



DOG Watch

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

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Study finds a quicker and non-invasive test for IBD.
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Chance, an anxious rescued Yorkie, doesn't understand how to play.

IN THE NEWS ...

A National Database Can Help Find Clinical Trials

If you're considering a clinical trial for your dog as an option for treatment, you'll find extensive listings on a new database from the American Veterinary Medical Association.

The AVMA Animal Health Studies Database, www.avma.org/findvetstudies, is the first of its kind for owners and researchers. It offers "one-stop shopping for people with animals with certain conditions who may be interested in trying to find out if there are any studies that may either help their animal or may at least help direct the advancement of knowledge for the condition," the AVMA says.

As do many colleges, Cornell University College of Veterinary Medicine lists clinical trials on its searchable website at www2.vet.cornell.edu. The AVMA database is national, including about 100 studies from the Veterinary Cancer Society, with plans to extend listings from Canada and the United Kingdom.

The AVMA site describes eligibility, potential medical benefits, risks and possible financial incentives for participants. ♦

20 Inspirational Ideas for the New Year

Some are spins on tradition, with new advice on avoiding over-vaccinating and the needed exam before tooth brushing

As the New Year approaches, do you find yourself writing a list of ambitious resolutions to eat healthier and exercise more? Perhaps you'll eat more kale and fewer pizzas and spend more time in aerobics class and less lounging on the sofa. We often create New Year's resolutions with good intentions but rarely fully achieve them.

However, if we shift the focus of our healthy goal-setting toward improving our



A safer alternative to some dog parks: play dates in your fenced back yard.

dogs' lives, we may just be more motivated to accomplish them throughout 2017. "Maintaining a pet's health is just as important as maintaining your own health," says Leni Kaplan, DVM, MS, a lecturer in the Community Practice Service at Cornell University College of Veterinary Medicine.

Easier Adherence. "Due to the strength and exquisiteness of the human-animal bond, it is more likely that owners will find

(continued on page 4)

What Those Mighty MRIs Can Reveal

They use magnetic waves up to 40,000 times stronger than the earth's magnetic field to detect abnormalities

When a 6-year-old Labrador Retriever arrived at Cornell University Hospital for Animals with difficulty walking and a confirmed bacterial infection, the veterinary team turned to its highly sophisticated diagnostic tool: magnetic resonance imaging (MRI).

MRI revealed the dog had two serious conditions: meningoencephalitis, an infection and inflammation of the brain, and otitis interna, an infection of the inner ear. Veterinarians in private practice had been unable to make their diagnosis using conventional tools and referred her to Cornell.

"The dog is responding well to long-term treatment with broad-spectrum antibiotics

and steroids," says radiologist Peter V. Scrivani, DVM, ACVR, Associate Professor of Imaging. The MRI enabled Cornell veterinarians to select the appropriate medications to avoid surgery.

Million dollar-plus MRI machines are part of imaging methods now being used at increasing levels in veterinary medicine. Other options include X-rays, computed tomography (CT), ultrasounds and nuclear medicine. Cornell performs about 400 MRI examinations on dogs and 25 exams on cats annually.

"MRI is excellent for neuro imaging and musculoskeletal imaging," says Dr. Scrivani. "About 90 percent of the imaging caseload

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SHORT TAKES

Study Finds a Quicker and Non-invasive Test for IBD

New research on inflammatory bowel disease (IBD) indicates that diagnosis of the disease can be made more quickly and avoid today's lengthy testing and invasive biopsies. Scientists at the University of California San Diego School of Medicine and Texas A&M University have identified a pattern of microbes to the degree that they can successfully predict most of the dogs in their study who had IBD and those who did not.

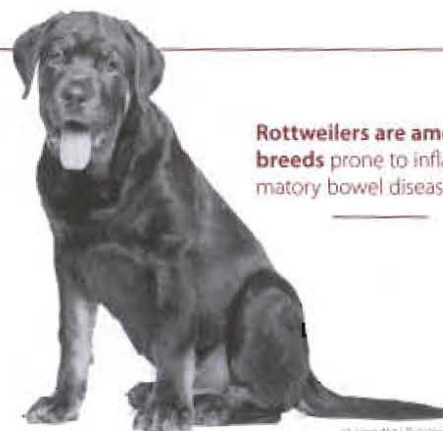
IBD is a painful, incurable disease resulting from an increase of inflammatory cells in the stomach lining, small intestine and colon. The immune system must work overtime to battle the presence of a parasitic, bacterial or food antigen. Affected dogs will have chronic or recurring vomiting, diarrhea, loss of appetite, weight loss and low-grade fever.

Veterinarians use a battery of tests in their diagnosis, but the most accurate is the use of the endoscope, a flexible, tubular optical device. With the dog under general anesthesia, veterinarians attach the endoscope to a light source, camera and computer monitor, allowing them to collect biopsy samples and view the condition of intestines.

The San Diego-Texas study, published in *Nature Microbiology*, found that diagnosis could be made using fecal samples. The researchers collected samples from 85 healthy dogs and 65 dogs with chronic signs of gastrointestinal disease and inflammatory changes.

They used a technique called "16S rRNA sequencing" to rapidly identify millions of bacterial species and looked for similarities and differences in the microbial species found in IBD and non-IBD dogs. The differences were significant enough that they could distinguish IBD dog feces from non-IBD with more than 90 percent accuracy.

Any dog of any age can develop IBD; however, some breeds are at a greater risk, including Basenjis, Boxers, English Bulldogs, German Shepherd Dogs, Irish Setters,



Rottweilers are among breeds prone to inflammatory bowel disease.

Norwegian Lundehunds, Rottweilers, Sharpeis and Wheaten Terriers.

Their Hunting Legacy

Evidence continues to emerge on dogs' often pivotal role in helping ancient hunters. Angela Perri, Ph.D., a researcher at the Max Planck Institute for Evolutionary Anthropology in Germany, studied 110 dog burials in pre-historic Japan and concluded that dogs were valued as ideal hunting companions and may have been critical to human survival. Her study was published in *Antiquity*, a journal of Cambridge University Press.

Dr. Perri focused on burials in Jōmon, Japan, during the pre-historic period of hunter-gatherers from approximately 12,000 BC to 300 BC. Later in that period, hunter-gatherers buried their canine companions much like humans, many with broken bones from hunting injuries that had healed — suggesting that people had cared for them, Dr. Perri says in *Science Magazine*. Some graves also contained bracelets and deer antlers.

The dogs were important in hunting, tracking and retrieving wounded animals or holding them until the hunter made the final kill, Dr. Perri says. A greater number of graves indicated a growing dependence on hunting dogs to extract prey from forested areas when resources were strained.

Some hunters buried their canine companions in huge piles of seashells, where they also typically interred their human dead. They were placed singly and appear to have been arranged in particular postures, Dr. Perri says. "They looked like they curled up and went to sleep." ♦

When to Seek Treatment for Constipation

A missed day or two, illness and visible signs of straining all warrant a trip to the veterinarian

Dogs typically defecate one to three times per day, depending in part upon their age and the food they eat. But constipation — the inability to routinely and easily produce stool — can also develop for a number of other reasons, says Meredith Miller, DVM, ACVIM, lecturer in small animal medicine at Cornell University College of Veterinary Medicine.

The common culprits are ingestion of foreign objects, perianal fistulas and prostatic disease of the small gland near the rectum in intact dogs. The disease results in enlargement of the prostate and painful urination and defecation.

Other causes include:

- ◆ A diet low in fiber or containing indigestible hair or bones.
- ◆ Dehydration, due to water restriction or reduced water intake.
- ◆ Blockages of the colon or rectum, as seen with cancer and certain infectious or inflammatory intestinal diseases.
- ◆ Disorders of colonic motility or megacolon — a distension of the colon — in serious and chronic constipation.

While constipation can occur in any breed or age of dog, some are particularly susceptible. “German Shepherd Dogs are predisposed to perianal fistulas. And mid-

dle-aged to older dogs more commonly develop prostatic disease,” Dr. Miller says.

Longer-haired dogs are prone to a different type of constipation — a condition called pseudocoprostasis. “These dogs are straining to defecate because of matted hair covering their anus, not because of any problem with their intestinal tract. Keeping longer-haired dogs well groomed can help prevent this from occurring,” Dr. Miller says.

Owners can watch for signs of constipation in their dog, such as posturing and straining to no effect. “Dogs may also cry out in pain when attempting to defecate,” Dr. Miller says. “When produced, the fecal material may appear unusually small or dry. Dogs may also show decreased appetite, vomiting or lethargy.”

Some cases of constipation may not pose serious health threats. “For dogs who strain to defecate and then pass foreign material like grass or hair, the situation may not be urgent,” says Dr. Miller. However, dogs who haven’t defecated for more than a day or two or those who repeatedly show signs of constipation or have other signs of illness should be seen by a veterinarian.

Veterinarians can detect constipation in small dogs by palpation of hard stool in the colon. “This is more difficult in larger



German Shepherd Dogs are predisposed to perianal fistulas, which can result in painful defecation.

dogs,” says Dr. Miller. In those cases, an abdominal X-ray will be helpful. And a digital rectal exam can detect any obstructions around the anus or in the rectum.

Megacolon often can be managed with medications and diet. “However, in severe cases, this may require surgical removal of the colon,” Dr. Miller says.

If untreated, a constipated dog can become obstipated — completely unable to defecate. This may require hospitalization for intravenous fluids, enemas and stool softeners. It also might require anesthetizing the dog so a veterinarian can manually remove the obstructing stool.

Given the potential consequences, any underlying cause of constipation should be treated promptly. If none can be found, the veterinarian may recommend modification of the diet with increases in fiber. Some owners add canned pumpkin to their dogs’ food for this reason. “Your dog’s veterinarian may also recommend a stool softener,” says Dr. Miller. “Good hydration and exercise are also important to keep your pets regular.”

Post-treatment outcomes vary, depending on the cause. “If a dog is impacted with grass or hair, a favorable prognosis is likely. A rectal mass, on the other hand, carries a poor prognosis,” says Dr. Miller. “In most cases, pets with persistent or recurrent bouts of constipation can be managed with nutritional changes, hydration, exercise and medication.” ♦

AVOIDING INJURY AND ILLNESS WITH HOME REMEDIES

Some home remedies and over-the-counter products for constipation can be dubious at best or dangerous at worst. Do not give your dog mineral oil, cautions Meredith Miller, DVM, ACVIM, at Cornell. “This can be dangerous, resulting in life-threatening pneumonia, if the dog vomits and aspirates it into his lungs.”

Likewise, giving an enema improperly and without restraint could lead to colonic injury or perforation, she says. Best leave it the veterinarian.

Some simple home remedies may help. Since increasing hydration and exercise are important, “Dogs can be encouraged to drink more by introducing a water fountain, flavoring the water bowl with low-sodium chicken broth, feeding canned food or adding water to their existing food,” Dr. Miller says.

INSPIRATION... *(continued from cover)*

it easier to adhere to a resolution for their pet than for themselves," she says. "And remember, any progress is better than no progress at all when it comes to maintaining your health and your pet's health."

One primary goal that Dr. Kaplan has set to benefit her dogs, Aja, Lewis and Sally: "To maintain their current healthy body weights and to walk the dogs for one full hour every single day since they love their walks."

Behaviorist Katherine A. Houpt, VMD, Ph.D., professor emeritus at Cornell, vows to make regular play dates for Yuki, her 2-year-old West Highland Terrier, with his favorite canine neighbor, a longhaired Chihuahua named Annie. "I also vow to take her on a hike three times a week."

Both experts offer inspirations — some a spin on traditional resolutions — to improve your dog's mental and physical well-being as we welcome 2017.

Promoting Well-being

1 *Topping the list is booking a wellness examination for your dog at least once next year — twice if he's a senior.*

"Not taking your dog to the veterinary clinic for an annual exam is one of the greatest failures of dog owners," Dr. Houpt says. "A lot of things can happen to your dog's health in a year. Complete physical examinations can help catch things early when they can be better treated."

2 *Discuss with the veterinarian the option of checking vaccine titers if over-vaccinating is a concern.* This alternative to vaccine boosters involves having the veterinarian draw blood from your dog for analysis. Ask about core (essential) and non-core (lifestyle-based) vaccines.

"In order to avoid over-vaccinating dogs, veterinarians and owners will discuss a pet's lifestyle, risk and exposure to infectious agents and together they will make a decision regarding which vaccines are necessary for that pet's protection," says Dr. Kaplan. "Owners should make sure to discuss whether vaccine titers are appropriate for evaluating the immune status of their pets."

Mindful House Training

3 *Be patient when walking your dog to eliminate.* Don't rush him or become agitated if he's taking longer than you would prefer.

"If an owner is impatient with their dog while he is outside to do his business, the dog may become anxious and develop negative associations with being outside and may even regress in his house-training habits," Dr. Kaplan says. "Just like people, dogs have routines. If they are used to a 30-minute walk, they will not be able to hurry up and go in less than 30 minutes."

4 *Schedule ample time for senior dogs or those with medical conditions, such as arthritis, to eliminate outdoors.*

If you notice that your dog is taking too long to eliminate, be sure to schedule an exam with his veterinarian. "If he is having trouble posturing to go to the bathroom, it could be a sign of pain, including arthritis, back pain or neurologic disease such as weakness in the limbs and inability to support body weight," Dr. Kaplan says. "If the pet is actually straining either for urination or defecation, a list of conditions can be the culprit, including bladder stones, neurologic impairment, a mass lesion obstructing outflow of urine or bowel movements."

5 *Enroll in a veterinarian-approved pet first-aid/CPR class* so you can learn how to stabilize and immobilize your dog in an emergency and transport him safely to a veterinary clinic when minutes count.

Grooming and Treating

6 *Invest five minutes every day to brush your dog.* Select the right brush or comb that fits his type of coat — short-haired, longhaired or nearly hairless like the Chinese Crested Dog or Mexican Hairless

Dog (Xoloitzcuintli). Or use grooming gloves designed for use on dogs.

"Regular brushing reduces the risk of your dog developing matted coats," says Dr. Houpt. "Brushing also helps distribute the oils in the coat. I recommend getting a dog used to being brushed by giving a tiny treat after one stroke of the brush, followed by two strokes of the brush and another treat. You will build a positive association with the brush because the dog is rewarded with treats."

7 *Inspect the coat carefully during grooming.* Be on the alert for suspicious lumps or bumps that may indicate a skin condition or possible disease.

8 *Trim your dog's claws* at least once a month to prevent overgrowth and torn or split nails.

Caring for the Mouth

9 *Schedule veterinary exams to have your dog's oral cavity evaluated.* More than 70 percent of dogs develop gum disease by age 3, according to the American Veterinary Dental Society.

10 *Select dental products* such as dog finger brushes, dental treats, chews, rinses and dog-safe toothpaste with the seal of approval from the Veterinary Oral Health Council.



It takes only five minutes a day to brush the coat to prevent mats, distribute oils and check for suspicious bumps.



Schedule a veterinary exam to make sure your dog isn't experiencing mouth pain before you begin a daily tooth-brushing regimen.

These products can help prevent diseases while maintaining oral health.

11 Commit to brushing your dog's teeth daily — it's the gold standard for prevention. If he's an adult, check with his veterinarian to make sure he doesn't have any mouth pain before you introduce a daily brushing routine. The veterinarian can provide information and guidance on how to safely and effectively brush your dog's teeth.

12 Dogs like routine, so try to brush at the same time each day and follow with a healthy treat or play time. Start gently, using gauze wrapped around your finger and dipped in chicken broth or toothpaste before moving on to brush.

Going Bowl-free

13 Banish meal time boredom and bring out the inner hunter in your dog by going bowl-free for at least one meal a week. Instead, put the measured portion of food in a food puzzle or treat ball for him to paw to trigger the release of the kibble.

"Treat balls help slow eating if you have a dog who seems to quickly gulp down food," says Dr. Houpt. "Chasing and swatting a food puzzle can also serve as an outlet for dogs who can be pushy at mealtime."

14 Become a label reader. Select quality commercial products that list real meat, such as beef, chicken or salmon, as the first ingredient. Choose

food made in North America to ensure quality compliance.

15 Measure meals to prevent unwanted weight gain. Overweight or obese dogs are at greater risk for a host of health conditions, including arthritis and diabetes. More than half of

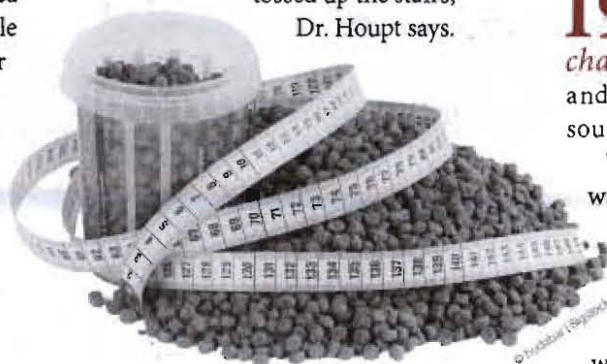
dogs in the U.S. are overweight or obese, according to the Association for Pet Obesity Prevention. Dogs fare best when they are served two or three meals a day and not allowed to graze all day from a bowl overflowing with kibble. "Not all dogs tolerate only two meals per day," Dr. Kaplan says. "They may have sensitive stomachs and cannot go longer than eight hour between meals."

Happy Home and Outdoors

16 Schedule daily mini-play sessions indoors, especially during inclement weather. Mix and match different types of toys to maintain interest. Toss a tennis ball down the hallway or engage in a friendly game of tug-of-war with a durable rope toy or praise your dog for stalking and "capturing" a plush toy with a squeaker inside.

"Depending on your dog's size and physical condition, you can convert indoors into an agility course by having him leap over the coffee table, weave in and out of dining room chairs or chase after a ball tossed up the stairs,"

Dr. Houpt says.



Measure food to keep your dog at healthy weight. Obese dogs are at greater risk for a host of health conditions, including arthritis and diabetes.

17 Boost mental stimulation by teaching your dog new tricks or introducing him to clicker training.

"Clicker training is an example of positive reinforcement training," says Dr. Kaplan. "It will not only aid in teaching your dog new tricks but also helps in building his confidence."

18 Before going to a dog park, investigate and ensure the enclosed area is safe and welcoming.

"It is always good for dog parks to have separate areas for small and big dogs," says Dr. Houpt. "Avoid dog parks where you see dogs with rawhide chews that can trigger a fight or ones with aggressive dogs. As a safer alternative, schedule a play date with your dog and one of his favorite doggy friends at your home or back yard."



Enliven your daily walks by occasionally changing the route, duration and pace. Minor changes in sights and smells can provide mental enrichment.

19 Eliminate the daily walk monotony by occasionally changing the route, the duration and the pace to introduce new sights, sounds and smells.

"These minor changes to the daily walk enrich your dog mentally," says Dr. Houpt.

20 Provide furnishing for seniors. A sturdy ramp will allow him easy access to the sofa or your bed. Or treat him to a heated orthopedic doggy bed that will cushion his arthritic joints and allow him to sleep easily. ♦

MRI ... (cont. from cover)

is radiology (X-rays) and ultrasound. If, however, you want to image the brain or the spinal cord, you definitely want to go with the MRI. Also, for assessing certain types of back fractures or congenital anomalies, the CT might be a better option. It is important to note that imaging modalities are not in competition with each other. They are complementary, and sometimes we may perform both MRIs and CTs to get the most information possible."

No Radiation. MRI is safe and doesn't produce exposure to ionizing radiation like X-rays, Dr. Scrivani says. "Extreme caution is taken to ensure no one enters the MRI room with loose metal because if metal gets sucked into the MRI, it becomes a projectile. Collars are removed and we take radiographs of some animals to make sure they have not ingested any metal."

Microchip identifications in pets having MRIs will not cause harm, but Dr. Scrivani says sometimes they do migrate in the body and can interfere when obtaining images near the spine. "But this is an infrequent problem."

Certainly, cost is an issue. Imaging averages \$1,000 to \$4,000 a session, including anesthesia. Many major pet insurance companies cover some or all the fee. The expense of the MRI machines and the required shielded rooms explain why they tend to be available only at spe-

cialty hospitals and some veterinary schools and not at general veterinary practices.

Generous Gift. Cornell has a Toshiba Vantage Atlas 1.5 Tesla machine designed for human use and adapted for animals. It was installed in 2010 at a cost of about \$3 million, including a CT scanner and room renovations, with most of its cost covered by a \$2.125 million donation from Janet Swanson, the wife of Cornell alumnus John Swanson. It is a "closed" machine versus open machines sometimes used for human patients.

"With a closed machine, for the most part, we get a better signal and so usually get a better image," Dr. Scrivani says. "In people, claustrophobia can be an issue, but all our patients are under anesthesia so that is not an issue."

MRIs use magnetic waves up to 40,000 times stronger than the earth's magnetic field to detect abnormalities. The dog is under general anesthesia to remain motionless to avoid blurred images for up to two hours. "It takes time to make an MRI image and patients must be still during this time to achieve the best image quality possible," Dr. Scrivani says. "Plus, patients must remain in a



X-rays and ultrasound comprise about 90 percent of imaging cases at Cornell, says radiologist Peter V. Scrivani, DVM, ACVR. "If, however, you want to image the brain or the spinal cord, you definitely want to go with the MRI."

particular location within the scanner where the best images are produced. "

He adds that a veterinary radiologist might want to look at a tissue from all angles and get different tissue characteristics. Each time requires a new image being taken to provide for a more comprehensive diagnosis.

Minute signals are generated as the dog's body responds to the magnetic field. The signals are then converted to a cross-sectional image that enables radiologists and other specialists to look for signs of injury and disease. At Cornell, all data is digital and medical reports are available to referring veterinarians via a computer system.

MRIs' use and precision are expected to expand even more. "The typical lifespan of a MRI scanner is about 10 years, so we will be looking for a means to replace or upgrade our system in the near future," Dr. Scrivani says. "The scanner has been excellent, but we look forward to having access to innovative technologies that will improve our clinical, teaching and research programs, allowing us to offer novel imaging examinations."

Improvements may include upgrading to a 3 Tesla MRI, a newer generation MRI that can provide even greater imaging details. Dr. Scrivani also anticipates:

- ◆ Shorter examinations. "Often, there is a trade-off made between image quality and time to acquire the image. Faster examinations with improved image quality are a likely advancement."

(continued on bottom of page 7)

FINDING DEFECTS FROM BRAIN SWELLING TO EYE MOVEMENT

MRIs can identify the causes of health and medical problems, including:

- ◆ Brain tumors
- ◆ Brain swelling or inflammation
- ◆ Traumatic brain injuries
- ◆ Herniated, bulging or degenerated discs
- ◆ Stenosis, the narrowing of open spaces in the spine
- ◆ Spinal tumors
- ◆ Congenital abnormalities of the spine
- ◆ Inflammation of the spinal cord or nerves
- ◆ Infections of the spine
- ◆ Joint diseases
- ◆ Compression fractures
- ◆ Loss of balance and coordination
- ◆ Unexplained shaking
- ◆ Jerking eye movements
- ◆ Chronic lameness

WHICH IMAGING WOULD BE BEST FOR YOUR DOG?

These are some of the features of various imaging tools.

X-RAYS: no anesthesia typically needed

They can detect changes or abnormalities in bone and soft tissue based on absorption of electromagnetic radiation. They're most commonly used to obtain images of the abdominal and chest cavity for signs of lung and heart disease, and identify bone fractures in dogs showing signs of lameness.

Advantages: Most veterinary clinics can take X-rays without dogs needing to be sedated or anesthetized. "Radiographs provide useful information in a quick and relatively inexpensive evaluation, which can be helpful following trauma such as a skull fracture," says radiologist Peter V. Scrivani, DVM, ACVR.

Drawbacks: The lack of depth perception, which is overcome by cross-sectional techniques like CT and MRI. Also, X-rays cannot differentiate as many different tissue types as CT and MRI. Care must be taken to prevent radiation exposure to technicians who operate the machine.

Cost: \$50 to \$100 per image.

ULTRASOUND: real time results

Sound waves are transmitted and reflected back from targeted tissue. The non-invasive option allows veterinarians to view the heart, abdominal organs, muscles and tendons.

Advantages: Images are available in real time versus a snapshot from X-rays. They can denote differences in fluids and the presence of crystals in urine, and see blood flowing through the chambers of the heart. "For musculoskeletal problems, radiography and ultrasonography generally should be performed first before MRIs because they often provide a diagnosis, are relatively inexpensive and generally do not require general anesthesia," Dr. Scrivani says.



Ultrasound shows fluids, crystals in urine and blood flowing through the chambers of the heart.

Drawback: lacks the detail of MRI.

Cost: \$300 to \$400.

COMPUTED TOMOGRAPHY: images in 3-D

The donut-shaped CT scanner uses a sophisticated computer processing system to create three-dimensional, cross-sectional images of a dog's body. An X-ray shows a flat, two-dimensional view.



Computed tomography provides images in 3-D. X-rays show a flat, two-dimensional view.

Advantages: A CT can obtain information about a body organ or tissue in a few minutes and the information can be processed to show many different images of the body part (different angles, different tissues). Quick scanning is also necessary when motion is present, for example, respiratory motion. It can detect traumas and head, lung and nasal diseases.

Drawbacks: General anesthesia is usually required. The scan cannot identify subtle changes in the body that an MRI can.

Cost: \$500 to \$1,200, plus the anesthesia fee.

NUCLEAR MEDICINE IMAGING: limited availability

Nuclear medicine imaging allows veterinarians to track internal hemorrhaging and kidney function. It can also aid in diagnosing stress fractures. At Cornell, it is occasionally used to rule out portosystemic, or liver, shunts in dogs and most commonly to diagnose hyperthyroidism in cats and signs of lameness in horses.

Regulations regarding radioactive pharmaceuticals can limit their availability. Their use must be documented and the patient remains hospitalized while the pharmaceuticals are mostly cleared from the body.

The imaging involves administering a small amount of a gamma ray-emitting radioisotope to a sedated patient. A camera device then detects the location and distribution of the radioisotope. Veterinarians watch how organs process these "tagging" medicines. The study shows how an organ or body system functions, not simply its appearance.

The cost: usually \$400 to \$600.

(continued from page 6)

◆ Improved functional and molecular imaging to assess how organs function and see how cells handle chemicals or drugs. "Although there will be continued improvement in morphologic imaging (revealing form and structure), this is an increasingly important aspect of MRI," he says.

◆ A trend toward producing hybrid images — combining two methods like CT and positron emission tomography (PET scans), which use small amounts of radioactive materials. The images could provide both structural and functional or molecular information in the same image.

Whatever the technological advances, Dr. Scrivani says veterinarians face challenges to keep on top of their game. "Modern imaging can produce exquisite depictions of patient morphology, but there still is a need for expert interpretation, technical expertise and continued research." ♦



Katherine A. Houpt, VMD, Ph.D., here with her West Highland White Terrier, Yuki, provided the answer on this page. Dr. Houpt is a diplomate of the American College of Veterinary Behaviorists and emeritus professor at Cornell University College of Veterinary Medicine.

Please Share Your Questions
We welcome questions of general interest on health, medicine and behavior. We regret however, that we cannot comment on specific products and prior diagnoses. Please send correspondence to:

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COMING UP ...

**DESTRUCTIVE
BEHAVIOR**



MARKING



SAFE CPR



**LONG-TERM
STEROID USE**

Her Fearful Rescue Yorkie Doesn't Know How to Play

Q I have a 3-year-old rescue Yorkie, who has two issues. Chance is so afraid that if he hears a loud noise, or if I raise my voice to talk with my husband, he jumps off the recliner where he has been lying with me. He follows me wherever I go in the house.

The second issue is that he won't, or doesn't know how to play. I roll a ball to him and he lets it roll past him, or he lets it roll between his front legs and walks away. I always thought puppies were born with "play" in them. Can you give me some hints on how to help him with either or both problems? I just want a dog who isn't missing out on fun.

A You were very kind to adopt Chance. Unfortunately, rescue dogs often come with a variety of behavior problems. Fearfulness tops the list. This is not always due to abuse in a former home. The act of transferring a dog from one environment and set of humans to another is often enough to trigger fearful behavior. The good news is that he is obviously very attached to you because he follows you everywhere.

Let's deal with his aversion to sounds. I know you are not yelling at your husband, but perhaps if you mute the TV and speak softly but clearly, your husband will hear, but Chance will not be afraid. I had a dog as a patient who was afraid of the husband only when the wife was home. The husband was profoundly deaf and, therefore, tended to shout at his wife.

For more scary sounds such as thunder, trash trucks and fireworks, a new product (Sileo) is available, which acts quickly to calm frightened dogs. Ask Chance's veterinarian about it. A variety of nutraceuticals may help. Many contain caseozepine, a milk protein that acts a little like Valium. You can even buy a dog food called the Calm Diet.

A complete blood count, chemistry screen and urinalysis would reveal any underlying pain or illness that might enhance Chance's fear.

You can use behavior modification to teach him that saying something like, "Turn down the volume, dear" is always paired with a rare, tasty treat. Use the same approach to teach him to like to be petted. Scratch his chest for one second (say one thousand and one under your breath) while he eats a tiny treat. Something like the Lickety Stik that has a roller ball that dispenses meat-flavored gel is great for this type of reward because you can easily hold it out for him to lick then take it away just as easily.

Could you enroll him in a doggy daycare? That would give him exercise and enrichment and also might find what kind of play he likes.

Puppies begin to play at 3 weeks of age at which time their play consists mostly of mouthing one another. By 9 weeks, play begins to decline, especially in dogs who are not well nourished, which could be the case with Chance. I would not expect him to like to play fetch. He is not a retriever, but he might like other kinds of play.

Squeaky toys are the favorite of many dogs unless the sound bothers them. They can chew plush toys and you could try to play tug of war with him. Although many people recommend against it, the game should be fine for a timid dog like Chance. Let him win at least at first. He may like wrestling or chase games in which you run away from him and then turn and chase him.

Food dispensing toys combine both exercise and nutrition so rubber toys in which soft food can be spread or rolling toys that dispense dry food as they turn might interest him. Finally, there are rawhides or real bones. Not all rawhides are created equal so I would try to find American-made beef hide. A few dogs cannot tolerate them, but unless you let the rawhide get chewed to a nubbin, which he could swallow, they are safe. It will keep his teeth tartar-free, too. Interactive play between the owner and dog is the most rewarding and dogs seem to understand that when their owner speaks in a whisper or a soft, but high-pitched voice while bowing toward the dog, the human wants to play.

Good luck with Chance. With time and a little behavior modification, he will become more loving and repay your good deed in giving him a home. ♦

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