

How rescued dogs become rescue dogs

These dogs aren't just man's best friend—they're man's lifeline. Here's a closer look.

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October 2018 | Volume 49 | Number 10 | dvm360.com

RNs fight vet techs over 'nurse'

Human nurses say they—and only they—have the right to use this word to describe their work.

By Rachael Zimlich

Webster's defines "nurse" as a person who cares for the sick or infirm. While the definition doesn't specify whether the recipient of that care is an animal or a human, the debate over whether to extend this title to veterinary technicians is a heated one.

The National Association of Veterinary Technicians in America (NAVTA) initiated the conversation about changing the title of veterinary technicians to "veterinary nurse" nationally in 2015. The Veterinary Nurse Initiative includes a proposal to establish a national credentialing process similar to that used for registered nurses. While NAVTA has support for the change within the veterinary profession, stakeholders in human nursing have not joined the call to action. We at *dvm360* wanted to know why not—here's what we found out.

Don't want techs called 'nurses'

Janet Haebler, MSN, RN, senior director of state government affairs for the American Nurses Association (ANA), says NAVTA first approached ANA about the change in 2015 after a referral from the National Council of State Boards of

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Are there enough dogs in the U.S. for those who want them? Exploring controversial questions in the shelter, rescue and breeding worlds in this three-part investigative report by Portia Stewart.

Dog shortage: Is it for real?

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For more information, please see a summary of the product insert on page 03.

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Kristi Reimer Fender | **DIRECTOR'S CUT**

Well-being in real life: How it works

You don't have to stretch far to find ways to boost your outlook.

I have been loving the stuff coming out of the Merck Animal Health Veterinary Wellbeing Study this year. For one, it breaks the concept of “well-being” down into manageable concepts. While I think yoga and meditation are great for those who manage to engage in them regu-

larly, I have never been one of those people. But the Merck study lists other pragmatic ways to pursue well-being—for instance, traveling for pleasure, reading for pleasure, spending time with family, socializing with friends, having a hobby and exercising regularly. Now those are things

I can get behind! The key is to make these things a priority—and not let work define who you are all the time. For more, read the article “3 steps to a healthier team” on page 34, and plan to hear the authors at the Fetch dvm360 conference in December (see fetchdvm360.com/sd for more).

IMMITICIDE® STERILE POWDER (MELARSOMINE DIHYDROCHLORIDE)

Brief Summary: Before Using IMMITICIDE, please consult the product insert, a summary of which follows.

CAUTION

Federal law restricts this drug to use by or on the order of a licensed veterinarian.

WARNING

IMMITICIDE should be administered by deep intramuscular injection in the lumbar (epaxial) muscles (between L3 - L5) ONLY. DO NOT USE IN ANY OTHER MUSCLE GROUP. DO NOT USE INTRAVENOUSLY. Care should be taken to avoid superficial injection or leakage. (See SAFETY).

INDICATIONS

IMMITICIDE Sterile Power is indicated for the treatment of stabilized Class 1, 2, and 3 heartworm disease caused by immature (4 month-old, stage L5) to mature adult infections of *Dirofilaria immitis* in dogs. See full package insert for Heartworm Disease Classification

CONTRAINDICATIONS

IMMITICIDE is contraindicated in dogs with very severe (Class 4) heartworm disease. Patients in this category have Caval Syndrome (D. immitis present in the venae cavae and right atrium).

WARNINGS

(See boxed Warning). For use in dogs only. Safety for use in breeding animals and lactating or pregnant bitches has not been determined.

HUMAN WARNINGS

Keep this and all medications out of the reach of children. Avoid human exposure. Wash hands thoroughly after use or wear gloves. Potentially irritating to eyes. Rinse eyes with copious amounts of water if exposed. Consult a physician in cases of accidental exposure by any route (dermal, oral, or by injection).

PRECAUTIONS

Dogs with heartworm disease are at risk for post-treatment pulmonary thromboembolism (death of worms which may result in fever, weakness, and coughing). Dogs with severe pulmonary arterial disease have an increased risk and may exhibit more severe signs (dyspnea, hemoptysis, right heart failure and possibly death). Dogs should be restricted from exercise after treatment. Studies indicate that adverse reactions may occur after the second injection in the series even if no problems were encountered with the first injection. All patients should be closely monitored during treatment and for up to 24 hours after the last injection.

Special Considerations for Class 3 dogs: Following stabilization, severely ill (Class 3) dogs should be treated according to the alternate dosing regime in an attempt to decrease post-treatment mortality associated with thromboembolism. Post-treatment mortality due to thromboembolism and/or progression of the underlying disease may occur in 10 to 20% of the Class 3 patients treated with IMMITICIDE. Hospitalization post-treatment and strict exercise restriction are recommended. If the alternate dosing regime is used, expect increased injection site reactions on the side receiving the second injection since the skeletal muscles at the first injection site may not have fully recovered (healed). If persistent swelling is present at 1 month, the second injections may be delayed for several weeks up to 1 month.

Special Considerations for Older Dogs: In clinical field trials, dogs 8 years or older experienced more post-treatment depression/lethargy, anorexia/inappetence, and vomiting than younger dogs.

DOSAGE AND ADMINISTRATION

Care must be taken to administer the proper dose deep into epaxial muscles ONLY (see boxed WARNING). Accurately weigh the dog and calculate the volume to be injected based on the dose of 2.5 mg/kg (1.1 mg/lb). This is equivalent to 0.1 mL/kg (0.045 mL/lb). See full product insert for dosing table. Use a 23 gauge 1 inch needle for dogs equal to or less than 10 kg (22 lb) in weight. Use a 22 gauge 1 ½ inch needle for dogs greater than 10 kg (22 lb). Use alternating sides with each administration and avoid injecting at the same lumbar location.

Disease Classification: It is vital to classify the severity of heartworm disease to apply the appropriate dosage regime for IMMITICIDE. See full product insert for Heartworm Disease Classification criteria.

Class 1 and 2: IMMITICIDE should be given in two intramuscular injections of 2.5mg/kg, 24 hours apart. Four months following treatment, a second treatment series (2.5 mg/kg twice, 24 hours apart) can be elected. **Class 3:** Alternate Dosing Regime: Dogs with severe (Class 3) heartworm disease should be stabilized prior to treatment and then dosed intramuscularly in the lumbar (L3 - L5) muscles with a single injection of 2.5 mg/kg then approximately 1 month later with 2.5 mg/kg administered twice, 24 hours apart.

SAFETY

IMMITICIDE has a low margin of safety. A single dose of 7.5 mg/kg (3X the recommended dose) can result in pulmonary inflammation, edema, and death. Symptoms of overdose (2x recommended dose) may include excessive salivation, panting, restlessness, fever, vomiting and diarrhea. These symptoms were seen in the clinical trials and all signs resolved within 24 hours. Symptoms of up to 3x the recommended dose included tremors, lethargy, unsteadiness, restlessness, panting, shallow and labored breathing, pulmonary inflammation, edema, and vomiting which progressed to respiratory distress, collapse, and death. Daily administration of 2X and 3X the recommended dose for 14 days caused renal damage in healthy dogs.

In Case of Overdosage:

BAL in Oil Ampules (Dimercaprol Injection, USP) [Akorn, San Clemente, California, at 1-800-223-9851] is reported in the literature to be an antidote for arsenic toxicity and was shown in one study to reduce the signs of toxicity associated with over-dosage of IMMITICIDE. The efficacy of IMMITICIDE may be reduced with co-administration of BAL.

ADVERSE REACTIONS (SIDE EFFECTS)

In clinical field trials, the most common reactions seen in dogs treated with IMMITICIDE were coughing/gagging, depression/lethargy, anorexia/inappetence, fever, lung congestion, and vomiting. Hypersalivation and panting occurred more rarely, however, these signs may occur within 30 minutes of injection and may be severe. Significant irritation was also observed at the intramuscular injection sites, accompanied by pain, swelling, tenderness, and reluctance to move. Generally, injection site reactions were mild to moderate in severity and recovery occurred in 1 week to 1 month, however, firm nodules can persist indefinitely. Avoid superficial or subcutaneous injection and leakage. Heartworm disease may cause death in dogs with or without treatment, especially in the Class 3 dogs.

Post Approval Experience: There have also been rare reports of paresis and paralysis in dogs following administration of IMMITICIDE.

The information provided here is not comprehensive. The full FDA-approved product insert is available at http://www.merial.us/SiteCollectionDocuments/Immiticide_PI_8.5x11_version.pdf. Consult your veterinarian for further information. For technical assistance, to request a Safety Data Sheet or to report suspected adverse events, call 1-888-637-4251. For additional information about adverse event reporting for animal drugs, contact FDA at 1-888-FDA-VETS, or <http://www.fda.gov/AnimalVeterinary>. NADA 141-042

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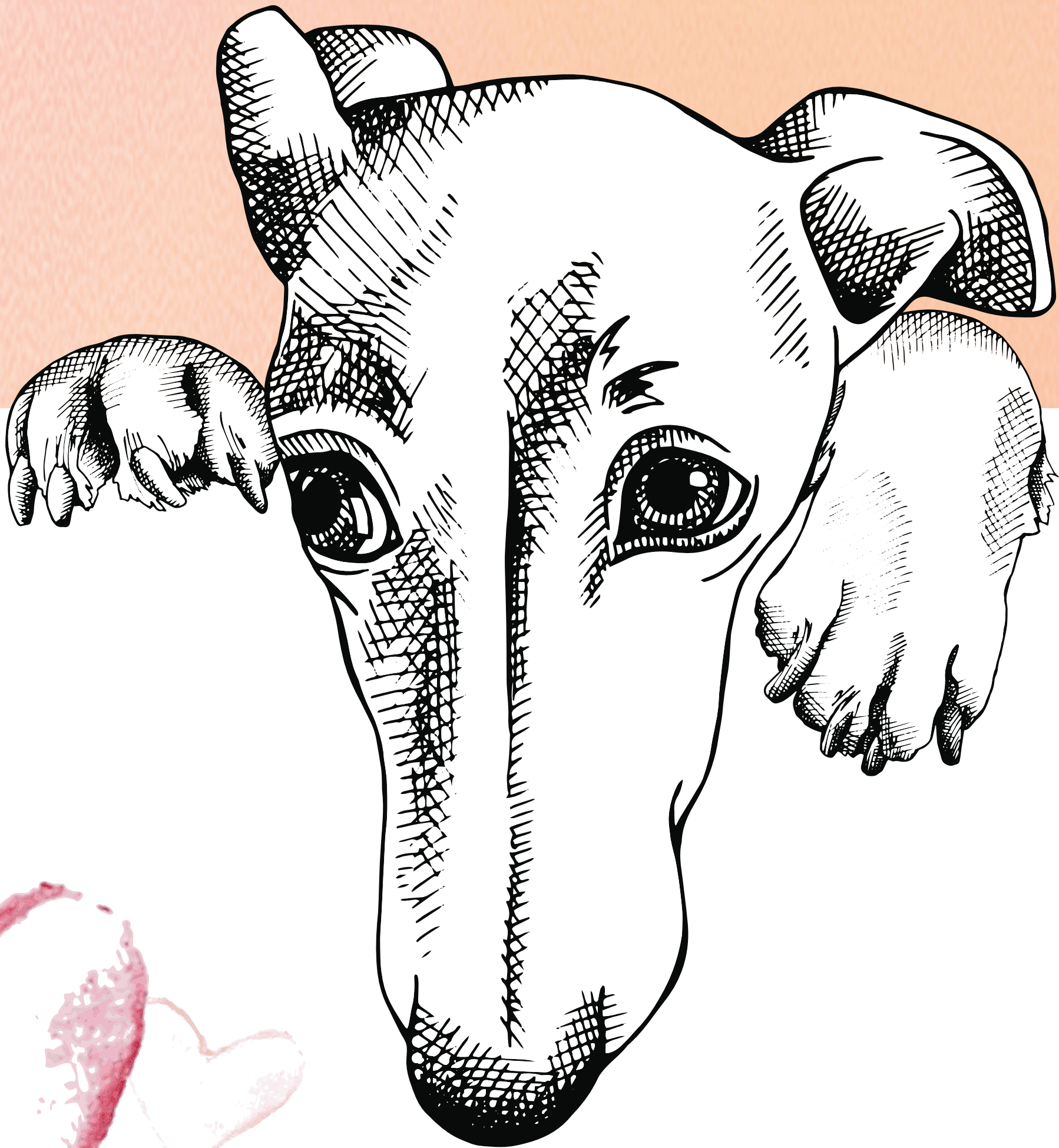
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Salivation abnormalities of neurogenic origin

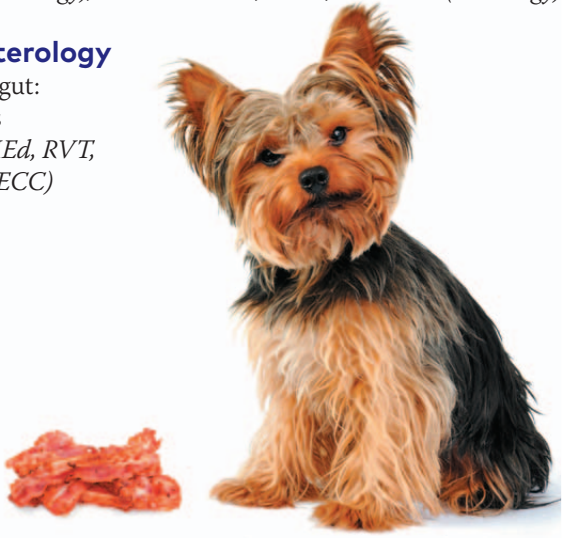
By Rachel B. Song, VMD, MS, DACVIM (neurology), Eric N. Glass, MS, DVM, DACVIM (neurology), and Marc Kent, DVM, DACVIM (neurology)

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Description: ENTYCE® (capromorelin oral solution) is a selective ghrelin receptor agonist that binds to receptors and affects signaling in the hypothalamus to cause appetite stimulation and binds to the growth hormone secretagogue receptor in the pituitary gland to increase growth hormone secretion.

Indication: ENTYCE (capromorelin oral solution) is indicated for appetite stimulation in dogs.

Contraindications: ENTYCE should not be used in dogs that have a hypersensitivity to capromorelin.

Warnings: Not for use in humans. Keep this and all medications out of reach of children and pets. Consult a physician in case of accidental ingestion by humans. **For use in dogs only**

Precautions: Use with caution in dogs with hepatic dysfunction. ENTYCE is metabolized by CYP3A4 and CYP3A5 enzymes (See Clinical Pharmacology). Use with caution in dogs with renal insufficiency. ENTYCE is excreted approximately 37% in urine and 62% in feces (See Adverse Reactions and Clinical Pharmacology).

The safe use of ENTYCE has not been evaluated in dogs used for breeding or pregnant or lactating bitches.

Adverse Reactions: Field safety was evaluated in 244 dogs. The most common adverse reactions were diarrhea and vomiting. Of the dogs that received ENTYCE (n = 171), 12 experienced diarrhea and 11 experienced vomiting. Of the dogs treated with placebo (n = 73), 5 experienced diarrhea and 4 experienced vomiting.

To report suspected adverse drug events and/or obtain a copy of the Safety Data Sheet (SDS) or for technical assistance, call Aratana Therapeutics at 1-844-272-8262.

For additional information about adverse drug experience reporting for animal drugs, contact FDA at 1-888-FDA-VETS or online at <http://www.fda.gov/AnimalVeterinary/SafetyHealth>

NADA 141-457, Approved by FDA

US Patent: 6,107,306
US Patent: 6,673,929

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August 2016



Banfield: Flea allergy dermatitis up 67% in cats, 13% in dogs

State of Pet Health Report highlights rise in prevalence that parallels increase in flea infestations over past 10 years. *By Kristi Reimer Fender*

Banfield Pet Hospital’s 2018 State of Pet Health Report, which focuses on skin allergies in pets, highlights a 67 increase in flea allergy dermatitis (FAD) cases diagnosed in cats at Banfield clinics since 2008 and a 12.5 percent rise in the disease in dogs, although experts note that overall prevalence is still fairly low.

According to Emi Saito, VMD, MSPH, MBA, Banfield’s senior manager of veterinary research programs, FAD was diagnosed in 170 of every 10,000 cats seen at Banfield hospitals in 2017, up from 102 of every 10,000 cats seen in 2008. For dogs, FAD prevalence was 154 of every 10,000 dogs seen by Banfield in 2017, up from 137 in 2008.

So what’s behind the ever-increasing number of FAD diagnoses in the past 10 years? Banfield investigators asked themselves the same question.

“We looked at changes in the prevalence of flea infestations in that same period as well,” Dr. Saito tells dvm360. “And we found that the increase in FAD nicely parallels the increased prevalence of fleas in dogs and cats.”

In other words, with more dogs and cats being infested with fleas, more are naturally being diagnosed with flea allergies as well. And while the increase in FAD might seem dramatic, especially for cats, Dr. Saito notes that a close look at the numbers offers some

perspective. “The condition in cats is relatively rare,” she says. “It’s a small percentage affected, so any increase seems especially dramatic.”

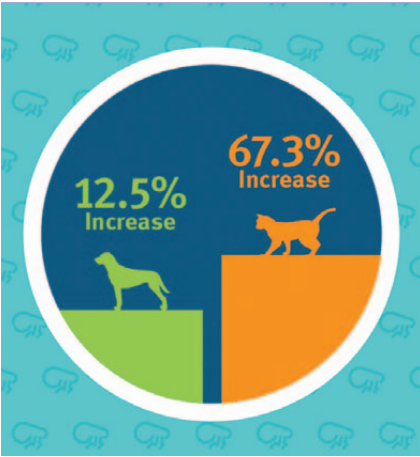
Dr. Saito says researchers don’t know for certain why the prevalence of fleas is increasing, but climate change could play a role. With the warmer temperatures, flea populations are surviving and thriving, and pets are spending more time outdoors, where they can be infested.

“But also today more and more pets are being brought indoors,” Dr. Saito continues. “Fleas are happy to be inside where it’s comfortable all the time. This is becoming a year-round problem—it’s especially happening where people think fleas are a seasonal issue.

Many owners who keep cats indoors don’t use preventives year-round or even at all, Dr. Saito says. What they don’t realize is that another animal—or even a human—can bring fleas inside. Plus, cats are fastidious groomers, and it can be hard for owners to spot a flea before the cat finds it herself. So the cat has flea bites but no fleas. “Oftentimes the first sign that a cat has been exposed is that allergic skin reaction [of FAD],” Dr. Saito says.

The take-home message Banfield is emphasizing in this report is the necessity of keeping pets on flea preventive year-round—all dogs and cats in the household, whether they live indoors, outdoors or both. “Plus, owners and veterinarians need to be cognizant and aware, keeping an eye out for fleas, flea dirt or signs the pet is itching more,” Dr. Saito says.

Besides the FAD findings, Banfield’s 2018 State of Pet Health Report found that 30 percent of food-allergic dogs and cats have another allergic skin condition. Food-allergic pets are also more prone to skin infections—dogs are six times more likely to develop a bacterial skin infection and cats are 15 times more likely, according to a Banfield release. For more information about the report, visit stateofpethealth.com/allergies.



Over the past 10 years, Banfield has seen a significant increase in flea allergy cases. The best solution is to administer parasite preventives year-round.



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Earlier age at spay/neuter a risk factor in obesity, orthopedic injuries

Epidemiologist Dr. Missy Simpson shares the first prospective research from the Morris Animal Foundation’s Golden Retriever Lifetime Study. *By Portia Stewart and Theresa L. Entriiken, DVM*

NADA 141-297, Approved by FDA

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Description: ProZinc® insulin is a sterile aqueous protamine zinc suspension of recombinant human insulin.

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glycerin	16.00 mg
dibasic sodium phosphate, heptahydrate	3.78 mg
phenol (added as preservative)	2.50 mg
hydrochloric acid	1.63 mg
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pH is adjusted with hydrochloric acid and/or sodium hydroxide.	

Indication: ProZinc (protamine zinc recombinant human insulin) is indicated for the reduction of hypoglycemia and hyperglycemia-associated clinical signs in cats with diabetes mellitus.

Dosage and Administration: USE OF A SYRINGE OTHER THAN A U-40 SYRINGE WILL RESULT IN INCORRECT DOSING.

FOR SUBCUTANEOUS INJECTION IN CATS ONLY.

DO NOT SHAKE OR AGITATE THE VIAL.

ProZinc insulin should be mixed by gently rolling the vial prior to withdrawing each dose from the vial. Once mixed, ProZinc suspension has a white, cloudy appearance. Clumps or visible white particles can form in insulin suspensions; do not use the product if clumps or visible white particles persist after gently rolling the vial. Using a U-40 insulin syringe, the injection should be administered subcutaneously on the back of the neck or on the side of the cat.

Always provide the Cat Owner Information Sheet with each prescription.

The initial recommended ProZinc dose is 0.1 – 0.3 IU insulin/pound of body weight (0.2 – 0.7 IU/kg) every 12 hours. The dose should be given concurrently with or right after a meal. The veterinarian should re-evaluate the cat at appropriate intervals and adjust the dose based on both clinical signs and glucose nadirs until adequate glycemic control has been attained. In the effectiveness field study, glycemic control was considered adequate if the glucose nadir from a 9-hour blood glucose curve was between 80 and 150 mg/dL and clinical signs of hyperglycemia such as polyuria, polydipsia, and weight loss were improved.

Further adjustments in the dosage may be necessary with changes in the cat’s diet, body weight, or concomitant medication, or if the cat develops concurrent infection, inflammation, neoplasia, or an additional endocrine or other medical disorder.

Contraindications: ProZinc insulin is contraindicated in cats sensitive to protamine zinc recombinant human insulin or any other ingredients in the ProZinc product. ProZinc insulin is contraindicated during episodes of hypoglycemia.

Warnings: User Safety: For use in cats only. Keep out of the reach of children. Avoid contact with eyes. In case of contact, immediately flush eyes with running water for at least 15 minutes. Accidental injection may cause hypoglycemia. In case of accidental injection, seek medical attention immediately. Exposure to product may induce a local or systemic allergic reaction in sensitized individuals.

Animal Safety: Owners should be advised to observe for signs of hypoglycemia (see Cat Owner Information Sheet). Use of this product, even at established doses, has been associated with hypoglycemia. An animal with signs of hypoglycemia should be treated immediately. Glucose should be given orally or intravenously as dictated by clinical signs. Insulin should be temporarily withheld and, if indicated, the dosage adjusted.

Any change in insulin should be made cautiously and only under a veterinarian’s supervision. Changes in insulin strength, manufacturer, type, species (human, animal) or method of manufacture (rDNA versus animal-source insulin) may result in the need for a change in dosage.

Appropriate diagnostic tests should be performed to rule out other endocrinopathies in diabetic cats that are difficult to regulate.

Precautions: Animals presenting with severe ketoacidosis, anorexia, lethargy, and/or vomiting should be stabilized with short-acting insulin and appropriate supportive therapy until their condition is stabilized. As with all insulin products, careful patient monitoring for hypoglycemia and hyperglycemia is essential to attain and maintain adequate glycemic control and to prevent associated complications. Overdosage can result in profound hypoglycemia and death. Progestogens, certain endocrinopathies and glucocorticoids can have an antagonistic effect on insulin activity. Progestogen and glucocorticoid use should be avoided.

Reproductive Safety: The safety and effectiveness of ProZinc insulin in breeding, pregnant, and lactating cats has not been evaluated.

Use in Kittens: The safety and effectiveness of ProZinc insulin in kittens has not been evaluated.

Adverse Reactions: Effectiveness Field Study

In a 45-day effectiveness field study, 176 cats received ProZinc insulin. Hypoglycemia (defined as a blood glucose value of <50 mg/dL) occurred in 71 of the cats at various times throughout the study. Clinical signs of hypoglycemia were generally mild in nature (described as lethargic, sluggish, weak, trembling, uncoordinated, groggy, glassy-eyed or dazed). In 17 cases, the veterinarian provided oral glucose supplementation or food as treatment. Most cases were not associated with clinical signs and received no treatment. One cat had a serious hypoglycemic event associated with stupor, lateral recumbency, hypothermia and seizures. All cases of hypoglycemia resolved with appropriate therapy and, if needed, a dose reduction.

Three cats had injection site reactions, which were described as either small, punctate, red lesions; lesions on neck; or palpable subcutaneous thickening. All injection site reactions resolved without cessation of therapy.

Four cats developed diabetic neuropathy during the study as evidenced by plantigrade stance. Three cats entered the study with plantigrade stance, one of which resolved by Day 45. Four cats were diagnosed with diabetic ketoacidosis during the study. Two were euthanized due to poor response to treatment. Five other cats were euthanized during the study, one of which had hypoglycemia. Four cats had received ProZinc insulin for less than a week and were euthanized due to worsening concurrent medical conditions.

The following additional clinical observations or diagnoses were reported in cats during the effectiveness field study: vomiting, lethargy, diarrhea, cystitis/hematuria, upper respiratory infection, dry coat, hair loss, ocular discharge, abnormal vocalization, black stool, and rapid breathing.

Extended Use Field Study

Cats that completed the effectiveness study were enrolled into an extended use field study. In this study, 145 cats received ProZinc insulin for up to an additional 136 days. Adverse reactions were similar to those reported during the 45-day effectiveness study and are listed in order of decreasing frequency: vomiting, hypoglycemia, anorexia/poor appetite, diarrhea, lethargy, cystitis/hematuria, and weakness. Twenty cats had signs consistent with hypoglycemia described as: sluggish, lethargic, unsteady, wobbly, seizures, trembling, or dazed. Most of these were treated by the owner or veterinarian with oral glucose supplementation or food; others received intravenous glucose. One cat had a serious hypoglycemic event associated with seizures and blindness. The cat fully recovered after supportive therapy and finished the study. All cases of hypoglycemia resolved with appropriate therapy and if needed, a dose reduction.

Fourteen cats died or were euthanized during the extended use study. In two cases, continued use of insulin despite anorexia and signs of hypoglycemia contributed to the deaths. In one case, the owner decided not to continue therapy after a presumed episode of hypoglycemia. The rest were due to concurrent medical conditions or worsening of the diabetes mellitus.

To report suspected adverse reactions, or to obtain a copy of the Material Safety Data Sheet (MSDS), call 1-866-638-2226.

Information for Cat Owners: Please refer to the Cat Owner Information Sheet for more information about ProZinc insulin. ProZinc insulin, like other insulin products, is not free from adverse reactions. Owners should be advised of the potential for adverse reactions and be informed of the associated clinical signs. Potential adverse reactions include: hypoglycemia, insulin antagonism/resistance, rapid insulin metabolism, insulin-induced hyperglycemia (Somogyi Effect), and local or systemic reactions. The most common adverse reaction observed is hypoglycemia. Signs may include: weakness, depression, behavioral changes, muscle twitching, and anxiety. In severe cases of hypoglycemia, seizures and coma can occur. Hypoglycemia can be fatal if an affected cat does not receive prompt treatment. Appropriate veterinary monitoring of blood glucose, adjustment of insulin dose and regimen as needed, and stabilization of diet and activity help minimize the risk of hypoglycemic episodes. The attending veterinarian should evaluate other adverse reactions on a case-by-case basis to determine if an adjustment in therapy is appropriate, or if alternative therapy should be considered.

Effectiveness: A total of 187 client-owned cats were enrolled in a 45-day field study, with 176 receiving ProZinc insulin. One hundred and fifty-one cats were included in the effectiveness analysis. The patients included various purebred and mixed breed cats ranging in age from 3 to 19 years and in weight from 4.6 to 20.8 pounds. Of the cats included in the effectiveness analysis, 101 were castrated males, 49 were spayed females, and 1 was an intact female.

Cats were started on ProZinc insulin at a dose of 0.1-0.3 IU/lb (0.2-0.7 IU/kg) twice daily. Cats were evaluated at 7, 14, 30, and 45 days after initiation of therapy, and the dose was adjusted based on clinical signs and results of 9-hour blood glucose curves on Days 7, 14, and 30.

Effectiveness was based on successful control of diabetes, which was defined as improvement in at least one blood glucose variable (glucose curve mean, nadir, or fructosamine) and at least one clinical sign (polyuria, polydipsia, or body weight). Based on this definition, 115 of 151 cases (76.2%) were considered successful. Blood glucose curve means decreased from 415.3 mg/dL on Day 0 to 203.2 mg/dL by Day 45, and the mean blood glucose nadir decreased from 407.9 mg/dL on Day 0 to 142.4 mg/dL on Day 45. Mean fructosamine values decreased from 505.9 µmol/L on Day 0 to 380.7 µmol/L on Day 45.

Cats that completed the effectiveness study were enrolled in an extended use field study. The mean fructosamine value was 342.0 µmol/L after a total of 181 days of ProZinc therapy.

How Supplied: ProZinc insulin is supplied as a sterile injectable suspension in 10-mL multidose vials. Each mL of ProZinc product contains 40 IU recombinant human insulin.

Storage Conditions: Store in an upright position under refrigeration at 36–46°F (2–8°C). Do not freeze. Protect from light.

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At Fetch dvm360 conference in Kansas City, Missy Simpson, DVM, PhD, epidemiologist for the Morris Animal Foundation’s Golden Retriever Lifetime Study (GRLS), presented “Gold-mining clinical insights from the Golden Retriever Lifetime Study—3,000+ dogs strong and six years along.”

Some of the highlights:

About 30% of the dogs are overweight or obese based on a body condition score of six on a nine-point scale.

The 2,764 dogs were divided into four groups based on the age that gonadectomy was performed:

- > 6 months or younger,
- > more than 6 months to 1 year old,
- > older than 1 year, and
- > intact dogs.

Compared to intact dogs, dogs that underwent gonadectomy when they were 1 year old or younger faced a two-times higher risk for overweight or obesity.

Dogs older than 1 year had a 40% increased risk for overweight or obesity. Further, Dr. Simpson shared that for every year older the dog was when gonadectomy occurred, it reduced the risk of overweight and obesity by 70%.

Another interesting point from the study: Overweight or obese dogs that had undergone gonadectomy showed a 300% increased risk of chronic non-traumatic orthopedic injury (osteoarthritis, cranial cruciate ligament disease). Dr. Simpson says veterinarians should share with owners that if they keep their dogs lean, owners can reduce the risk of these orthopedic problems by almost half.

The dvm360 team caught up with Dr. Simpson to discuss these preliminary results as well as how Morris Animal Foundation plans to make the raw data and samples from the GRLS available to researchers to mine for future insights. Watch the video at dvm360.com/MAFupdate.



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Important Safety Information: For use in cats only. Animals presenting with severe ketoacidosis, anorexia, lethargy, and/or vomiting should be stabilized with short-acting insulin and appropriate supportive therapy until their condition is stabilized. As with all insulin products, careful patient monitoring for hypoglycemia and hyperglycemia is essential to attain and maintain adequate glycemic control and to prevent associated complications. Overdosage can result in profound hypoglycemia and death. Progestogen and glucocorticoid use should be avoided. PROZINC insulin is contraindicated in cats during episodes of hypoglycemia and in cats sensitive to protamine zinc recombinant human insulin or any other ingredients in the PROZINC product.

References: **1.** Nelson RW, Henley K, Cole C; PZIR Clinical Study Group. Field safety and efficacy of protamine zinc recombinant human insulin for treatment of diabetes mellitus in cats. *J Vet Intern Med.* 2009;23(4):787–793. **2.** Nelson RW. Disorders of the endocrine pancreas. In: Nelson RW, Cuoto CG, eds. *Small Animal Internal Medicine*. 4th ed. St. Louis, MO: Mosby Elsevier; 2008:764–802. **3.** Rucinsky R, Cook A, Haley S, Nelson R, Zoran DL, Poundstone M; American Animal Hospital Association (AAHA). AAHA diabetes management guidelines for dogs and cats. *J Am Anim Hosp Assoc.* 2010;46(3):215–224.



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Turning rescued dogs into rescue dogs

At the National Disaster Search Dog Foundation, dogs aren't just man's best friend—they're man's lifeline. Here's a behind-the-scenes look at what it takes to put a search-and-rescue team together. *By Ed Kane, PhD*

Just before 4 a.m. on the morning of January 9, 2018, a massive mudslide decimated the beach-side community of Montecito, California, sweeping homes and their sleeping inhabitants off their foundations.

Two veteran canine search teams trained by the National Disaster Search Dog Foundation (SDF) had been staged in the area prior to the slide and immediately went to work searching for survivors. As the sun rose that morning, it revealed 30 square miles of devastation, as homes, cars and other debris had washed down from the mountains to the beaches below.

When the magnitude of the disaster became clearer, additional teams from all over California deployed to assist in the rescue efforts. People and dogs worked side by side in the mud during the grueling weeklong mission to find survivors. In total, 18 SDF-trained search teams responded, making it the largest number of SDF teams deployed to a single disaster since Hurricane Katrina in 2005.

A start and a place to train

In April of 1995, Wilma Melville, a retired physical education teacher, was deployed with her FEMA-certified search dog Murphy to the site of the Oklahoma City bombing. While there, Melville noticed there weren't enough canine search teams to tackle the needs of the tragedy. Driven and determined to do something about it, she started the SDF that same year.

Based in Santa Paula, California, the nongovernmental organization's mission is to strengthen the United States' disaster response by producing highly skilled canine search teams that can partner with firefighters and other first responders to search for victims of

natural disasters and terrorist attacks. It bills itself as the only organization in the U.S. that recruits rescued dogs, gives them ongoing professional training and partners them with firefighters at no cost to their departments.

The SDF National Training Center (NTC) is a state-of-the-art facility occupying 125 acres of donated ranch land that includes specially designed indoor and outdoor kennels for rest and play, training facilities for beginner and advanced dogs, accommodations and classrooms for handlers, and staff offices. Sadly, the massive Thomas Fire in December 2017 burned much of the dog-training facilities, which will need to be rebuilt. Fortunately, the SDF staff was able to evacuate all dogs and personnel before they became trapped by the raging flames.

Caring for a different kind of "rescue" dog

When dogs first come to the NTC from shelters across the country, they're placed under a temporary quarantine to make sure they're healthy and disease-free before entering the organization's dog population. The initial screening includes a physical exam, lab work and, since these are working dogs, orthopedic radiographs to look for signs of conformation issues and degenerative joint disease.

Veterinary care at the SDF is provided by Ohana Pet Hospital in Ventura, California. Every two weeks, either Jill Muraoka Lim, DVM, or Katherine Byrne, DVM, two of Ohana's founding partners, along with a few technical staff members, make a "house call" at the NTC to perform physical exams, administer vaccines and provide basic veterinary care for the gamut of illnesses and injuries that can occur.



Decker, who was trained at the National Disaster Search Dog Foundation, takes a break while working in Montecito, California.

"We diagnose and treat a variety of orthopedic injuries (mainly joint issues), neuropathies, other soft-tissue injuries, foot injuries and skin issues directly related to the vigorous training the dogs undergo," says Dr. Lim.

Because it's important for the handlers to know how to identify when their dogs require emergency care (as in cases of bloat, heatstroke or dehydration), as well as how to provide first aid in the field, the Ohana veterinarians are also helping the SDF refine its medical training protocols for their firefighter handlers. They've been able to teach the handlers basic first aid, wound care and bandaging.

"We all enjoy the work we do with the SDF dogs and their dedicated staff," says Dr. Lim. "Working with local nonprofit groups like the SDF is an honor and a way for us to give back to our community."

A breed apart

A disaster site is a treacherous environment. It can be noisy, chaotic, dust-filled and dark. Over the 22 years since its founding, the SDF has honed a carefully crafted set of evaluations to identify promising canine candidates.

"It takes an extraordinary dog—with extreme boldness, intense drive, energy, strength, athleticism, agility and focus—to approach every training

exercise and deployment with energy and determination," says Denise Sanders, director of communications for the SDF. "These are dogs that love to work, need to work, and want nothing more than to be out on the rubble searching."

The breeds most likely to have these qualities, according to the SDF, are Labradors, golden retrievers, border collies, German shepherds, Belgian Malinois and mixes of these breeds.

"These specific breeds are 'air-scenting' dogs that sniff with their noses up in the air," says Sanders. "When they scent a victim, you can see them whip their heads around to get into the 'scent cone,' which is a cone-shaped area that goes out from a pinpointed spot and widens over the rubble. You can see the dog hit upon the scent and zero in on the cone. It'll wheel around and zigzag on it until it gets to the strongest scent spot."

This is the point at which the dog's nose goes down and it alerts the handler. The rescue crew (which may be up to 75 people, plus equipment and machinery) can then get to work at that designated site.

"The dog's ability is really phenomenal. It's built for it," says Sanders.

From rescued to rescuer

What does it take to successfully transform a shelter dog into a highly trained

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search-and-rescue team member? Some innate abilities and characteristics and a lot of hard work. The process has five stages:

1 The right rescue recruits. Because the SDF uses shelter dogs, timing is of the essence, as the best kind of dog for the job can end up on the “unadoptable” list for having an insatiable work ethic. It may even end up euthanized, which is an especially sobering thought considering that lost life could’ve saved a life one day.

“With their level of excessive energy and toy obsession, some of these dogs would not make great pets,” says Sanders. “They’re more likely to chew up a couch than be a couch potato.”

2 Reward-based training. Evaluation, socialization and training at the NTC takes about eight to 12 months per dog, but every dog has its own canine learning curve. Some dogs fly through the training period, while others need more time. A dog might proceed without problems on certain aspects of the training process and then plateau, needing a little more time or attention to learn certain skills.

First things first, assessing a dog’s innate energy and endurance is critically important, as these qualities will need to carry the dog through its career for the next eight to 10 years.

“We’re looking for laser-like focus and a huge toy-seeking drive (or a drive to hunt and search in general),” says Sanders. “The dogs at the NTC come to know that their toy is their reward, and they’re the kind of dogs that will play fetch until they collapse. These dogs will not quit unless you make them, and that’s exactly what we’re looking for. We look for those qualities at the outset and continue to enhance them during the training period.”

In fact, the first thing a dog learns at the NTC is that it can bark to get the toy it loves. “The dog tends to have a lightbulb moment in which it realizes that not only can it bark for a toy, it’s encouraged to bark for a toy—and is rewarded when it does,” says Sanders. “The dog learns that it can use what was formerly considered bad behavior to its advantage.”

As soon as this concept “clicks,” the canine trainee starts picking up on the rest of its training, like locating people hidden in barrels.



SDF dog Riley at work after the mudslides in Montecito, California.

“We line up about eight to 10 barrels together, and only one contains a person. Once the dog barks at the barrel containing the person, the toy comes out as a reward,” says Sanders.

As the dog progresses, the trainers make the challenges increasingly complicated. For example, the barrels are next spread apart so the dog has a greater area to cover, and then the barrels are placed haphazardly.

“Each step of the way, the dog is rewarded and told that it’s a fantastic dog—that it’s doing great work,” says Sanders. “The dog is learning and building its confidence at the same time.”

The goal is to eventually get the dog on a rubble pile that’s similar to an actual disaster situation. Volunteer “victims” hide in the rubble, and the dog is tasked with finding them to earn a toy. This simulation equips the dog to find people who would otherwise remain buried after a disaster.

“Rubble pile footing is the last concept we train the dog to do, but it’s also what we test for initially when the dog first comes through our gate,” says Sanders. “If the dog isn’t willing to go up on a rubble pile—especially one with precarious, uneven footing, or even footing that’s moving—for a toy reward, it won’t make it. If the dog’s drive isn’t enough, it’s not going to work out during the training. We don’t ever want to force a dog to do something it’s not comfortable with.”

Obedience work is also part of the training at the NTC, as the dog has to learn to mind its handler. Whether the dog is at home, at the fire station or at a disaster site, it has to mind its manners.

3 Handling handler recruitment.

Picking the right handler for the team can be just as important as picking the right dog.

“These dedicated men and women have to love the process and the training to be ready to deploy when disaster strikes,” says Sanders. “The SDF doesn’t just interview the firefighters, but also their spouses or significant others. We want to ensure that both fully understand the commitment and have a full support network in place.”

The firefighter handlers volunteer their off time to search-and-rescue training and are given a small stipend from FEMA or the state for disaster deployment.

4 Handler-dog team training.

A dog is trained for eight to 12 months before it ever meets its handler, and then the SDF works closely with the handler-dog team for 14 days to make sure it’s a good fit. Often, says Sanders, the handler needs to catch up to the skill level of the dog—a process that can’t be rushed.

“We can’t push. We have to give them whatever time it takes to jell, dog to handler and handler to dog,” says Sanders.

During this time, the handler is evaluated on skill level, personality and mannerisms, all of which are important aspects of the team.

At the end of the two-week course, the SDF’s training team passes the leash from trainer to handler. Then, the firefighter takes the dog home, continuing to train under the SDF team’s supervision.

5 Certification training. After graduating from the SDF, the handler-dog team goes through an additional year of training to achieve type 1 certification through either FEMA or the state. The process consists of a foundation skills assessment that tests the dog’s agility, obedience and basic search skills.

The dog needs to be able to negotiate two 10,000-square-foot piles of rubble, wood and debris, locating victims within a certain timeframe determined by FEMA and the state. Success in these tests is that no victim is left behind, which at the end of a given disaster day is the dog’s “job.”

One of the rubble piles is considered a full-access pile, which means the handler can walk anywhere. The other is a limited-access pile, where the handler must demonstrate that he or she can control the dog via hand or verbal commands. Here’s how it works: The handler sends the dog out to search, and once the dog finds the victim and alerts the handler, the handler goes to where the victim is and resends the dog to cover the rest of the pile. This leapfrog-like exercise reveals whether or not the dog can work without the handler by its side. During deployment, the dog will have to work independently.

As the year proceeds, the bond between handler and dog develops to form a workable partnership. Once certified, this highly trained team can be deployed to work at disasters anywhere in the nation.

To date, the SDF has trained more than 200 teams that have deployed to 172 disasters and missing person searches. There are currently 70 SDF-trained search teams located in California, Florida, Nebraska, New York, Oklahoma, Pennsylvania, Texas, Utah, Virginia and Baja California. Still, there’s a shortage of canine disaster search teams in the U.S., as it’s estimated that 450 teams are needed to adequately respond to disasters—about twice the number currently in active service. To learn more about how you can partner with the SDF’s mission, visit searchdogfoundation.org.

Ed Kane, PhD, is a researcher and consultant in animal nutrition. He is an author and editor on nutrition, physiology and veterinary medicine with a background in horses, pets and livestock. Kane is based in Seattle.

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Fight over 'nurse'

> Continued from the cover

Nursing. While discussions have been ongoing, Haebler says NAVTA pushed ANA last summer for an official statement endorsing the change—something the ANA opted not to give.

In its official statement on NAVTA's proposal, the ANA shared concerns about the title change: "We are not suggesting any pet owner will confuse a staff member in a veterinary clinic or hospital as a human healthcare practitioner. The issue at hand is the title 'nurse' and the connotations and respect that come with that title."

"Before 1903, anyone could be a nurse," Haebler says, "and they fought hard to change that and improve credibility of nursing." There are statutes limiting the title of "nurse" right now, she adds, and ANA discussed these distinctions with NAVTA.

"Veterinarians are not called 'physicians'; physicians are not called 'veterinarians.' There are four titles [for veterinary technicians] across the county, and it's confusing," she says. "They should definitely standardize, or create a new title that accurately reflects the education and credential."

Adopting the term "nurse," however, isn't necessarily the answer, she says.

"We're not saying they shouldn't be able to practice how they want to practice. We just don't want them to be called nurses. ... We've already got a slippery slope with an evolution of roles," Haebler says. "I would hate to see us put our political capital [in]to this when there are so many things happening. It just doesn't feel right."

NAVTA announced plans to introduce legislation in several states to make the title change official last year, but Haebler says the state nursing associations in those states worked hard to oppose those efforts. Haebler says she's confident that NAVTA will reintroduce legislation in those states and expand their efforts.

An issue of trust

Tina Gerardi, MS, RN, CAE, executive director of the Tennessee Nurses Association (TNA), says TNA helped ANA draft its position on the veterinary technician bill and worked to halt legislation in Tennessee for the 2018 session.

"We anticipate it will be back in 2019 in some form. While we laud the efforts of the veterinary techs to standardize their education and licensure, we believe the title 'nurse' should be protected and only used for the care of humans," Gerardi says. "One of the

Latest on the Veterinary Nurse Initiative

At the 2018 Pet Healthcare Industry Summit hosted Sept. 11 in Portland, Oregon, by Banfield Pet Hospital, organizers offered an update on the Veterinary Nurse Initiative (VNI) and countered the idea that human nurses have the right to tell the veterinary industry what to do.

"The success of the Veterinary Nurse Initiative depends on whether a group with nothing to do with the veterinary profession gets to say no," said Mark Cushing, JD, an attorney with the Animal Policy Group who's been hired by NAVTA to lead the initiative's lobbying efforts. "Yet nine different healthcare professions use the word 'doctor.' Do we really believe that 'nurse' is that different or special?"

The VNI has worked in two states this year to pass legislation allowing the "registered veterinary nurse" title change. A bill failed in Tennessee after intense lobbying from human nurses. In Ohio, a bill passed out of committee but is pending a vote on the House floor—a vote that's complicated by a political scandal involving the speaker of the house.

On a positive note for the VNI, Purdue University in April changed the name of its veterinary technology degree programs to associate's and bachelor's degrees in veterinary nursing.

Cushing is confident the initiative can make headway next year, but he is asking the industry to rally around the cause. Specifically, the VNI is broke and needs companies to help shore up the effort, to the tune of \$250,000 per year, he says.

"We've got to beat the nurses in three or four states and they can move on to other issues," Cushing said, "but we cannot go any farther without funding. NAVTA funded it for one year but they don't have the resources to go farther with it."

reasons cited for the name change by the vet techs is the confusion over their titles and the lack of respect for what they do. The issue at hand is the title 'nurse' and the connotations and respect that come with that title."

Like Haebler, Gerardi says that trust in the title of "nurse" is a big sticking point for the nursing profession in supporting NAVTA's proposal.

"For 16 years in a row, the Gallup poll has recognized nurses as the most ethical and trusted profession. We believe that a distinction should be made between those who provide care for human beings and other forms of life—just as those providing medical care for animals are called veterinarians, not physicians," Gerardi says. "Rather than co-opting another profession's title to garner respect for what they do for animals, we urge NAVTA to unify under one of the four existing titles currently in use."

Not all nurses share the opinions of their leadership, however.

Support from some nurses

Mary Ann Friesen, PhD, RN, CPHQ, says she was not supportive of the change to the title "veterinary nurse" when it was first proposed, but she has had a change of heart.

"As a member of the Texas Nurses

Association, at the time I supported the title protection of RNs," Friesen says. "However, my position has evolved. My understanding of the role of a vet tech has expanded since my daughter returned to school to become a licensed veterinary technician. I realized the range of course work, skills and clinical experience she needed to become a credentialed technician."

The knowledge and skill of the veterinary technician includes the same foundational skills taught in nursing—assessment, planning, implementation and evaluation, Friesen explains, adding that continuing education requirements are also "robust and rigorous."

"Now, having a better understanding of the requirements to become a credentialed technician—graduation from an accredited program, passage of a national board exam and application to practice as a vet tech from the state—I support the Veterinary Nurse Initiative and properly credentialed technicians using the title 'veterinary nurse,' similar to doctors of veterinary medicine being called 'doctors,'" Friesen says.

Plus, she says, there's an issue of public understanding, she says: "The term 'nurse' would be more readily understandable to the general public and more reflective of the position in healthcare provided to animals."

Opposition from some veterinary technicians

But not everyone in the veterinary profession supports the change either. Liz Hughston, MEd, RVT, CVT, VTS—past president of the Academy of Internal Medicine Veterinary Technicians and current president of the National Veterinary Professionals Union—says she has a lot of concerns about the proposed title change because there are deeper issues at hand.

"I believe that a title change will not address the problems that veterinary technicians face in our industry," Hughston says. "While some states have title protection for credentialed veterinary technicians, veterinarians can still hire personnel that are not credentialed and have no formal education or training as a veterinary technician and have not passed the Veterinary Technician National Examination."

Hughston says there are veterinarians hiring unlicensed personnel and giving them the title of "veterinary technician," and the real problem is that there's no enforcement over who uses this title.

"Changing the title to 'registered veterinary nurse' will then allow veterinarians to call any personnel on their staff 'veterinary nurse,'" Hughston says.

Hughston says the bigger obstacles in the profession include standardized educational requirements, title protection and state reciprocity. Fighting against the nursing profession for the name change might cause more problems, she says, without fixing the root problem.

"The national and state nursing associations as well as some associations within our profession are actively opposed to [these efforts]. The title 'nurse' has some degree of title protection in at least 39 states. This means that if just one state does not pass 'veterinary nurse,' we will not have a unified title across the United States, which will increase confusion and further muddy the public's understanding of what we do," Hughston says. "I believe our profession should choose one of the existing titles to unify our profession. Registered nurses have worked for decades to earn respect for their title, and it's irresponsible for another profession to hijack it—especially without the infrastructure and enforcement to protect the title."

Rachael Zimlich worked as a reporter for dvm360 magazine before returning to school to become a registered nurse. She now works at the Cleveland Clinic.

3-year study aims to increase access to veterinary care

Maddie's Fund provides \$2.8 million for UT's AlignCare program, which helps meet the needs of low-income pet-owning families.

The University of Tennessee College of Social Work Program for Pet Health Equity has received a \$2.8 million grant from Maddie's Fund to support research and development of a program called AlignCare, which takes a One Health approach to improving access to veterinary care for underserved families, according to a university release.

The three-year AlignCare study involves researchers from UT's social work, business, veterinary and public health schools. It's an extension of work done by the Access to Veterinary Care Coalition, which commissioned a national study of barriers to veterinary care performed by the College of Social Work and also funded by Maddie's Fund. The results of that study will be available by the end of the year.

AlignCare's One Health approach recognizes that access to veterinary care for underserved families requires different types of professionals to work together. Medical treatment for pets is one aspect of this model, but a family's financial reality and other factors that prevent adequate veterinary care must also be addressed.

"Thanks to Maddie, millions of pets and their people will benefit from the One Health approach that is AlignCare by sustainably gaining access to veterinary care," says Michael Blackwell, DVM, MPH, lead investigator and former dean of the College of Veterinary Medicine. "Lack of access to veterinary care is the greatest animal welfare crisis affecting owned pets in the United States. We can manage our way out of this problem by making evidence-based decisions, ultimately achieving pet health equity and improving family and community health and well-being."

According to Dr. Blackwell, existing social service and public health programs do not adequately consider the role of pets in overall family health and well-being. In addition, veterinary service providers are focused on a pet's medical needs and are not structured to address families' financial limitations. The goal of the AlignCare study is to provide evidence-based guidance for veterinary service providers to help more patients in the context of limited resources, which may help prevent

treatment refusal and euthanasia.

"Animal welfare's primary focus has been to find homes for homeless pets. AlignCare takes this vision to its next big step in revolutionizing the status and

well-being of companion animals by helping to keep pets in their homes," says Laurie Peek, DVM, part of the executive leadership team for Maddie's Fund. "We are delighted to fund this project."



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1. Adequan Canine Prescribing Information, Rev. 1/18.

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Are the doggone dogs all gone?



Is there a dog shortage in the United States? It depends on who—and how—you ask. Here's a closer look at a tricky question. *By Portia Stewart*

An empty shelter. No sad-eyed dogs or wary cats staring back. Can you imagine it?

Some shelters can—and the prospect produces both excitement and trepidation. Maybe the spay-neuter message has finally sunk in, and the efforts of veterinary professionals who work tirelessly to reduce the unwanted pet population have finally made an impact. But in places where there are more families looking for dogs to adopt than there are dogs available, what's a dog lover to do?

I went looking for the answer to the question of whether there's a shortage of adoptable dogs in the United States. What I found: Dog auctions. Amish breeders. Animal transporters. Retail rescuers. And reputable shelters and rescuers fighting to stay above the muck—and elevate the rest of the rescue world to their high standards.

A good problem—but still a problem?

It's with great pride that many pet owners report that they obtained their animal from a shelter. It's a badge of honor, one that the sheltering community has worked long years to promote. It's also nearly impossible to leave a shelter with an intact, breeding animal.

But if you live in Houston, the idea of a dog shortage is a punchline to a terrible joke. Roll out a map of

Houston in front of any animal rescuer who's lived in the area and they can tell you, by ZIP code, where to find the highest population of strays.

If you live in Colorado or certain parts of the Northwest, you know that dogs (and sometimes cats!) leave the shelter mere hours after the transport van arrives to drop them off from southern climes. And not just puppies and kittens. Older animals. Animals with special needs.

"We're finding great homes for dogs we wouldn't even consider putting up for adoption 10 or 15 years ago. People are adopting animals with arthritis or animals that are 8 or 9 or 10 years old," says Apryl Steele, DVM, president and CEO of the Dumb Friends League in Denver. "We're having some successes with animals that deserve great homes, and they're getting second chances that they wouldn't before. We're also able to bring animals in from communities that aren't as lucky as we are and haven't gotten to this point, and there's good and bad with that."

For example, Dr. Steele notes that many of the transported animals in Colorado shelters come from Gulf states—Texas, Mississippi and Louisiana—as well as New Mexico and Oklahoma.

The upside: "You're helping an animal that was going to be euthanized," Dr. Steele says. Some of these communities have live release rates of 35 or 40

percent, which means a vast majority of the animals that come to shelters are being euthanized, even puppies and healthy dogs, she notes.

The challenge with transporting adoptable animals? They come from heartworm-endemic areas to regions that were previously nonendemic, which can risk native populations.

"You have to be willing to test every animal before you bring them up, put them on heartworm prevention and, if the animal tests positive, treat them according to American Heartworm Society guidelines—not just give them heartworm prevention and say you've treated them," Dr. Steele says.

It's this area, she says, where things can get hinky. It's expensive to treat heartworm infection properly, but it's part of the obligation of transferring an animal to another community. And the risks go beyond heartworm—animals

can also transmit parvovirus, distemper and other types of infection, she says.

Another concern is a dog's behavior. You don't want to introduce aggressive dogs into your community, Dr. Steele says. Which raises another difficult-to-answer question: What qualifications do pets need to meet to be considered adoptable? Or, to flip the question, what traits make a pet unadoptable?

Our experts agree that definitions vary by organization. Most espouse something like this: A dog may be unadoptable if (1) it has a physical condition that causes it to suffer in a way that can't be corrected by a veterinarian, or (2) it shows significant aggression toward other animals or people.

Another important consideration: Dr. Steele says shelters that bring in pets from other regions must consider what they're doing to reinvest back into those source communities, whether it's providing humane education, spearheading spay-and-neuter initiatives or doing something else that makes a long-term difference.

The incredible vanishing canine

A recent study seems to confirm that there are fewer dogs, at least in some areas of the United States. In 2017, the Pet Leadership Council announced results from a study from researchers at the Mississippi State College of Veterinary Medicine that pointed to the number of dogs in shelters being at an all-time low. The study seems to support the experience of the shelter professionals we spoke to in the Northeast. For those in other areas of the country—Houston and Austin, for example—the study doesn't represent their experience. What do you think? Share your thoughts with us at dvmnews@ubm.com.



The otitis case that changed my business

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(enrofloxacin/silver sulfadiazine)
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For Otolopical Use in Dogs

Caution: Federal (U.S.A.) Law restricts this drug to use by or on the order of a licensed veterinarian.

▶ Federal law prohibits the extralabel use of this drug in food-producing animals. ◀

PRODUCT DESCRIPTION:

Each milliliter of Baytril® Otic contains: enrofloxacin 5 mg (0.5% w/v), silver sulfadiazine (SSD) 10 mg (1.0% w/v), benzyl alcohol (as a preservative) and cetylstearyl alcohol (as a stabilizer) in a neutral oil and purified water emulsion. The active ingredients are delivered via a physiological carrier (a nonirritating emulsion).

MICROBIOLOGY:

In clinical field trials, Baytril® Otic demonstrated elimination or reduction of clinical signs associated with otitis externa and *in vitro* activity against cultured organisms. Baytril® Otic is effective when used as a treatment for canine otitis externa associated with one or more of the following organisms: *Malassezia pachydermatis*, coagulase-positive *Staphylococcus* spp., *Pseudomonas aeruginosa*, *Enterobacter* spp., *Proteus mirabilis*, *Streptococci* spp., *Aeromonas hydrophila*, *Aspergillus* spp., *Klebsiella pneumoniae*, and *Candida albicans*.

INDICATIONS:

Baytril® Otic is indicated as a treatment for canine otitis externa complicated by bacterial and fungal organisms susceptible to enrofloxacin and/or silver sulfadiazine (see Microbiology section).

EFFECTIVENESS:

Due to its combination of active ingredients, Baytril® Otic provides antimicrobial therapy against bacteria and fungi (which includes yeast) commonly encountered in cases of canine otitis externa.

CONTRAINDICATIONS:

Baytril® Otic is contraindicated in dogs with suspected or known hypersensitivity to quinolones and/or sulfonamides.

HUMAN WARNINGS:

Not for human use. Keep out of the reach of children. Avoid contact with eyes. In case of contact, immediately flush eyes with copious amounts of water for 15 minutes. In case of dermal contact, wash skin with soap and water. Consult a physician if irritation develops or persists following ocular or dermal exposures. Individuals with a history of hypersensitivity to quinolone compounds or antibacterials should avoid handling this product. In humans, there is a risk of user photosensitization within a few hours after excessive exposure to quinolones. If excessive accidental exposure occurs, avoid direct sunlight.

PRECAUTIONS:

The use of Baytril® Otic in dogs with perforated tympanic membranes has not been evaluated. Therefore, the integrity of the tympanic membrane should be evaluated before administering this product. If hearing or vestibular dysfunction is noted during the course of treatment, discontinue use of Baytril® Otic.

Quinolone-class drugs should be used with caution in animals with known or suspected Central Nervous System (CNS) disorders. In such animals, quinolones have, in rare instances, been associated with CNS stimulation which may lead to convulsive seizures.

Quinolone-class drugs have been associated with cartilage erosions in weightbearing joints and other forms of arthropathy in immature animals of various species.

The safe use of Baytril® Otic in dogs used for breeding purposes, during pregnancy, or in lactating bitches, has not been evaluated.

ADVERSE REACTIONS:

During clinical trials, 2 of 113 (1.7%) dogs exhibited reactions that may have resulted from treatment with Baytril® Otic. Both cases displayed local hypersensitivity responses of the aural epithelium to some component within the Baytril® Otic formulation. The reactions were characterized by acute inflammation of the ear canal and pinna.

For medical emergencies or to report adverse reactions, call 1-800-422-9874. For customer service or to obtain product information, including Material Safety Data Sheet, call 1-800-633-3796.

SAFETY:

General Safety Study:

In a target animal safety study, Baytril® Otic was administered in both ears of 24 clinically normal beagle dogs at either recommended or exaggerated dosages: 10, 30 or 50 drops applied twice daily for 42 consecutive days. A control group of 8 beagle dogs was treated by administering 50 drops of vehicle in one ear twice daily for 42 consecutive days, with the contralateral ear untreated. Erythema was noted in all groups, including both treated and untreated ears in the controls, which resolved following termination of treatment.

Oral Safety Study:

In order to test safety in case of ingestion, Baytril® Otic was administered, twice daily for 14 consecutive days, to the dorsum of the tongue and to the left buccal mucosa of 6 clinically normal dogs. No adverse local or systemic reactions were reported.

DOSAGE AND ADMINISTRATION:

Shake well before each use.

Tilt head so that the affected ear is presented in an upward orientation. Administer a sufficient quantity of Baytril® Otic to coat the aural lesions and the external auditory canal. As a general guide, administer 5-10 drops per treatment in dogs weighing 35 lbs. or less and 10-15 drops per treatment in dogs weighing more than 35 lbs. Following treatment, gently massage the ear so as to ensure complete and uniform distribution of the medication throughout the external ear canal. Apply twice daily for a duration of up to 14 days.

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NADA # 141-176, Approved by FDA

September, 2016

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The otitis case that changed my business

When the owner of a Lhasa apso with chronic otitis refused to bring her dog in for a recheck, I turned the problem into a new policy at my veterinary hospital.

By Kathryn Primm, DVM

Long ago, I had a client (we'll call her "Ms. Madden") who changed my entire way of treating (and charging out) cases.

Ms. Madden and her Lhasa apso came to me from another practice. I was unsuccessful at obtaining good records, but according to the client, the other vet would always treat her dog's otitis with "antibiotic





TOOLS YOU NEED

For tips, tools and more resources for diagnosing and treating otitis, go to dvm360.com/otitistoolkit.

ointment" and it would go away quickly. But it always came back.

I gathered as much diagnostic information as Ms. Madden would allow, but because she was accustomed to the

other vet simply peeking in her pet's ears and sending her out the door with "antibiotics," she wasn't particularly open to my plan of providing a full workup.

I suspected that the other veterinarian had been handing out antibiotic and steroid combinations several times a year. Ms. Madden was under the impression that they worked great at

treating the "infection." I, on the other hand, had a hunch that the steroids would tame the inflammation, then the ears would look better and the client would stop the treatment (and the otitis would eventually rear its ugly ear again). I also feared that, because of this haphazard management, the Lhasa apso's ears had developed an infection that had



Sometimes the recheck is a quick “Everything looks like I wanted,” and sometimes we have to take additional measures. Regardless, both the pet and the practice win.

become resistant to first-line therapy choices.

Ms. Madden wouldn't allow me to perform culture and sensitivity tests but agreed to an ear cytology. The dog's ears were so swollen that I couldn't visualize his eardrums. I explained to Ms. Madden that I was going to prescribe something I thought would help (because without the culture, I couldn't know for sure). I told her that I would like to recheck the dog before finishing the medication—after the swelling had gone down some—to make sure his ears were responding to the treatment plan and to visualize his eardrums.

When she failed to show up for her recheck appointment, I called Ms.

Madden personally. She told me that the ears were “fine” now and that a desire for more money was the only reason I'd dialed her number. I tried to explain, but Ms. Madden would have none of it.

I took my frustration at this recheck refusal and turned it into something productive: I changed my hospital's policy. It's so important to me to get that recheck (especially on ears) that I've now built a courtesy follow-up appointment into every sick pet exam. I get to see my patient and provide better care, and clients can't claim I'm trying to rob them.

We explain that the recheck is a part of their charges at the first visit and that any change in medication or added products will be extra at the second visit. Sometimes the recheck is a quick “Everything looks like I wanted,” and sometimes we have to take additional measures. Regardless, both the pet and the practice win. The only thing you really lose is the complaining, and I don't think you'll miss it.



Kathryn Primm, DVM, the author of *Tennessee Tails: Pets and Their People*, owns Applebrook Animal Hospital in Ooltewah, Tennessee. She is a frequent contributor to dvm360.com and other publications, and she was the nation's first Fear Free certified professional.

New data on dermatology

SOURCE: PET OWNER PATHS, SPONSORED BY MERCK, UNFENCED, KYNETEC

When it comes to otitis and other dermatology conditions, pet owners aren't always on the same page as veterinarians. Do you know where your clients get their info when it comes to skin issues?

Pet owners*

Where **dog owners** looked for information on a **dog's** dermatology issue

54% used online sources

42% asked someone

76% of those: someone at their veterinary practice

59% of those: friends or family

39% thought about past experiences/knowledge

34% read about it

42% of those: product literature

37% of those: magazine or newspaper

33% of those: product packaging

6% saw or heard an ad

Where **cat owners** looked for information on a **cat's** dermatology issue

57% used online sources

44% asked someone

72% of those: someone at their veterinary practice

50% of those: friends or family

31% of those: a pet store employee

39% thought about past experiences/knowledge

42% read about it

55% of those: product packaging

44% of those: veterinary hospital printed material

42% of those: magazine or newspaper

19% saw or heard an ad



Pet owners*

What **dog owners** bought for a **dog's dermatology issue**

48% medicated shampoo
 38% of those: from pet store
 24% of those: from mass merchandiser
 18% of those: online
 17% of those: veterinary hospital



What **cat owners** bought for a **cat's dermatology issue**

39% medicated shampoo
 from pet store or from
 mass merchandiser

37% oral pill or tablet at
 veterinary hospital



28% oral pill or tablet at
 veterinary hospital

34% cream or ointment at
 veterinary hospital



39% cream or ointment at
 veterinary hospital

26% nutritional supplements
 or special food
 42% of those: from pet store
 21% of those: online



36% nutritional supplements
 or special food
 from pet store or
 veterinary clinic

19% natural or home
 remedy



25% natural or home
 remedy

14% liquid medicine at
 veterinary hospital



37% liquid medicine at
 veterinary hospital

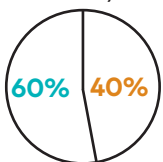
9% injections/shots at
 veterinary hospital



24% injections/shots at
 veterinary hospital

Veterinarians

Percentage of clients last week
 you talked to about **dermatology**



60% scheduled because
 of a dermatological
 issue

40% scheduled for preventive
 care or other reason

What percentage of clients looking for a
 dermatological solution end up **buying a product
 from you?** (All, three-quarters, half or quarter?)

6% said a quarter

25% said half

56% said three-quarters

13% said all

*Respondents selected all that applied

Otitis *again?!?*

Solving those seemingly endless ear infections

By Mindy Valcarcel

An infection's recurrent nature stems from the many factors at play in your veterinary patients' poor sore ears. Here's what to note in the exam room to keep on top of it and stop the cycle.

In her aptly named Fetch dvm360 session, Laura Wilson, DVM, DACVD, a dermatologist at Pet Emergency and Specialty Center of Marin in San Rafael, California, discussed "Not another ear infection"—because you've thought these exact words, yes? Dr. Wilson says that when it comes to ear infections, there are three factors you must take into account: primary, secondary and perpetuating.

Primary factors are those that initiate inflammation in the ear, such as parasites (e.g. *Otodectes*, *Demodex* or *Sarcoptes* species), foreign bodies (e.g. grass awns) and allergies (e.g. atopic dermatitis, food allergies), as well as less common issues like keratinization disorders, immune-mediated disease and neoplasia.

Next up come the secondary factors. These are the things you see on a daily basis in your ear patients by performing an ear cytology: bacterial or yeast infections, or even both—what Dr. Wilson calls "dermatology potpourri."

Finally come in the perpetuating factors. This category of considerations is all about chronic inflammation or advanced changes such as stenosis or hyperplastic,



over-reactive changes to the ear canal.

"Every time you see an ear infection, you don't need to think, 'OK, primary, secondary or perpetuating?'" says Dr. Wilson. "But deep down, maybe you already are, because if we haven't addressed everything, it can definitely lead to complications. It's not really just a single treatment, but you're trying to intervene and prevent more chronic changes."

Rechecks are an absolute must for these patients, whether it's their first case of otitis or their fifth. And whether you're a solo practitioner or in a multi-doctor practice, the records you keep on ear patients are essential. They can help either your future self or your fellow docs if they end up seeing the patient on follow-up. Here's what Dr. Wilson says needs to be recorded in the patient's chart:

- **The ear pinna.** "Is it lying flat?" asks Dr. Wilson. "Or have you guys had that cocker spaniel whose ears look like airplane wings?" She says clients often don't realize that's a sign of stenosis, mineralization and, often, pain. She asks clients to gently feel the hardening

of their pet's ear ("It's turning to bone!") to counter the chances that owners will dismiss it, as owners of breeds like cocker spaniels tend to do.

- **The ear canal.** What does the ear look like? How about the external canal?

"It's not really just a single treatment, but you're trying to intervene and prevent more chronic changes."

Can you see where the ear canal is? "I also describe the material. Is it brown? Is it yellow? Is it waxy? Is it creamy? This really helps me from one visit to the next to have some idea of how things look," says Dr. Wilson.

- **Physical exam and ear canal palpation.** Dr. Wilson's cavalcade of questions she records for the next visit: Is the ear canal soft? Is it starting to be firm? Is it the left ear? The right? Is there any sort of pain with manipulation? Does the patient have a slight head tilt? Are you seeing any nystagmus or are you concerned about deeper ear involvement? What do you see on otoscopy or cytology? Cocci? Rods?

Yeast? How about inflammatory cells? Are there any other concerning changes?

That question about whether there are inflammatory cells is important, says Dr. Wilson. You're used to seeing inflammatory cells with other dermatologic conditions, but it's actually unusual for ear cases.

"Think about a really nasty ear—it smells, you lift it up in the exam room and it's nasty," she says. "If you smear that out, a lot of times you do not see inflammatory cells on an ear. When I do see them, I usually worry—do I have *Pseudomonas*? *Pseudomonas* can be more tissue-destructive, more painful, more inflammatory."

If any of this leaves you slightly stressed to face your next ear case, Dr. Wilson says to remember this—it will keep you on task and not freaked out by the "scary black box" that is an ear. "There are times that if you step back and say, 'OK, well, it's just skin. Maybe it's hyperplastic. What would I do for skin somewhere outside of the ear canal?' Sometimes that helps you focus on a plan and get a better understanding of what's going on."

5 hard truths about ears

Want better otitis patient management in your practice? **Listen to the vet techs.**

By Michael Nappier, DVM, DABVP

Veterinary technicians have a unique perspective on otitis cases. Here's what they have to teach your hospital's busy veterinarians:



hard truth ^{no.1}

An otoscope isn't a shoehorn

Forcing the otoscope down the ear canal may get the veterinarian the view they want, but it hurts and leaves a red, raw area in the ear canal. This makes the animal sensitive and makes everything the pet needs done afterwards more difficult.

Listen up: Instead of ram-rodging the otoscope, extend the ear canal with your hand and adjust the ear canal to the cone, not the other way around.

hard truth ^{no.2}

Yes, the vet tech sees rods

Believe it or not, technicians do know what they're looking at on an ear cytology. How often has a veterinary technician in your practice reported the results only to have a doctor check behind instead?

Listen up: Trust your licensed veterinary technicians. They do actually know what they're looking at.

hard truth ^{no.3}

Free cleanings are hard work

Do any of your hospital's doctors give away no-cost ear cleanings? Upset about it? You should be. It's hard work to clean up two smelly, dirty ears on a bouncing 3-year-old Lab.

Listen up: If it took three people and 15 minutes to finish a task, that's time worth being compensated for, don't you think? Giving it away for "free" also trivializes the skill and effort. You don't see the average pet owner in there doing the ear cleaning for a reason, you know?

hard truth ^{no.4}

Vet techs get clients to comply

Does the veterinarian seriously think your clients actually put that goopy stuff in their dogs' ears twice daily for three weeks? Ha! The veterinary technicians are the ones wrestling to get that stuff in during the visit so you can tell exactly how many doses they are or aren't going to get in.

Listen up: Make compliance easier with newer, simpler long-lasting medications like Claro (Bayer) or Osrurnia (Elanco). Taking compliance out of clients' hands makes for happier clients.

hard truth ^{no.5}

There's no "one and done"

Otitis goes away magically after the first round of treatment, right? Veterinarians get busy and focused on current problems at hand. It's easy for them to forget about the follow up until they're seeing the dog back six weeks later for the same problem. Technicians are the client communication and compliance specialists in the practice.

Listen up: Make sure your hospital's doctors are supporting veterinary technicians by emphasizing the importance of making sure the infection is resolved to clients.



How to make a great impression

When it comes to diagnosing that crusty patient with otitis, Dr. Laura Wilson says you're gonna need to put your best cytology slide forward.

By Laura Wilson, DVM, DACVD

Never underestimate the importance of a lasting impression. The same can be said in the realm of ear disease. Laura Wilson, DVM, DACVD, a dermatologist at Pet Emergency and Specialty Center of Marin in San Rafael, California, spoke to Fetch dvm360 attendees in Kansas City about case-based approaches to the crusty patient and the importance of cytology in diagnosing these patients, including otitis cases.

"With cytology, there's so much to be learned from that little microscope slide," Dr. Wilson tells attendees. "An impression smear is good for your superficial infections. Doing swabs of ears to help identify otitis externa—is it bacterial, is it yeast, is it both?" Let's dig in.

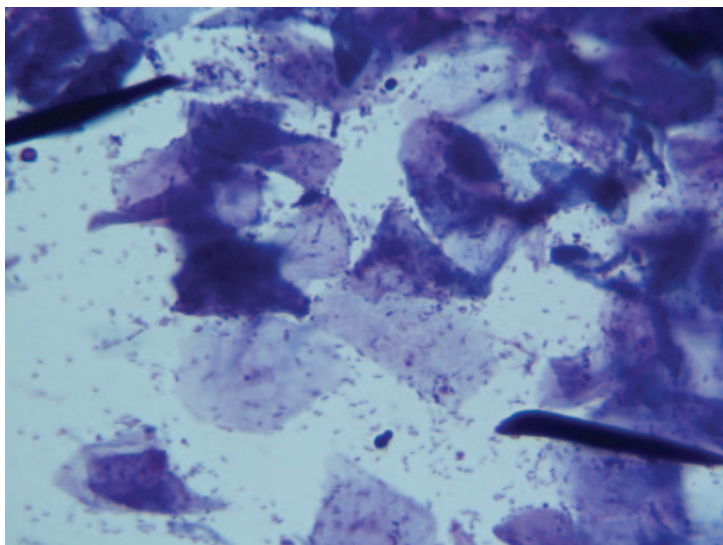


FIGURE 1: Cytology of an ear swab reveals a mixed population of bacteria and yeast.

The breakdown

Diagnostic tests to consider when facing the crusty patient include impression smears, skin scrapes, dermatophyte cultures, aerobic cultures of the skin and multiple punch biopsies for histopathology, Dr. Wilson says. For more superficial bacterial skin infections, like otitis externa, she says that impression smears are the

best course of action.

To establish the presence of organisms like bacteria, yeast and fungal spores, smears of pustules and exudative lesions can seriously help (Figures 1 and 2). "Number one, let's establish if this dog has an infection," she tells attendees.

And if you get a negative result on an impression smear, keep in mind that

it could have been a sampling error or any number of common mistakes. "Negative results can be inconclusive," Dr. Wilson says. "It could still be an infection and you missed it. This can be because we simply missed it on our slide or maybe the owners just gave the pet a bath. Or maybe they forgot to tell you that the white pill they are giving is an antibiotic. Don't be afraid to repeat your cytology if you think you may be missing something. I do it all the time."

If you're still unsure of the dermatological problem, Dr. Wilson says to take a deep breath and phone a friend. "If you're new or you just don't feel comfortable with it," she says, "you can always do a slide and send it out to a good clinical pathologist to read it and give you their interpretation. I do cytology constantly, so I'm always looking at impression smears."

The process

Dr. Wilson says to first grab your glass microscope slides—"I prefer the ones

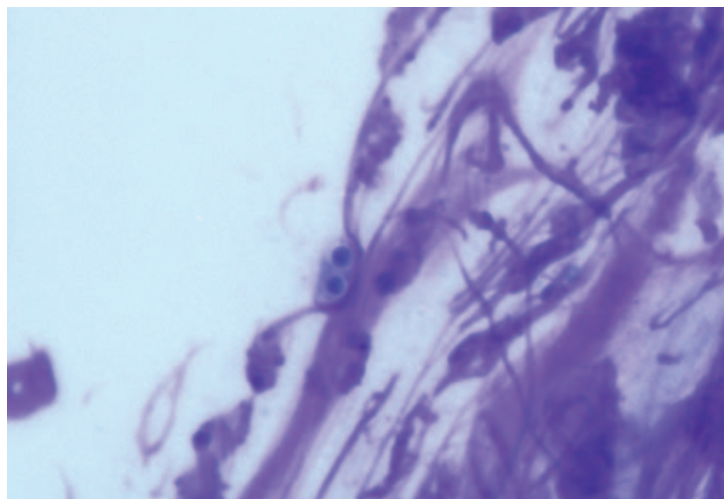


FIGURE 2: Cytology of an ear swab reveals fungal spores.

with the frosted edge," she says, "because if it doesn't have that, I have no clue which side I did my smear on." Then you just need your wooden cotton applicators—with or without a heat source for sample fixation—Diff-Quik staining materials, and a microscope with a scanning lens (4x) and an oil immersion lens (100x).

Whether you perform direct impression smears or tape-prep, one slide or multiple slides, Dr. Wilson says it's completely up to personal preference. For her, though, she likes to use one slide per crusty pa-

tient. "Technique-wise, you just pretty much take the slide—I'll use a corner of the microscope slide to poke a pustule, I'll use the edge to kind of lift—and then I'll smear all of that on the slide," she tells attendees.

Sometimes it's a little more difficult to get a slide into a patient's ear, Dr. Wilson says. For that, she recommends a cotton swab on those hard-to-reach areas that are then smeared onto the slide. "I am constantly doing cytology slides," she admits to attendees, and, eventually, she says, you'll find your rhythm in what process works best for you.



DR. HALL EXAMINES A DOG WITH OTITIS

Ears and allergies: A common couple in veterinary medicine

Why you might be just scratching the surface when addressing otitis in your patients. *By Melissa Hall, DVM, DACVD*

Ear disease is one of the most common reasons for a patient to be presented at the veterinary clinic. The pet owner may notice many different clinical signs, including odor,

discharge, head shaking, ear scratching or pain upon touching or petting the ears. At times, it may be so severe that the pet is presented to the emergency services and even develop aural

hematomas, requiring surgical intervention.

The cause of otitis can be tricky to ascertain since it's multifactorial, often complicated by inflammation and secondary microbial

Allergic diseases are reported as the most common cause of otitis, especially chronic otitis, responsible for 43% of cases.

overgrowth and infection. Also, as patients experience recurrent infections, proliferation of the tissue and reactions to the medications can further muddle the diagnostic process.

Throughout the years, several classification systems have been used to help categorize and diagnose otitis externa. One of the most accepted and utilized systems is to try to identify four aspects of otitis externa: primary causes, secondary causes, perpetuating factors and predisposing factors. When using this system, hypersensitivities and

allergies are considered a primary cause of otitis externa. In fact, allergic diseases are reported as the most common cause of otitis, especially chronic otitis, responsible for 43% of cases.^{1,2}

In dermatology referral practice, about 75% of chronic otitis externa cases are associated with atopic disease, and the otitis may be the only sign of environmental allergies. Food-allergic dogs are also prone to increased incidence of otitis externa. In fact, one study showed that 55% of 65 food-allergic dogs had otitis externa, and often the clinical signs of otitis preceded other signs of food allergy in 34% of the cases.³ In some breeds like cocker spaniels and Labrador retrievers, chronic recurrent otitis may be the only clinical sign of food hypersensitivity.

So when approaching otitis in a patient, treating the secondary bacterial and/or yeast overgrowth is only scratching the surface since identifying



TOOLS ON TOOLS
For more tips and tools, plus diagnostic and treatment resources, go to dvm360.com/otitistoolkit.

and controlling as much as possible all the causes and factors will lead to a better clinical outcome. Many recurrent ear infections cases benefit from a full investigation into allergic triggers, including elimination diet trials and environmental allergy testing.

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Treating canine otitis: So many options — *how do I choose?*

Topicals, systemics, antibacterials, antifungals, glucocorticoids ... The list of potential therapies is long, but with the right diagnostic information and patient history details, you can formulate a regimen that gets those ears under control. *By Lynette Cole, DVM, MS, DACVD*

Once you've diagnosed an otic infection, it's time to put together your treatment plan. Topical therapy is almost always a staple of treatment, and systemic antimicrobials may be necessary as well. At each recheck, you'll be monitoring the patient's response to treatment, performing cytology, and adjusting products accordingly.

In most cases of infectious otitis externa, topical therapy alone is enough. In patients with severe infections or with long-standing chronic otitis externa, you may need to add a systemic antimicrobial agent to clear the infection in the ear tissue as well as in the lumen of the ear canal. Dogs with concurrent infectious otitis externa and otitis media usually require

both topical and systemic antimicrobial therapy.

Topical options: A rundown

Topical otic preparations generally contain glucocorticoids, antibiotics, antifungals or some combination thereof in a vehicle base. Rely on your cytology results to select the right active ingredient for topical use. Remember, you can achieve 100 to 1,000 times the plasma level of the antimicrobial agent by administering it topically. Cytologically monitor your patient's response to these medications at each reevaluation and adjust the topical therapy accordingly.

No commercially available topical otic treatments are labeled for use with a nonintact tympanic membrane, but most of them

have been used to treat otic infections in dogs with otitis media. Warn clients to watch for neurological signs of ototoxicity while administering topical medications when the tympanic membrane is not intact.

With that note, let's look at topical agents one at a time.

Glucocorticoids are antipruritic, anti-inflammatory and antiproliferative. During the acute stage of otitis, the ear canal becomes edematous and erythematous. As the inflammation progresses, the dermis becomes infiltrated with a mixed population of cells. Apocrine glands dilate and become hyperplastic, which leads to excessive cerumen production.

Glucocorticoids are therefore beneficial in decreasing the pain, pruritus, stenosis and edema



associated with otitis. In addition, they're effective in decreasing sebaceous and apocrine secretions. They're usually used in combination with other agents but may be beneficial when used alone in allergic cases of otitis and some ceruminous otitis cases. It's important to use the lowest-potency glucocorticoid at the lowest frequency needed to control the otitis to prevent iatrogenic hyperadrenocorticism.

Topical aminoglycosides such as neomycin and gentamicin have good activity against gram-positive and gram-negative otic pathogens for the treatment of acute otitis externa. Gentamicin and neomycin are available in many combination products, some of which contain an antifungal

and glucocorticoid. Another aminoglycoside, tobramycin, is available as an ophthalmic solution and is very effective against otitis infections caused by *Pseudomonas* species, especially in cases of chronic otitis externa.

Fluoroquinolones have a broad spectrum of antibacterial activity against gram-negative and gram-positive bacteria. Note that fluoroquinolones are a second-line treatment for chronic otitis externa cases, not acute infections.

Polymyxin has excellent in vitro activity against *Pseudomonas* species with resistance rarely developing, but it's inactivated in purulent debris so the ear needs to be kept clean during treatment.

Florfenicol has been available for a number

of years as a fast-acting, long-lasting injectable antibiotic for the treatment of bovine respiratory disease. Recently, two new otic medications (Claro—Bayer; Osrurnia—Elanco) have been approved for the treatment of bacteria (*Staphylococcus pseudintermedius*) and yeast (due to the addition of terbinafine in the products). They also contain a topical glucocorticoid.

Tris-EDTA is a topical product that enhances the activity of topical antibiotics against otic pathogens by decreasing stability and increasing the permeability of the cell wall of gram-negative bacteria.

Antifungal agents are used in cases of otitis caused by *Malassezia* or *Candida* species. Ingredients that are

active against yeast include nystatin, thiabendazole, miconazole, ketoconazole, posaconazole, clotrimazole, and terbinafine.

How to choose

So how do you decide which topical products to choose? Start with the chronicity of the otitis, the results of your otic examination, and your otic cytology results. The results of cytologic examination of otic exudate are the basis for your selection of the active ingredient. Keep in mind that ointment- or suspension-based otic preparations may not be as effective as those that are solution- or emulsion-based if the ears are stenotic or hyperplastic, as may be the case in those patients with chronic otitis externa, but they can be used if the ears aren't stenotic or hyperplastic or in patients with acute otitis externa.

Choose first-line topical otic medications for cases of acute or occasional otitis externa, reserving second-line otic medications, such as those containing fluoroquinolones, for cases of bacterial otitis due to *Pseudomonas* species or chronic infections that haven't responded to first-line topical otic antimicrobial products.

Systemic considerations

Systemic antimicrobial therapy for infectious otitis externa and otitis media is controversial. In dogs with end-stage otitis externa and concurrent otitis media, bacterial organisms can be isolated from the exudate in the lumen of the vertical ear canal and middle ear cavity as well as from the tissue from these sites. So most experts agree that systemic antibiotics—based on culture and susceptibility testing—are indicated in patients with:

- otitis media
- severe proliferative chronic otitis externa
- ulcerative otitis externa
- inflammatory cells seen on cytology (indicating deeper skin involvement)
- owners who cannot administer topical therapy.

It's important to select a systemic antimicrobial agent based on culture and susceptibility testing from the external ear (for otitis externa) and middle ear (for otitis media), but go ahead and initiate therapy based on cytologic results while you're waiting on culture and susceptibility results.

Indications for systemic

antifungal agents are similar to those for bacterial infections. Use systemic products in patients with yeast otitis media or severe yeast otitis externa and for owners who cannot administer topical therapy. Otic yeast infections require topical therapy in addition to systemic therapy for resolution. Ketoconazole and itraconazole have been used in dogs for the treatment of yeast otitis.

Systemic glucocorticoids are used to decrease stenosis, edema and hyperplasia of the vertical and horizontal ear canal to allow a complete otic examination as well as proper cleaning of the ear. They're also indicated in cases of allergic otitis externa. In older patients or those with concurrent diseases, you may need to perform bloodwork before starting your patient on glucocorticoids. Aim to use the lowest dose needed to prevent side effects, with the end goal of discontinuing the systemic glucocorticoid.

Dr. Lynette Cole is a professor of dermatology at The Ohio State University College of Veterinary Medicine. This article is adapted from her proceedings for a Bayer-sponsored session at the 2017 Fetch dvm360 conference

DYK? **Laser therapy can treat otitis**

Photobiomodulation therapy (PBMT)—the more accurate term for therapy laser treatments—can be used for a variety of dermatologic conditions. It's best used in a multimodal approach, and doing so may decrease the need for systemic medications. While PBMT doesn't replace surgery, it can be used in cases where surgery isn't an option and would provide a better option than medication alone.

The most important element to check before using PBMT for otitis and other skin conditions is to first verify that you are not dealing with cancer. Because laser therapy can accelerate tissue healing, we could potentially cause a tumor to become larger or more aggressive in nature. Once it has been verified that the patient doesn't have cancer, here's how I'd treat an end-stage otitis externa case.

Also called "cauliflower ear," end-stage cases are often painful and the ear canal has narrowed. Because of this narrowing, while awaiting culture results, it can be challenging to administer topical medications. Also, some dogs cannot take a non-steroidal anti-inflammatory drug (NSAID), which would relieve some of the pain from the inside out. Systemic prednisone is not

indicated in these cases, so what other anti-inflammatory and pain-relieving option do you have? Photobiomodulation! The therapy laser can be used once a day or every other day for two to three weeks to reduce inflammation and pain. This then allows for easier treatment of the infected ear canal and appropriate administration of topical medications.

As part of that multimodal approach, the laser treatments can then be tapered to a lower frequency and can even be used for long-term chronic management of these cases. The key is repeated treatments, as PBMT works on a cumulative effect. A one-time treatment may be helpful for temporary relief of pain, but multiple treatments will be needed for patients with chronic conditions.

Of course, acute otitis cases happen as well. Those red, painful ears can be challenging for pet owners to manage. In conjunction with topical medications and cleanser, PBMT can be used here as well. I find it especially helpful if the dog is boarding while the pet owners are on vacation, so daily or even twice-daily PBMT treatments can be performed.

—*Matthew Brunke, DVM, DACVSMR, CCRP, CVPP, CVA*

Dr. Matt Brunke is a pain and rehabilitation specialist with Veterinary Orthopedic and Sports Medicine Group in Annapolis Junction, Maryland. He's also a regular contributor and speaker at Fetch dvm360 conferences.

Sample script:

How to pitch clients on otitis rechecks

Otitis cases may need more than one appointment to resolve, but how do you get clients to see the importance of bringing their pet back to the clinic?

By Katie Adams, CVPM

Otitis rechecks are part of providing complete patient care, so why do we struggle to get clients back in the door for these much-needed follow-ups? Typically, the disconnect has to do with something simple: plain ol' poor communication. Let's examine some strategies for ensuring your clients hear you loud and clear.

Be consistent. Ensure that everyone from the groomer and kennel staff, to your veterinarians, gives your clients a consistent message. Your hospital should have a standard protocol for otitis rechecks, so be sure that everyone knows it. Each touchpoint that a client has with your team should involve reinforcing the expectation that the patient recovering

from otitis will be seen for the recheck according to your protocol.

Share literature. We all have a thousand things zooming around inside our heads at any given moment, with an onslaught of new info that doesn't stop. Give your clients the chance to be successful with your recheck recommendation by sending them home with a short and sweet handout on the importance of a recheck following an otitis diagnosis. If handouts feel old school to you, send them a quick email (or text) with the info.

Educate on social media. Launch a quarterly social media campaign that reminds clients about the importance of rechecks for all sorts of conditions.

Pick a different diagnosis to highlight each time. For example, in Q1 talk about the importance of otitis rechecks; in Q2 highlight UTI rechecks and so on. You can even have some fun buttons made for your front desk team to wear during these campaigns to reinforce the idea.

Practice scripts. There are common objections to recheck appointments, so create some scripts for your team and role play (yes, I said it), so they are comfortable executing the script with a reluctant client.

Sample script for otitis rechecks

Here are a few common pet owner objections to otitis rechecks along with possible team member responses. Ask your staff to practice these



exchanges in small groups, so they learn to ask good questions of clients to gauge understanding as well as deal with the pushback about time and money that we often face.

OBJECTION:

"I don't have my calendar with me."

Team member response:

"I completely understand, I know my schedule changes all the time. But our clinic calendar can book up pretty quickly. We can get something scheduled to hold a spot for Max and you can always change it later if you realize it won't work."

OBJECTION:

"I'm not sure I can afford

another \$300 visit, so I'm going to wait to see how Max is doing before I schedule the recheck."

Team member response:

"I can certainly appreciate the cost involved with caring for pets. My concern is that if Dr. Smith doesn't get to see that Max is improving or healing as expected, it may result in costlier problems down the road."

OBJECTION:

"I'm going to wait and see how Max is doing before I schedule. He may not need the recheck."

Team member response:

"I certainly hope that Max is on the mend quickly. His recheck appointment is important for multiple

reasons. Dr. Smith can ensure that he's improving as expected, that he's responding to the medication as expected, that he's healing as expected, and that the ear infection has completely resolved."

Most importantly, remember that nothing is obvious to our clients. We live and breathe veterinary medicine, but they don't. Whatever your strategy is, be sure it's clear and concise and doesn't assume that your well-meaning clients have any previous knowledge.

Katie Adams, CVPM, is director of Curriculum Development at IGNITE Veterinary Solutions.

Client handout:

Types of otitis and what to watch for

Educate your veterinary clients on the basics of otitis externa, media and interna and how you'll get to a diagnosis.

What the client sees: some extra head shaking and itchiness—normal pet stuff, right?

What you see: a potentially serious problem needing immediate attention and care.

The goal of this handout is to help clients see the signs of otitis through your lens. It covers the three types of otitis (externa, media and interna), the warning signs of each, as well as what clients can expect from you with regards to zeroing in on a diagnosis.

FROM YOUR VETERINARIAN dvm360

OTITIS: What it is and what to watch for in pets

Is your pet scratching at his ears or shaking his head more than normal? Otitis could be the problem. Learn more about what could be going on with your pet and how your veterinarian may get to a diagnosis.

Otitis is a general term to describe inflammation of the ear, but it can be broken down into three different types:

- Otitis externa**
Otitis externa describes when the external ear canal is inflamed. Inflammation can occur when the glands inside the ear canal produce too much wax and discharge, causing the canal to narrow. It can also be caused by infection (bath foam bacteria and fungus). Otitis externa can cause pain, redness, itching and head shaking. If the condition lasts a long time or recurs over and over, it can lead to a ruptured eardrum and inflammation of the inner ear canal.
- Otitis media**
Otitis media describes inflammation of the middle ear structure, which is often caused by an extension of infection from the external ear canal or a ruptured eardrum. The signs of otitis media can look similar to those of otitis externa. Head shaking, pain, itching, rubbing, discharge and tilting of the head are other signs.
- Otitis interna**
Otitis interna describes inflammation of the inner ear structures caused by ruptured inflammation of the middle ear. It has similar signs to otitis externa and otitis media, but it also includes dizziness and loss of balance. Neurologic signs such as facial

nerve paralysis and nystagmus (involuntary eye movement from side to side) are sometimes seen as well.

How your veterinarian can help your pet
These conditions can be diagnosed using several methods. Your veterinarian will most likely start by performing an exam, such as otoscopy to detect wax or look in your pet's ear) to diagnose noise and visible ear infections. Your veterinarian may also perform a microscopic examination to check

for yeast and bacteria in the ear. If an inner ear infection is suspected, a computed tomography scan (commonly called a CT scan) or magnetic resonance imaging scan (commonly called an MRI) may be needed if your pet's ear canal is not if fluid is collecting or if soft tissue is growing.

Be sure to see your veterinarian if your pet is experiencing any of the signs of otitis externa, media or interna. These conditions can cause serious problems if they last for long periods of time or are left untreated.



Source: Carol Barbee, CVT, VTS (Internal Practice)

Scan the code to download the handout.



Otitis quandary: To pluck or not to pluck hair in the ear?

During her Fetch dvm360 presentation "Not another ear infection," Laura Wilson, DVM, DACVD, answered several audience queries, including this one she gets often: "Should I pluck the hair in the dog's ear?" Well, it depends, as in all things, she says. In this audio clip from the session, hear all the details, including a particularly tangled case in a standard poodle.

Unfortunately, ear infections in standard poodles are pretty standard. What to do with all that hair? Scan the QR code to listen to Dr. Wilson's thoughts on plucking hair in dogs' ears.

**CLARO®**

(florfenicol, terbinafine, mometasone furoate)
Otic Solution

Antibacterial, antifungal, and anti-inflammatory
For Otic Use in Dogs Only

The following information is a summary of the complete product information and is not comprehensive. Please refer to the approved product label for complete product information prior to use.

CAUTION: Federal (U.S.A.) law restricts this drug to use by or on the order of a licensed veterinarian.

PRODUCT DESCRIPTION: CLARO® contains 16.6 mg/mL florfenicol, 14.8 mg/mL terbinafine (equivalent to 16.6 mg/mL terbinafine hydrochloride) and 2.2 mg/mL mometasone furoate. Inactive ingredients include purified water, propylene carbonate, propylene glycol, ethyl alcohol, and polyethylene glycol.

INDICATIONS:

CLARO® is indicated for the treatment of otitis externa in dogs associated with susceptible strains of yeast (*Malassezia pachydermatis*) and bacteria (*Staphylococcus pseudintermedius*).

DOSAGE AND ADMINISTRATION:

CLARO® should be administered by veterinary personnel. Administration is one dose (1 dropperette) per affected ear. The duration of effect should last 30 days. Clean and dry the external ear canal before administering the product. Verify the tympanic membrane is intact prior to administration. Cleaning the ear after dosing may affect product effectiveness. Refer to product label for complete directions for use.

CONTRAINDICATIONS:

Do not use in dogs with known tympanic membrane perforation (see **PRECAUTIONS**).

CLARO® is contraindicated in dogs with known or suspected hypersensitivity to florfenicol, terbinafine hydrochloride, or mometasone furoate, the inactive ingredients listed above, or similar drugs, or any ingredient in these medicines.

WARNINGS:

Human Warnings: Not for use in humans. Keep this and all drugs out of reach of children. In case of accidental ingestion by humans, contact a physician immediately. In case of accidental skin contact, wash area thoroughly with water. Avoid contact with eyes. Humans with known hypersensitivity to florfenicol, terbinafine hydrochloride, or mometasone furoate should not handle this product.

PRECAUTIONS:

Do not administer orally.

The use of CLARO® in dogs with perforated tympanic membranes has not been evaluated. The integrity of the tympanic membrane should be confirmed before administering the product. Reevaluate the dog if hearing loss or signs of vestibular dysfunction are observed during treatment.

Use of topical otic corticosteroids has been associated with adrenocortical suppression and iatrogenic hyperadrenocorticism in dogs.

Use with caution in dogs with impaired hepatic function. The safe use of CLARO® in dogs used for breeding purposes, during pregnancy, or in lactating bitches has not been evaluated.

ADVERSE REACTIONS:

In a field study conducted in the United States, there were no directly attributable adverse reactions in 146 dogs administered CLARO®.

To report suspected adverse drug events and/or obtain a copy of the Safety Data Sheet (SDS) or for technical assistance, contact Bayer HealthCare at 1-800-422-9874.

For additional information about adverse drug experience reporting for animal drugs, contact FDA at 1-888-FDA-VETS or online at <http://www.fda.gov/AnimalVeterinary/SafetyHealth>.

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Claro[®] Otic Solution is approved for the treatment of ear infections in dogs caused by susceptible strains of yeast (*Malassezia pachydermatis*) and bacteria (*Staphylococcus pseudintermedius*). CAUTION: Federal (U.S.A.) law restricts this drug to use by or on the order of a licensed veterinarian. CONTRAINDICATIONS: Claro[®] should not be used in dogs known or suspected to be allergic to Claro[®] or any of its ingredients.

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The goal, she says, is to reduce the pet population and become irrelevant to that community, then move on to another overpopulated community.

“When you transfer animals, if you don’t do anything in that source community, then you’re just taking that animal away without having any impact on changing the problem,” she says. “And when you’re not there, that community just ends up euthanizing the majority of their animals.”

In the end, Dr. Steele urges caution about jumping to any conclusions about shortages. “Even in Colorado, the problem of homeless pets is not resolved—80 percent of the 20,000 animals we receive annually are from people in our own community who cannot provide for the pet anymore,” she says. “It’s only because of the incredible adoption demand that we are able to meet the need in our community and then transfer from others.”

Meet the transporter

So how exactly do those adoptable animals down south make their way to new homes up north? The short answer: transporters.

Dr. Steele says animal welfare organizations transport a large number of dogs. These groups have well-funded professionals who transport animals between one another.

There are also chain transports. Say a dog in Florida needs to get to California. Transport coordinators recruit and schedule volunteers to drive 100 miles at a time to move the dog across the country. Paid transporters receive financial compensation, while volunteer transporters deliver pets to shelters and rescue groups in different parts of the country on their own time and dime.

Tim Hebert is a volunteer transporter, a self-described Cajun and recovering CPA from Lafayette, Louisiana. As we talk, the 74-year-old retiree is blazing down the highway at 70 miles per hour with roughly 30 cats in the back of his truck—an animal control van Hebert purchased himself. He’ll eat and sleep in this truck for the next four days. This relentless driving is with a purpose—he’s moving these homeless cats from Louisiana to the Northeast. Two kittens with cerebellar hypoplasia and a third special-needs kitty are destined for a special rescue group in Massachusetts, and 27 others will go to a shelter in New Hampshire.

When Hebert first started volunteer-

ing with rescue organizations 10 years ago, he was constantly introduced to people who needed to move a dog from here to there or there to here. So he was always trying to borrow an SUV or rent a trailer or truck. On a tip from a friend, he started following an online auction in Lincoln, Nebraska, where the city was auctioning off an animal control van. Before he knew it, he’d won the auction—and bought himself a van.

For the first few years, Hebert used the vehicle to transport animals around the city to adoption locations. When he hit 310,000 miles, he handed it off to a rescue group in Louisiana and bought a new animal transport vehicle for the long-haul trips he does now. In 2017, Hebert drove 76,600 miles and delivered 340 dogs and 773 cats to safe places.

When I ask him why he thinks the South has such an overpopulation problem, he answers bluntly. “Well, there’s two reasons. Mainly people down here are shit. They just don’t take care of their animals like they ought to. And I’m sorry, I’m from here so I can say that,” he says. “The other big reason is down here it’s year-round breeding season.”

Jason Leavitt is vice president of



Friends of BARC, a nonprofit group that supports BARC, the city of Houston animal shelter. Leavitt says BARC’s conservative estimates put the number of strays on the streets of Houston at between 800,000 and 1.2 million. Like Hebert, he points to climate and cultural differences as factors in Houston’s animal control challenges.

A local group, the Rescued Pets Movement, has transported more than 25,000 animals to Colorado, but still a glut of pets haunts the city streets.

“There are times you just want to cry your eyes out, because a really special animal got put down through no fault of their own—simply by being born,” Leavitt says. “I tell a lot of people, volunteer at BARC and it won’t take you long to learn to hate people. They come up with the most awful reasons to return or turn in animals.

“Then there are times when you

meet some wonderful people and help them adopt wonderful animals. Wonderful people who don’t care if an animal has scars or health issues or is missing a leg or is blind. That helps re-energize you and make you want to keep going through the best of times and the worst of times.”

Why rescuers need support

Carol Thompson, PhD, is a professor of sociology at Texas Christian University in Fort Worth, Texas, and an animal rescuer who teaches in the Human-Animal Relationships Program at TCU.

Compassion fatigue and burnout are common themes Thompson sees in people who work with animals. Often these are expressed as challenging personality quirks, she says.

“One is lack of patience: ‘I don’t have time for this. I’ve got 20 animals that need to be fed tonight before I go to bed. I don’t have time for chitchat.’ ... Some people look gruff because their plate is so very full and their coffers are so very empty and they’ve seen the worst of about 20 people today.”

It’s a challenge Thompson says she identifies with. She says she considers

While we are able to place many of those dogs, sometimes they need a more selective home,” says Dr. Doyle. “What we’ve got a shortage of are dogs that don’t come with special needs medically or behaviorally. And puppies.”

An emerging trend noted by Drs. Doyle and Steele is an increasing need for cats. Spay-and-neuter education and efforts may garner at least partial credit for the feline shortfall.

“As long as I’ve been practicing here, the dog population has always been a little better off, in that there’s less overpopulation. It’s the cats where I’ve seen a dramatic change in recent years,”

Dr. Doyle says. “One surmises that probably spay-and-neuter has a strong impact. But I don’t think there’s a lot of science that says for certain.”

When asked if she’s seeing a shortage in cats in Denver, Dr. Steele says yes. “This is our success. We’ve been trying to get people to spay and neuter cats for decades in the public, and we are finally seeing a decline in cats,” she says. “And we’ve actually been transferring cats in from other states this year—and a little bit last year—so this is a newer phenomenon.”

“People in the South just don’t take care of their animals like they ought to. I’m from here so I can say that. And down here it’s year-round breeding season.”

—Tim Hebert, animal transporter

herself to be very people-oriented, but she’s been in rescue a long time, which can make her skeptical and negative.

“When I’m doing rescue work I have a different mask, like a different self than when I’m in the classroom,” Thompson says. “It’s sort of like, I love everybody and I’m suspicious of everybody. You get whiplash—identity whiplash.”

The pipeline

Even as Hebert shuttles the cats north, veterinarians at animal welfare organizations and shelters are waiting for the next shipments of adoptable pets. Erin Doyle, DVM, DABVP (shelter medicine), is a senior veterinarian with the Animal Rescue League of Boston. In Dr. Doyle’s area, transports supply a number of the adoptable pets in shelters.

“A lot of the dogs that are surrendered to shelters come with preexisting medical and behavioral challenges.

So is there really a dog (and cat) shortage? Sort of. But not really. It’s more about apportioning the pets across the United States, of finding the communities that have moved further down the path of valuing pets and implementing effective spay-and-neuter programs and educating and supporting shelters and rescue groups in areas that need help down the path.

“We joke that a puppy used to be anything under 6 months, and now it’s anything under 6 years,” Dr. Steele says. “Anything under 6 years is highly adoptable in our community, and even the older dogs are getting homes.”

Editor’s note: The ASPCA declined to be interviewed for this article. The Humane Society of the United States did not respond to interview requests. Portia Stewart is former team channel director for dvm360.com.

For the love of dog: The future of animal sheltering

As some shelters seek to fill their inventory of adoptable pets with animals from the South, veterinarians are posing the tough question: What's next for shelters? *By Portia Stewart*

In cartoons and movies, it's not uncommon for shelters to be portrayed as animal jails, gray and cruel, where the only path out besides escape is a quick march to euthanasia. But this image belies all of the changes veterinary professionals and animal rescue advocates have brought about in creating safe, comfortable spaces for animals. More and more, shelters are becoming waystations for pets' transitions from homelessness to loving homes.

Many potential pet owners see shelters and rescue groups as the only acceptable source for adoptable pets. So when a shelter no longer houses enough adoptable animals to meet pet owner demand, how should it shift its services? Some are rewriting their goals, offering new services and building new relationships to promote healthier relationships between people and pets.

Apryl Steele, DVM, president and CEO of Dumb Friends League in Denver, says her organization is building spaces to work with fearful dogs that would currently be dangerous if placed in homes. "There are some animals that we feel could be adopted that aren't now," she says. "If we had some really quiet places where we could work with them for four to eight weeks, we could make them trust again, and we could

make them safe. So that's something we're working towards."

Dr. Steele says they also don't currently place diabetic cats, but they do transfer some of them to a group that places these special needs felines. Pets with chronic diseases may also be new targets for adoption.

What else could the future of sheltering hold? Let's look at what shelter and veterinary professionals are saying.

New opportunities for shelters

Jed Rogers, DVM, is CEO at Firehouse Animal Health Centers in Austin, Texas, and previously served as senior vice president of animal health services for the ASPCA. In years past, he says the focus for shelters has been getting adoptable pets in homes. But the shifts in available dogs may be an opportunity for shelters to reimagine the services they offer. For example, they might focus instead on keeping adoptable pets in their homes. He points to efforts like the ASPCA's Safety Net program, which works with communities to provide services like one-on-one counseling, pet food banks, community vaccination clinics and spay/neuter services, pet help lines and more.

Dr. Rogers says a positive trend he sees is the sheltering world becoming

more organized. "It's always been a professional world, it's just now more organized in a very professional way," he says. "You can have a better chance of doing a good job if you're sharing best practices and adhering to standards."

The second positive trend he sees is a deepening relationship between some veterinary professionals in private practice and shelters.

"I see more and more veterinarians participating in a positive way with shelters and rescue groups in their community, and I think that's an awesome thing," Dr. Rogers says. His own practices work closely with animal shelters and rescue groups to support pet adoptions and rescue efforts. He says the key is to identify the services the shelter or rescue most needs—and it's not always what you think it will be.

"We always spend a little time to get to know them and say, 'How can we help you?'" Dr. Rogers says. "And if they don't have any ideas, then we can say, 'OK, here are the four or five things we do with other shelters; are any of these interesting to you?' And usually there's something there that clicks."

For example, some rescue groups offer to reimburse the adoption fee in the form of free veterinary services at a partnering practice. So if you paid \$100 to adopt a dog, you'd receive \$100 worth of free veterinary services.

Another way to help? Helping rescues and shelters offer the care required to get pets healthy and adoptable.

"At the beginning of each year we

give the shelters we work with a credit for services, a \$5,000 or \$10,000 credit, and then they can use it however they want throughout the year," Dr. Rogers says. "If they have a complicated surgery they want done or a bunch of dental work or whatever, they can just use the credit."

"There are a hundred things a veterinarian can do with a shelter, so it's just a matter of taking the time to get to know each other and figure out what that relationship is going to look like."

A new view on sheltering

Nichole Boudreau is director of shelter operations at Young-Williams Animal Center in Knoxville, Tennessee, which takes in more than 10,000 animals each year. Since she joined the organization two years ago, Boudreau has been working to change the attitudes and relationships in the community to support responsible pet ownership.

"There was a mentality that own-



Clients evaluating adoption options?

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ers are bad and we need to have open doors and take all of the animals from the people, even if it means putting them down,” Boudreau says. “I’ve been trying to change all that.”

For one, she’s helped implement a managed intake system to work with pet owners to discover their issues with their pets and help resolve them. “We’re contributing to the cycle of poor pet ownership if we’re just taking them every time someone gets sick of having an animal or bumps against some behavior concerns,” Boudreau says.

She has a dedicated intake manager and pet resource coordinator who fields all owner surrender calls. These team members have received some behavior counseling training to help people manage litterbox issues, fear and play aggression, and so on.

Boudreau is also focused on changing the attitudes of other groups in the animal sheltering community, including animal control officers. She says her goal is to shift their attitudes from law enforcement to social services.

“It all starts with shifting the concept of what an animal shelter’s role is in a community. I think we need to get away from having people think of a shelter as somewhere to relinquish their pet for adoption,” Boudreau says. “We’re in the business of housing, sheltering, rehabilitating and finding homes for stray animals that are never reclaimed by owners, despite a proactive effort on the shelter’s part and animal control’s part.”

To that end, Boudreau has been working closely with an organization called Mission Reunite, which has gifted Young-Williams with microchip scanners for their animal control trucks. This way animal control officers can scan loose pets in the field and drive the pet home instead of taking it to the shelter. This frees up resources at the shelter and makes space for pets that need sheltering.

Boudreau says her efforts are guided by three principles: keep pets out of the shelter as much as possible, reduce their length of stay, and remove any barriers to getting them out of the shelter.

“So don’t charge rescue groups pull fees, reduce the adoption fees, don’t have crazy home visit requirements and vet record requirements for your adopters,” she says.

Thanks to these efforts and more, the shelter team has increased the organization’s save rate from 67 percent

The great no-kill debate

Apryl Steele, DVM, says she sees a disturbing trend in the no-kill animal movement in which some advocates are pushing organizations to go no-kill if they want donor dollars. The challenge: this means no-kill shelters have to shut their doors to any animal that’s not highly adoptable and send it down the street to the municipal shelter or another organization that takes every animal.

The result? The open-admission shelter winds up with a 40 percent live release rate, while the no-kill shelter has a 96 percent live release rate. “But then the no-kill shelter doesn’t have enough adoptable animals coming in from their community, so they start bringing them in from another community and taking up homes, while there are animals being euthanized less than a mile away that could have had a home,” Dr. Steele says.

If you’re confused about what “no-kill” actually means, you’re not alone. There’s no single definition that everyone agrees on. “No-Kill Colorado and No-Kill Nation have said that a no-kill shelter is a shelter that adopts [out] at least 90 percent of the animals that come to them,” Dr. Steele says. “And you can make that number—anybody can become a ‘no-kill shelter’ quickly—just by saying you’re not going to take any animal you can’t adopt into your shelter. But what are you doing to prevent suffering and homelessness?”

Dr. Steele says this doesn’t mean she thinks all no-kill shelters are bad. Her goal instead is to take a look at goals and language—and calling a shelter a “kill” shelter is inflammatory, she says.

Another concern is mandated live release rates that don’t take into account the health and well-being of the shelter animals. “If 12 percent of the animals that come to me are in end-of-life situations, to achieve a 90 percent live release rate, 2 percent of those suffering animals would have to be allowed to suffer,” Dr. Steele says.

In communities like Denver where animals are increas-

ingly desired and adoptable, animals that are healthy and behaviorally appropriate may be rehomed before they reach the shelter, because a friend or neighbor will take that pet. This means the shelters are seeing an increasing proportion of sick and aggressive animals.

“I don’t want to give people the impression we don’t have highly adoptable, wonderful animals, because we do,” Dr. Steele says. “But if you look at the overall population as animals continue to be more valued in the community, we’re going to see a higher and higher percentage of animals coming to us that are more difficult.”

In the not-so-ancient past, many shelters would take animals in, hold them for three days and, if no one claimed them, euthanize them. Adoption and foster programs didn’t exist like they do today.

“I think no-kill was a useful message to knock communities and policymakers out of that complacency that that was acceptable. But when you get above a 70 percent live release rate, it becomes a very detrimental, bullying-type movement. And it starts creating decisions that cause suffering and poorer outcomes,” Dr. Steele says. “And the other thing is, no-kill language basically by definition says if you’re not a no-kill shelter you’re a kill shelter, and people working at that shelter are killers. That’s such a not-OK thing to say.”

Jed Rogers, DVM, also struggles with the term “no-kill.”

“I wrote an article 15 years ago where I said there is no such thing as a no-kill, and I still believe that. I think no-kill is an aspiration. I think anybody who’s involved in animal welfare aspires to save every pet we possibly can,” Dr. Rogers says. “The term ‘no-kill’ suggests that there are people out there in sheltering who want to kill, who really enjoy killing. And that just doesn’t sit right with me. I’ve been doing this for 25 years, and I have yet to meet one person in my entire time doing this who enjoyed euthanizing an animal. Not one.”

to 84 percent at the end of last year.

“It’s on us. We have the biggest stake in this whole thing. We have to kill the animals we can’t save. That’s the end-all, be-all for me,” Boudreau says. “I don’t want my staff to have to kill these animals because we don’t have solutions or because we’re too full.”

Rescues, shelters and vets can work together

In an ideal world, animal rescue organizations will find ways to work together to promote healthy relationships between pets and people.

“In Colorado, rescue groups have really taken off. Last year was the first year that adoptions through rescue groups exceeded adoptions through shelters,” Dr. Steele says. “Rescues transferred in about 20,000 dogs, shelters 10,000, and the other 5,000 animals were cats, which had a similar

ratio of rescues to shelters.”

Breed rescues, she says, are having the most trouble, because there aren’t as many purebreds that need homes. But the breed rescue groups also offer an opportunity for shelters. Dr. Steele uses the example of purebred German shepherds. They can be protective, and it’s important to know this breed in order to provide a good home for it.

“We will often transfer to a German shepherd rescue, even though we can put that dog on the floor and adopt it,” Dr. Steele says. “They have a following of people who really understand German shepherd behavior, and that will be the best outcome for that dog.”

On the flip side, breed rescues used to get most of their dogs from shelters, Dr. Steele says, and if there’s a purebred that comes to a shelter it’s adopted as fast as it can be adopted.

“A lot of the breed rescues we’ve

seen in our community, the specific breed rescues, have really diminished. Whether they’ve gone away completely or they just handle way fewer dogs, it depends on the group.”

At the end of the day, our experts say, it’s the relationships veterinary professionals, animal control officers, shelter professionals and rescue groups form that will create stronger relationships between people and pets.

“There’s a lot of potential to tighten up the community, have rescue groups work closely with shelters, have animal control officers work closely with shelters and have everyone on the same page, seeing the big picture,” Boudreau says. “More communication, getting together more, sharing the same goals and sharing the same data.”

Portia Stewart is former team channel director for dvm360.com.

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Man's *best* livestock

How do we value dogs—and what makes them different from others in the animal kingdom? My experience at a dog auction offers a striking perspective on humans' relationships with animals. *By Portia Stewart*

When I pull onto the private property to park in the grass in front of the auction pavilion, the first car I see is the Barry County Deputy Sheriff SUV. Normally an auction gets me excited, but today I'm only nervous and slightly headachy. After all, I'm here incognito. I've brought my parents for cover, but when we finally arrive we barely talk because I become engrossed in absorbing all of the things—the sights, the smells, the sounds and the people who are arriving with us.

I'm at a dog auction—an event I wouldn't be able to imagine existed before this summer. I'm here to see the whos and hows, but they won't answer the bigger question: Why do dog auctions exist? And do people really know where their dogs come from?

I first read about dog auctions in the April 18 *Washington Post* article “Dog rescuers, flush with donations, buy animals from the breeders they scorn.” Living in northeastern Kansas, only a few miles from the Missouri border, I couldn't quite kick the idea of traveling to one of the auctions mentioned in the article—Southwest Auction Service in Wheaton, Missouri. So I settled on

a date for an upcoming auction—June 23—and registered online.

The auction is held on private property, and the warnings on the website are quite firm: no photography, no recording. In an age of transparency, it's a jarring feeling to find there are places where the cell phone is an unwelcome intrusion. Before I share my auction experience, let's take a closer look at the players involved.

Retail rescues and commercial breeders

The primary groups I'm looking for at the auction are commercial breeders and retail rescue groups. What exactly are retail rescue groups, and how do they differ from other rescues?

Apryl Steele, DVM, is president and CEO of the Dumb Friends League in Denver. “We have some groups in Colorado that we call retail rescues that are bringing in large numbers of puppies from these areas in the South or New Mexico, not protecting them from heartworm, not vaccinating them, not spaying and neutering them, and then ‘adopting’ them within 48 to 72 hours for hundreds—\$500 some-times. They're making a lot of money,

but they're nonprofits,” she says.

In Colorado, the Pet Animal Care Facilities Act (PACFA) regulates pet care facilities through licensing and inspection. Dr. Steele says PACFA's consumer complaints have gone up more than 400 percent with the influx of these retail rescues.

“That's a big problem for a lot of reasons,” Dr. Steele says. “It's bringing disease into our community, the animals are suffering, and people are like, ‘Why would I ever adopt another animal?’ They think they're saving an animal by ‘adopting’ them. That's not always the case in those situations.”

Bob Hughes, co-owner of Southwest Auction Service, says two kinds of rescue groups attend his event, which is the largest legal dog auction in the United States. The first type takes retired breeding dogs or dogs not deemed saleable from commercial breeders. The second group—which is what most people are referring to with the term “retail rescuers”—attend auctions to purchase dogs that they later place for adoption.

“I feel ‘retail rescue’ is a profit center similar to a distributor, one who buys

at a price and then increases the price for profit,” Hughes says. “It's as simple as starting a nonprofit organization and distributing funds as expenses. However, it basically just comes down to the nature of the people you're dealing with. There is good and bad in everything, you just have to pick which side you want to be on.”

At the auction, organizers carefully instruct the attendees on their behavior, which I assume is related to the concern that welfare advocates might arrive and stir up conflict. I scan the parking lot but fail to see any signs any rescue or welfare group is on site.

I ask Hughes how much it changes the auction when rescuers are in attendance. “Not much,” he replies.

Prop B (or how things changed after 2012)

Talk to any breeder in Missouri for longer than a hot minute and you'll probably end up hearing about Prop B. In 2012, Proposition B, more precisely known as the Missouri Dog Breeding Regulation Act, was passed to regulate the large-scale commercial breeding operations in the state. The result:

The female goldens are in the next kennel. One is extremely obese. My mother falls in love with her and wants to rescue her and try to get her to a healthy weight. They're shedding heavily, and they need to be brushed.

Hughes says kennel production has fallen from 3,000 kennels in Missouri to around a thousand. The law also restricts the number of dogs a commercial breeder can have in a kennel—a move that Hughes says is responsible for the plummet of the average of 125 dogs per kennel dropping to about 50.

This means about 325,000 fewer dogs are being produced every year, Hughes says. “Prior to 2012, we were conducting approximately 50 auctions per year, with an average of 250 dogs per auction. Now we conduct around 20. So we have downsized over 50 percent.”

The tradeoff, says Hughes, is a higher level of professionalism among buyers. “They’re much more particular about quality, genetics and temperament than in previous years,” he says.

So who attends auctions? The answer, Hughes says, is professional USDA-licensed and -inspected breeders. In other words, this isn’t where people go to find the family dog. It’s where commercial breeders go to buy the dog that may produce the family dog for sale.

What have the Amish got to do with it?

I was struck at the auction by the strong presence of Amish families at the auction. So I asked Hughes about it.

“The Amish community is associated strongly with this industry,” Hughes says. “Some of the best kennel operators and animal husbandry specialists come from the Amish community. I have a high regard for their ability to create unique and very creative kennel designs. The Amish professional kennels are some of the best I have ever seen. The Amish have hundreds of years of practical education in caring for animals. They are people I have grown to admire and respect over the past 30 years.”

An Amish breeder is behind the top dog to ever sell at Hughes’ auction: a male toy poodle that sold for \$18,000 in February.

At the June 23 auction, Amish children in suspenders and hats help fetch and hold the dogs that go up for auction as well as clean and supervise dogs in cages and refresh water bowls. A black horse-drawn carriage with the distinctive reflective orange triangle on the back is parked outside. I’m not sure whether the Amish are auctioning any of their breeding stock today, but they’re definitely buying. I see them bid, and bid high.

Dog-tion time

The auction building is a dark green structure, with a peaked roof over an indoor pavilion you enter through an open garage door. To the left of the pavilion is a door to the office. The right is the entrance to the kennels.

First we see the dogs in outdoor runs, in a clustered line: German shepherds and golden retrievers. For a brief time, we are completely distracted. I’m drawn to the goldens. Three are two months older than my own pup. It’s challenging to see them there. They watch me with those soulful brown eyes. It’s hard to not to assume they’re wary or suspicious or sad or desperate for social contact. Across the way is a 1-year-old male desperately jumping against the cage. His tale wags energetically and he makes small whines and barks when people come near.

The females are in the next kennel. One is extremely obese. My mother instantly falls in love with her and wants to rescue her and try to get her to a healthy weight. They’re shedding heavily, and they need to be brushed.

I’m trying to say kind words to each dog, engaging in baby talk at first, till I become aware I am the only one doing this. Other people attending the auction study the dogs analytically, without smiles. Some have their auction catalogs out, and they make notes.

The runs are on grass, and I observe to my parents that it’s a temperate day, somewhere in the 70s. On a hotter day this could be miserable. I can’t check the temperature on my phone, because phones aren’t allowed.

A 13-year-old boy with a sticker on his chest that reads “Staff” watches over the dogs, presumably to make sure they’re all well and watered and not being bothered by the attendees.

I decide I should collect my auction number to blend in. We head to the auction building, where a deputy sheriff stands outside. I’m nervous, but I approach him and ask where I collect my number. He points inside. I hope he doesn’t evict me before the day is over.

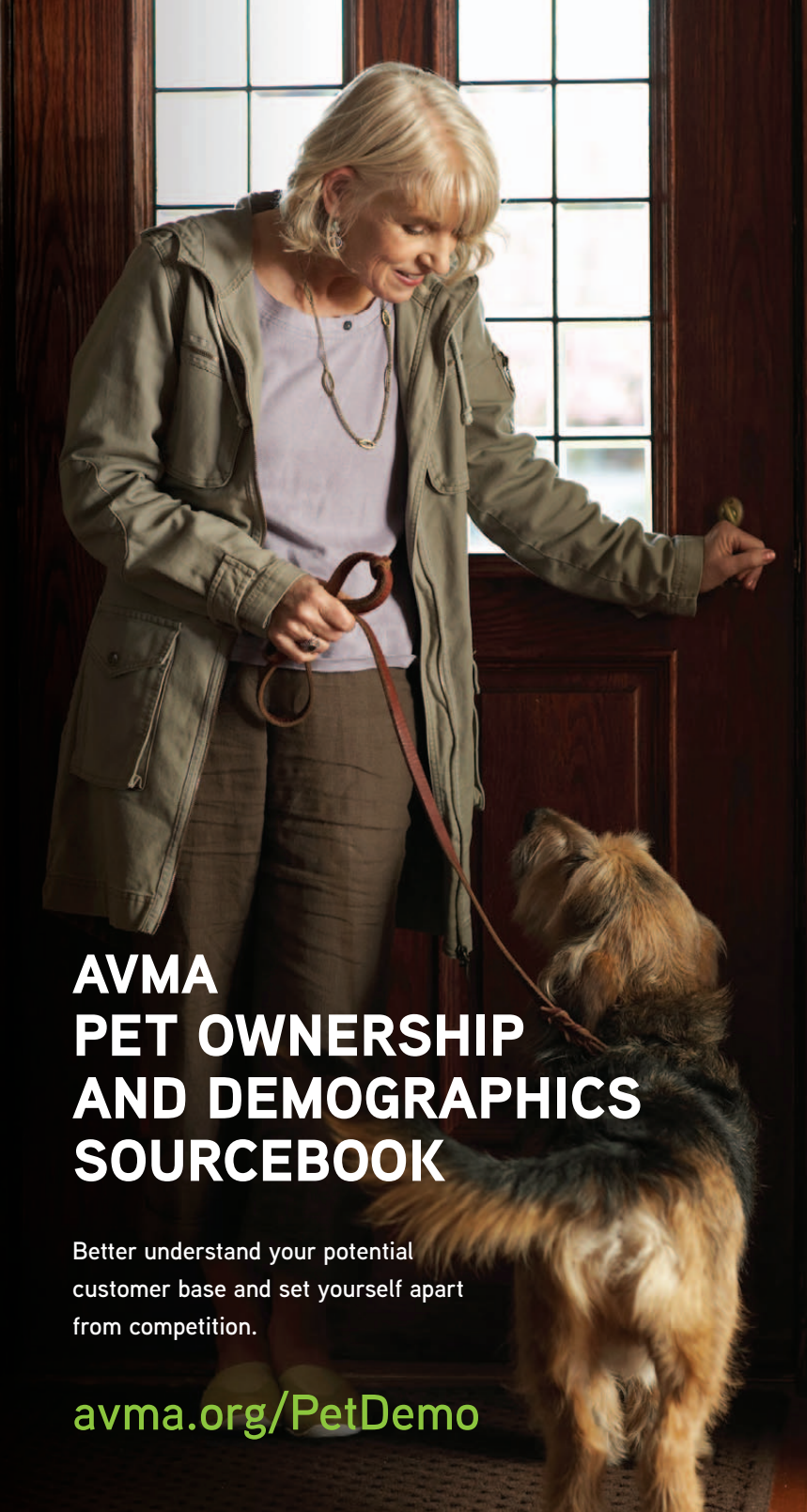
Inside, metal bleachers circle the auction stand. The deputy leads me to a registration line behind the bleachers. I look at the other people standing in line and milling about. Most are dressed in jeans, belt buckles, hats and suspenders. I’m wearing my “I love your dog” shirt from the Fetch dvm360 conference, because I thought this

would help me blend in. Not so.

As I wait in line, the auctioneer begins to speak. He mentions the auction and their industry have gotten some negative attention recently. I try to listen over the din and look like I’m not paying attention too closely. He tells the crowd if anyone is feeling harassed, tell the officer. He points to the deputy—

the one who pointed me to the registration line. The auctioneer reminds the audience this is private property, and anyone can be asked to leave.

I reach the front of the line. I’ve already registered. I tell the clerk my name and she hands me an auction number and a sticker to wear. I’m not bidding, but I need the number to look



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legitimate. Once I've collected it, we sit for a few minutes on the bleachers, until the auctioneer finishes his opening spiel. They plan to start with some small equipment sales first, then get to the dogs around 10:30 a.m.

We decide to go look at the dogs in the inside kennels. Smaller, two-tier kennels take up three-fourths of the space, and there's a line of runs at the back. The Havanese, Hava Klee, Chihuahuas and poodles are near the front. The wire-bottomed cages allow the urine to drain into channels. Any poop seems to be cleaned up quickly. At least six teens shuttle up and down the aisles, replacing water and checking on the dogs.

Dog No. 244, a female apricot miniature poodle named Dancer, trembles and hides in the back of her cage. She's not the only one. Dogs show a combination of boredom—sleeping or resting—and anxiety or fear. It's an intense experience—more than 200 dogs in this room, with most kennels full.

We walk up and down aisles, past the gray Frenchie pup, the bulldogs. One lies on its side, panting heavily. Others simply watch from behind the bars of their cages. Dog 144A, an unnamed male shih tzu, is excited, jumping around his cage.

We walk past the beagles, corgies, basset hounds. In the larger runs are the Labs, the mastiffs, dogues de Bordeaux. The kennels are regularly cleaned, but when the mastiffs urinate the fan blows the smell up into our faces, and we step over the sticky urine that's running to the drain.

Suddenly it's all too much. We step out of the building and into the sun. I take a tour around the parking lot, trying to get a sense of who's here. I'm looking for signs of rescue groups, cars with animal rights stickers or the "I love my rescue pug." I see none—just nondescript Chevys, Fords and other varieties of cars, trucks and even vans.

I retreat with my parents to our car for a minute and scribble notes as we discuss what we've seen so far. We agree the animals look safely and cleanly kept, but there's a sense of depression that hangs over the place.

I am not comfortable with the auctioning aspect of this, and I'm beginning to understand why. As a pet owner, I think of these creatures as beloved companions, to be loved and enriched. In this place, the animals are livestock,



not unlike cattle or hogs. Many of the physical needs of these dogs seem to be met, but I can't help but think about their social and emotional needs.

As the time nears 10 a.m., we wander back to the pavilion. It's supposed to hold 300 people, and it's about two-thirds full. They're still auctioning equipment. The auctioneer's cadence and banter as he rattles off his auction chant is soothing. Next to him stands his big catcher or ringman, who takes note of bids and communicates them to the auctioneer. An American flag hangs above the auction stand, and a cowboy hat hangs beneath it.

Most of the dogs will be sold times the money—so nine dogs at \$100 apiece would be \$900. Some people bid for choice—the ability to choose first, then let other bidders take the rest for the same amount. If there are no takers after the winner takes first pick, the remaining dogs will be auctioned again, usually going for lower prices.

Before the first dogs come out, the lead man explains that all dogs are tested for brucellosis, and he recites a lengthy explanation of the testing and what's guaranteed.

"We're not vets, so we'll call out what we can physically see on the outside of the animal—underbites, overbites, hernias," he says.

He explains that they will not describe any dog as pregnant. They can be called bred. This means the seller has witnessed a tie. Presumably these dogs are more valuable, because they may produce puppies for the breeder.

With these statements made, the dog auction begins at roughly 10:44 a.m. First up are the Havanese, No. 9, 10, 11. They are placed and held on a table for the room to see. All three are females, born in 2013. The three dogs

are sold at once, for \$270 a piece.

The Hava Klees are next. These are still puppies, born Feb. 26, 2018. The bidding reaches \$315. The winner takes choice, opts for 14 and 16. The auctioneer starts again. No. 13 goes for \$225, and No. 15, with a reverse scissor bite, goes for \$75.

The beagles are next, and they aren't selling. One doesn't sell at all; two sell for \$2, and the final one goes for \$6—all less than the deposit required to enter property in the auction.

There's a breadth of what dogs go for, even dogs from the same kennel or even litter. A 5-year-old female miniature Australian shepherd that was bred sells for \$425. A male puppy with an underbite goes for \$65.

Next up are the Chihuahuas. The owner, an older dark-haired woman with curly hair, regularly interrupts the lead man, the ring man and the auctioneer to add details about the dogs she's selling—nine in total. They sell from \$300 to \$800.

The Labs barely sell at \$15 a pop, with much coaxing from the auction staff. There is mild confusion when the Akitas are pulled instead of the Alaskan malamutes. The auctioneer starts to sell them as the 4-year-old malamutes, but they are clearly puppies. The man behind me shouts that they're akitas, and soon it's straightened. They sell for \$30 to \$75.

The huskies sell for between \$5 and \$85. "Three years ago they were bringing \$3,000," the auctioneer says.

The auction heats up again as Bernese mountain dogs sell well, with one going for more than \$900. At this point, I see the goldens are close to going up for sale. I don't think my mother will be able to watch the sweet overweight one without bidding, so we make our exit.

As I navigate the winding backroads toward home, I turn to my dad and say, "That was a once-in-a-lifetime experience. And let's never do it again."

How we value pets

One of the things I've been struggling with since the auction is the idea of the value of pets. So I reach out to Carol Thompson, PhD, a professor of sociology at Texas Christian University in Fort Worth, Texas, and an animal rescuer who teaches in the Human-Animal Relationships Program at TCU.

When I share with her my experience at the dog auction, she offers this insight: I believe the auction to be an unethical practice, but in the moment, in my experience, the animals at auction were ethically treated, at least in the sense of their being livestock. It's my anthropomorphizing of the dogs that sees the auction as a minimally acceptable experience for that animal, because it lacks the relationships and enrichment I perceive a pet would need.

Whoa. She's right.

"So the next question is, where are they going after the auction? Are they going to labs? Are they going to homes? Are they going to breeders?" Thompson says. "In that sense it's an immoral practice ... because of the outcomes that are probable for the majority of the animals being auctioned. And so the whole idea of the auction is problematic because they're being treated as property. At the end of the day, the thing that's morally objectionable about it is not that they were being treated badly but that they were being sold."

And this brings us back to the burning question I've struggled with since I began this journey. What makes us love dogs so much?

"Dogs are a species that coevolved with us," Thompson says. "The fact that they are sold at auctions kind of perverts their coevolution with humans. Because they were cohunters in our evolutionary path ... dogs have a kind of sacredness in society."

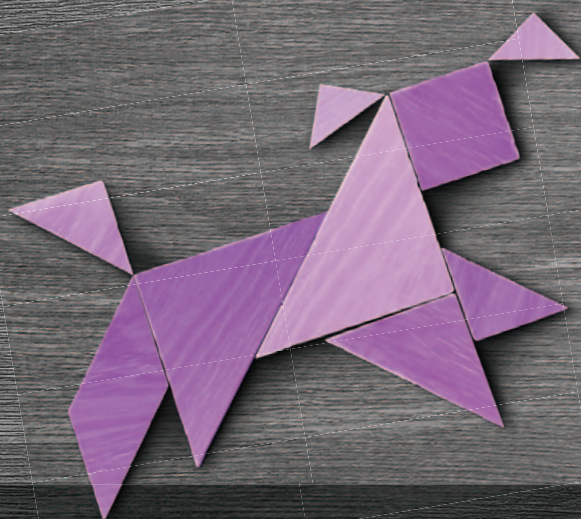
In the end, this may be what saves us—and the canine. Our love for them (and theirs for us) is an unbreakable bond, so we must continue to make safer shelters, homes and communities for these noble pets who have rightly earned the title: man's best friend.

Portia Stewart is former team channel director for dvm360.com.

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METACAM and PREVICOX are indicated for the control of pain and inflammation associated with osteoarthritis in dogs.

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IMPORTANT SAFETY INFORMATION: METACAM (meloxicam oral suspension) and PREVICOX (firocoxib) are for use in dogs only. METACAM (meloxicam) Solution for Injection is approved for use in dogs or cats. Repeated use of meloxicam in cats has been associated with acute renal failure and death. Do not administer additional injectable or oral meloxicam to cats. As a class, cyclooxygenase inhibitory NSAIDs like METACAM and PREVICOX may be associated with gastrointestinal, kidney, or liver side effects. Dogs should be evaluated for pre-existing conditions and currently prescribed medications prior to treatment with METACAM or PREVICOX, then monitored regularly while on therapy. Concurrent use with another NSAID, corticosteroid, or nephrotoxic medication should be avoided or monitored closely.

Please see brief summaries of full prescribing information for products mentioned in this ad on pages 28-29.



CHEWABLE TABLETS

Brief Summary: Before using PREVICOX, please consult the product insert, a summary of which follows:

Caution: Federal law restricts this drug to use by or on the order of a licensed veterinarian.

Indications: PREVICOX (firocoxib) Chewable Tablets are indicated for the control of pain and inflammation associated with osteoarthritis and for the control of postoperative pain and inflammation associated with soft-tissue and orthopedic surgery in dogs.

Contraindications: Dogs with known hypersensitivity to firocoxib should not receive PREVICOX.

Warnings: Not for use in humans. Keep this and all medications out of the reach of children. Consult a physician in case of accidental ingestion by humans.

For oral use in dogs only. Use of this product at doses above the recommended 2.27 mg/lb (5.0 mg/kg) in puppies less than seven months of age has been associated with serious adverse reactions, including death (see Animal Safety). Due to tablet sizes and scoring, dogs weighing less than 12.5 lb (5.7 kg) cannot be accurately dosed. All dogs should undergo a thorough history and physical examination before the initiation of NSAID therapy. Appropriate laboratory testing to establish hematological and serum baseline data is recommended prior to and periodically during administration of any NSAID. **Owners should be advised to observe for signs of potential drug toxicity (see Adverse Reactions and Animal Safety) and be given a Client Information Sheet about PREVICOX Chewable Tablets.**

For technical assistance or to report suspected adverse events, call 1-877-217-3543. For additional information about adverse drug experience reporting for animal drugs, contact FDA at 1-888-FDAVETS or <http://www.fda.gov/AnimalVeterinary/SafetyHealth>

Precautions: This product cannot be accurately dosed in dogs less than 12.5 pounds in body weight. Consider appropriate washout times when switching from one NSAID to another or when switching from corticosteroid use to NSAID use.

As a class, cyclooxygenase inhibitory NSAIDs may be associated with renal, gastrointestinal and hepatic toxicity. Sensitivity to drug-associated adverse events varies with the individual patient. Dogs that have experienced adverse reactions from one NSAID may experience adverse reactions from another NSAID. Patients at greatest risk for adverse events are those that are dehydrated, on concomitant diuretic therapy, or those with existing renal, cardiovascular, and/or hepatic dysfunction. Concurrent administration of potentially nephrotoxic drugs should be carefully approached and monitored. NSAIDs may inhibit the prostaglandins that maintain normal homeostatic function. Such anti-prostaglandin effects may result in clinically significant disease in patients with underlying or pre-existing disease that has not been previously diagnosed. Since NSAIDs possess the potential to produce gastrointestinal ulceration and/or gastrointestinal perforation, concomitant use of PREVICOX Chewable Tablets with other anti-inflammatory drugs, such as NSAIDs or corticosteroids, should be avoided. The concomitant use of protein-bound drugs with PREVICOX Chewable Tablets has not been studied in dogs. Commonly used protein-bound drugs include cardiac, anticonvulsant, and behavioral medications. The influence of concomitant drugs that may inhibit the metabolism of PREVICOX Chewable Tablets has not been evaluated. Drug compatibility should be monitored in patients requiring adjunctive therapy. If additional pain medication is needed after the daily dose of PREVICOX, a non-NSAID class of analgesic may be necessary. Appropriate monitoring procedures should be employed during all surgical procedures. Anesthetic drugs may affect renal perfusion, approach concomitant use of anesthetics and NSAIDs cautiously. The use of parenteral fluids during surgery should be considered to decrease potential renal complications when using NSAIDs perioperatively. The safe use of PREVICOX Chewable Tablets in pregnant, lactating or breeding dogs has not been evaluated.

Adverse Reactions:

Osteoarthritis: In controlled field studies, 128 dogs (ages 11 months to 15 years) were evaluated for safety when given PREVICOX Chewable Tablets at a dose of 2.27mg/lb (5.0 mg/kg) orally once daily for 30 days. The following adverse reactions were observed. Dogs may have experienced more than one of the observed adverse reactions during the study.

Adverse Reactions Seen in U. S. Field Studies		
Adverse Reactions	PREVICOX (n=128)	Active Control (n=121)
Vomiting	5	8
Diarrhea	1	10
Decreased Appetite or Anorexia	3	3
Lethargy	1	3
Pain	2	1
Somnolence	1	1
Hyperactivity	1	0

PREVICOX (firocoxib) Chewable Tablets were safely used during field studies concomitantly with other therapies, including vaccines, anthelmintics, and antibiotics.

Soft-tissue Surgery: In controlled field studies evaluating soft-tissue postoperative pain and inflammation, 258 dogs (ages 10.5 weeks to 16 years) were evaluated for safety when given PREVICOX Chewable Tablets at a dose of 2.27 mg/lb (5.0 mg/kg) orally approximately 2 hours prior to surgery and once daily thereafter for up to two days. The following adverse reactions were observed. Dogs may have experienced more than one of the observed reactions during the study.

Adverse Reactions Seen in the Soft-tissue Surgery Postoperative Pain Field Studies		
Adverse Reactions	Firocoxib Group (n=127)	Control Group* (n=131)
Vomiting	5	6
Diarrhea	1	1
Bruising at Surgery Site	1	1
Respiratory Arrest	1	0
SQ Crepitus in Rear Leg and Flank	1	0
Swollen Paw	1	0

*Sham-dosed (pilled)

Orthopedic Surgery: In a controlled field study evaluating orthopedic postoperative pain and inflammation, 226 dogs of various breeds, ranging in age from 1 to 11.9 years in the PREVICOX-treated groups and 0.7 to 17 years in the control group were evaluated for safety. Of the 226 dogs, 118 were given PREVICOX Chewable Tablets at a dose of 2.27 mg/lb (5.0 mg/kg) orally approximately 2 hours prior to surgery and once daily thereafter for a total of three days. The following adverse reactions were observed. Dogs may have experienced more than one of the observed reactions during the study.

Adverse Reactions Seen in the Orthopedic Surgery Postoperative Pain Field Study		
Adverse Reactions	Firocoxib Group (n=118)	Control Group* (n=108)
Vomiting	1	0
Diarrhea	2**	1
Bruising at Surgery Site	2	3
Inappetence/ Decreased Appetite	1	2
Pyrexia	0	1
Incision Swelling, Redness	9	5
Oozing Incision	2	0

A case may be represented in more than one category.

*Sham-dosed (pilled).

**One dog had hemorrhagic gastroenteritis.

Post-Approval Experience (Rev. 2009): The following adverse reactions are based on post-approval adverse drug event reporting. The categories are listed in decreasing order of frequency by body system:

Gastrointestinal: Vomiting, anorexia, diarrhea, melena, gastrointestinal perforation, hematemesis, hematachezia, weight loss, gastrointestinal ulceration, peritonitis, abdominal pain, hypersalivation, nausea

Urinary: Elevated BUN, elevated creatinine, polydypsia, polyuria, hematuria, urinary incontinence, proteinuria, kidney failure, azotemia, urinary tract infection

Neurological/Behavioral/Special Sense: Depression/lethargy, ataxia, seizures, nervousness, confusion, weakness, hyperactivity, tremor, paresis, head tilt, nystagmus, mydriasis, aggression, uveitis

Hepatic: Elevated ALP, elevated ALT, elevated bilirubin, decreased albumin, elevated AST, icterus, decreased or increased total protein and globulin, pancreatitis, ascites, liver failure, decreased BUN

Hematological: Anemia, neutrophilia, thrombocytopenia, neutropenia

Cardiovascular/Respiratory: Tachypnea, dyspnea, tachycardia

Dermatologic/Immunologic: Pruritis, fever, alopecia, moist dermatitis, autoimmune hemolytic anemia, facial/muzzle edema, urticaria

In some situations, death has been reported as an outcome of the adverse events listed above.

For a complete listing of adverse reactions for firocoxib reported to the CVM see: <http://www.fda.gov/downloads/AnimalVeterinary/SafetyHealth/ProductSafetyInformation/UCM055407.pdf>

Information For Dog Owners: PREVICOX, like other drugs of its class, is not free from adverse reactions. Owners should be advised of the potential for adverse reactions and be informed of the clinical signs associated with drug intolerance. Adverse reactions may include vomiting, diarrhea, decreased appetite, dark or tarry stools, increased water consumption, increased urination, pale gums due to anemia, yellowing of gums, skin or white of the eye due to jaundice, lethargy, incoordination, seizure, or behavioral changes. **Serious adverse reactions associated with this drug class can occur without warning and in rare situations result in death (see Adverse Reactions). Owners should be advised to discontinue PREVICOX therapy and contact their veterinarian immediately if signs of intolerance are observed.** The vast majority of patients with drug-related adverse reactions have recovered when the signs are recognized, the drug is withdrawn, and veterinary care, if appropriate, is initiated. Owners should be advised of the importance of periodic follow up for all dogs during administration of any NSAID.

Effectiveness: Two hundred and forty-nine dogs of various breeds, ranging in age from 11 months to 20 years, and weighing 13 to 175 lbs, were randomly administered PREVICOX or an active control drug in two field studies. Dogs were assessed for lameness, pain on manipulation, range of motion, joint swelling, and overall improvement in a non-inferiority evaluation of PREVICOX compared with the active control. At the study's end, 87% of the owners rated PREVICOX-treated dogs as improved. Eighty-eight percent of dogs treated with PREVICOX were also judged improved by the veterinarians. Dogs treated with PREVICOX showed a level of improvement in veterinarian-assessed lameness, pain on palpation, range of motion, and owner-assessed improvement that was comparable to the active control. The level of improvement in PREVICOX-treated dogs in limb weight bearing on the force plate gait analysis assessment was comparable to the active control. In a separate field study, two hundred fifty-eight client-owned dogs of various breeds, ranging in age from 10.5 weeks to 16 years and weighing from 7 to 168 lbs, were randomly administered PREVICOX or a control (sham-dosed-pilled) for the control of postoperative pain and inflammation associated with soft-tissue surgical procedures such as abdominal surgery (e.g., ovari hysterectomy, abdominal cryptorchidectomy, splenectomy, cystotomy) or major external surgeries (e.g., mastectomy, skin tumor removal <8 cm). The study demonstrated that PREVICOX-treated dogs had significantly lower need for rescue medication than the control (sham-dosed-pilled) in controlling postoperative pain and inflammation associated with soft-surgery. A multi-center field study with 226 client-owned dogs of various breeds, and ranging in age from 1 to 11.9 years in the PREVICOX-treated groups and 0.7 to 17 years in the control group was conducted. Dogs were randomly assigned to either the PREVICOX or the control (sham-dosed-pilled) group for the control of postoperative pain and inflammation associated with orthopedic surgery. Surgery to repair a ruptured cruciate ligament included the following stabilization procedures: fabellar suture and/or imbrication, fibular head transposition, tibial plateau leveling osteotomy (TPLO), and 'over the top' technique. The study (n = 220 for effectiveness) demonstrated that PREVICOX-treated dogs had significantly lower need for rescue medication than the control (sham-dosed-pilled) in controlling postoperative pain and inflammation associated with orthopedic surgery.

Animal Safety: In a targeted animal safety study, firocoxib was administered orally to healthy adult Beagle dogs (eight dogs per group) at 5, 15, and 25 mg/kg (1, 3, and 5 times the recommended total daily dose) for 180 days. At the indicated dose of 5 mg/kg, there were no treatment-related adverse events. Decreased appetite, vomiting, and diarrhea were seen in dogs in all dose groups, including unmedicated controls, although vomiting and diarrhea were seen more often in dogs in the 5X dose group. One dog in the 3X dose group was diagnosed with juvenile polyarteritis of unknown etiology after exhibiting recurrent episodes of vomiting and diarrhea, lethargy, pain, anorexia, ataxia, proprioceptive deficits, decreased albumin levels, decreased and then elevated platelet counts, increased bleeding times, and elevated liver enzymes. On histopathologic examination, a mild ileal ulcer was found in one 5X dog. This dog also had a decreased serum albumin which returned to normal by study completion. One control and three 5X dogs had focal areas of inflammation in the pylorus or small intestine. Vacuolization without inflammatory cell infiltrates was noted in the thalamic region of the brain in three control, one 3X, and three 5X dogs. Mean ALP was within the normal range for all groups but was greater in the 3X and 5X dose groups than in the control group. Transient decreases in serum albumin were seen in multiple animals in the 3X and 5X dose groups, and in one control animal. In a separate safety study, firocoxib was administered orally to healthy juvenile (10-13 weeks of age) Beagle dogs at 5, 15, and 25 mg/kg (1, 3, and 5 times the recommended total daily dose) for 180 days. At the indicated (1X) dose of 5 mg/kg, on histopathologic examination, three out of six dogs had minimal periportal hepatic fatty change. On histopathologic examination, one control, one 1X, and two 5X dogs had diffuse slight hepatic fatty change. These animals showed no clinical signs and had no liver enzyme elevations. In the 3X dose group, one dog was euthanized because of poor clinical condition (Day 63). This dog also had a mildly decreased serum albumin. At study completion, out of five surviving and clinically normal 3X dogs, three had minimal periportal hepatic fatty change. Of twelve dogs in the 5X dose group, one died (Day 82) and three moribund dogs were euthanized (Days 38, 78, and 79) because of anorexia, poor weight gain, depression, and in one dog, vomiting. One of the euthanized dogs had ingested a rope toy. Two of these 5X dogs had mildly elevated liver enzymes. At necropsy all five of the dogs that died or were euthanized had moderate periportal or severe panzonal hepatic fatty change; two had duodenal ulceration; and two had pancreatic edema. Of two other clinically normal 5X dogs (out of four euthanized as comparators to the clinically affected dogs), one had slight and one had moderate periportal hepatic fatty change. Drug treatment was discontinued for four dogs in the 5X group. These dogs survived the remaining 14 weeks of the study. On average, the dogs in the 3X and 5X dose groups did not gain as much weight as control dogs. Rate of weight gain was measured (instead of weight loss) because these were young growing dogs. Thalamic vacuolation was seen in three of six dogs in the 3X dose group, five of twelve dogs in the 5X dose group, and to a lesser degree in two unmedicated controls. Diarrhea was seen in all dose groups, including unmedicated controls. In a separate dose tolerance safety study involving a total of six dogs (two control dogs and four treated dogs), firocoxib was administered to four healthy adult Beagle dogs at 50 mg/kg (ten times the recommended daily dose) for twenty-two days. All dogs survived to the end of the study. Three of the four treated dogs developed small intestinal erosion or ulceration. Treated dogs that developed small intestinal erosion or ulceration had a higher incidence of vomiting, diarrhea, and decreased food consumption than control dogs. One of these dogs had severe duodenal ulceration, with hepatic fatty change and associated vomiting, diarrhea, anorexia, weight loss, ketonuria, and mild elevations in AST and ALT. All four treated dogs exhibited progressively decreasing serum albumin that, with the exception of one dog that developed hypoalbuminemia, remained within normal range. Mild weight loss also occurred in the treated group. One of the two control dogs and three of the four treated dogs exhibited transient increases in ALP that remained within normal range.

Made in France
Marketed by: Merial, Inc., Duluth, GA 30096-4640, U.S.A.
1-877-217-3543
NADA 141-230, Approved by FDA
Rev. 09-2015

Brief Summary
NADA 141-213, Approved by FDA

Metacam®

(meloxicam oral suspension)
1.5 mg/mL (equivalent to 0.05 mg per drop) /0.5 mg/mL (equivalent to 0.02 mg per drop)
Non-steroidal anti-inflammatory drug for oral use in dogs only

Caution: Federal law restricts this drug to use by or on the order of a licensed veterinarian.

Warning: Repeated use of meloxicam in cats has been associated with acute renal failure and death. Do not administer additional injectable or oral meloxicam to cats. See Contraindications, Warnings, and Precautions for detailed information.

Description: Meloxicam is a non-steroidal anti-inflammatory drug (NSAID) of the oxicam class. Each milliliter of METACAM Oral Suspension contains meloxicam equivalent to 0.5 or 1.5 milligrams and sodium benzoate (1.5 milligrams) as a preservative. The chemical name for Meloxicam is 4-Hydroxy-2-methyl-N-(5-methyl-2-thiazolyl)-2H-1,2-benzothiazine-3-carboxamide-1, 1-dioxide. The formulation is wwa yellowish viscous suspension with the odor of honey.

Indications: METACAM Oral Suspension is indicated for the control of pain and inflammation associated with osteoarthritis in dogs.

Contraindications: Dogs with known hypersensitivity to meloxicam should not receive METACAM Oral Suspension. **Do not use METACAM Oral Suspension in cats. Acute renal failure and death have been associated with the use of meloxicam in cats.**

Warnings: Not for use in humans. Keep this and all medications out of reach of children. Consult a physician in case of accidental ingestion by humans. **For oral use in dogs only.**

As with any NSAID all dogs should undergo a thorough history and physical examination before the initiation of NSAID therapy. Appropriate laboratory testing to establish hematological and serum biochemical baseline data is recommended prior to and periodically during administration. Owner should be advised to observe their dog for signs of potential drug toxicity and be given a client information sheet about METACAM.

Precautions: The safe use of METACAM Oral Suspension in dogs younger than 6 months of age, dogs used for breeding, or in pregnant or lactating dogs has not been evaluated. Meloxicam is not recommended for use in dogs with bleeding disorders, as safety has not been established in dogs with these disorders. As a class, cyclo-oxygenase inhibitory NSAIDs may be associated with gastrointestinal, renal and hepatic toxicity. Sensitivity to drug-associated adverse events varies with the individual patient. Dogs that have experienced adverse reactions from one NSAID may experience adverse reactions from another NSAID. Patients at greatest risk for renal toxicity are those that are dehydrated, on concomitant diuretic therapy, or those with existing renal, cardiovascular, and/or hepatic dysfunction. Concurrent administration of potentially nephrotoxic drugs should be carefully approached. NSAIDs may inhibit the prostaglandins that maintain normal homeostatic function. Such anti-prostaglandin effects may result in clinically significant disease in patients with underlying or pre-existing disease that has not been previously diagnosed. Since NSAIDs possess the potential to induce gastrointestinal ulcerations and/or perforations, concomitant use with other anti-inflammatory drugs, such as NSAIDs or corticosteroids, should be avoided. If additional pain medication is needed after administration of the total daily dose of METACAM Oral Suspension, a non-NSAID or non-corticosteroid class of analgesia should be considered. The use of another NSAID is not recommended. Consider appropriate washout times when switching from corticosteroid use or from one NSAID to another in dogs. The use of concomitantly protein-bound drugs with METACAM Oral Suspension has not been studied in dogs. Commonly used protein-bound drugs include cardiac, anticonvulsant and behavioral medications. The influence of concomitant drugs that may inhibit metabolism of METACAM Oral Suspension has not been evaluated. Drug compatibility should be monitored in patients requiring adjunctive therapy.

Adverse Reactions: Field safety was evaluated in 306 dogs.¹ Based on the results of two studies, GI abnormalities (vomiting, soft stools, diarrhea, and inappetence) were the most common adverse reactions associated with the administration of meloxicam.

The following adverse events are based on post-approval adverse drug experience reporting. Not all adverse reactions are reported to FDA/CVM. It is not always possible to reliably estimate the adverse event frequency or establish a causal relationship to product exposure using these data. The following adverse events are listed in decreasing order of frequency by body system.

Gastrointestinal: *vomiting, diarrhea, melena, gastrointestinal ulceration*
Urinary: *azotemia, elevated creatinine, renal failure*
Neurological/Behavioral: *lethargy, depression*
Hepatic: *elevated liver enzymes*
Dermatologic: *pruritus*

Death has been reported as an outcome of the adverse events listed above. **Acute renal failure and death have been associated with use of meloxicam in cats.**

Information for Dog Owners: METACAM, like other drugs of its class, is not free from adverse reactions. Owners should be advised of the potential for adverse reactions and be informed of the clinical signs associated with drug intolerance. Adverse reactions may include vomiting, diarrhea, decreased appetite, dark or tarry stools, increased water consumption, increased urination, pale gums due to anemia, yellowing of gums, skin or white of the eye due to jaundice, lethargy, incoordination, seizure, or behavioral changes. **Serious adverse reactions associated with this drug class can occur without warning and in rare situations result in death (see Adverse Reactions). Owners should be advised to discontinue METACAM and contact their veterinarian immediately if signs of intolerance are observed.** The vast majority of patients with drug related adverse reactions have recovered when the signs are recognized, the drug is withdrawn, and veterinary care, if appropriate, is initiated. Owners should be advised of the importance of periodic follow up for all dogs during administration of any NSAID.

Effectiveness: The effectiveness of meloxicam was demonstrated in two field studies involving a total of 277 dogs representing various breeds, between six months and sixteen years of age, all diagnosed with osteoarthritis. Both of the placebo-controlled, masked studies were conducted for 14 days. All dogs received 0.2 mg/kg meloxicam on day 1. All dogs were maintained on 0.1 mg/kg oral meloxicam from days 2 through 14 of both studies. Parameters evaluated by veterinarians included lameness, weight-bearing, pain on palpation, and overall improvement. Parameters assessed by owners included mobility, ability to rise, limping, and overall improvement. In the first field study (n=109), dogs showed clinical improvement with statistical significance after 14 days of meloxicam treatment for all parameters. In the second field study (n=48), dogs receiving meloxicam showed a clinical improvement after 14 days of therapy for all parameters; however, statistical significance was demonstrated only for the overall investigator evaluation on day 7, and for the owner evaluation on day 14.¹

Reference: 1. FOI for NADA 141-213 METACAM (meloxicam oral suspension).

Manufactured for:
Boehringer Ingelheim Vetmedica, Inc.
St. Joseph, MO 64506 U.S.A.

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601401-08/601413-04/6015161-10/6015268-04
Revised 07/2016

18490
06/2018

Brief Summary
NADA 141-219, Approved by FDA

Metacam®

(meloxicam)
5 mg/mL Solution for Injection
Non-steroidal anti-inflammatory drug for use in dogs and cats only

Caution: Federal law restricts this drug to use by or on the order of a licensed veterinarian.

Warning: Repeated use of meloxicam in cats has been associated with acute renal failure and death. Do not administer additional injectable or oral meloxicam to cats. See Contraindications, Warnings, and Precautions for detailed information.

Description: Meloxicam is a non-steroidal anti-inflammatory drug (NSAID) of the oxicam class. Each mL of this sterile product for injection contains meloxicam 5.0 mg, alcohol 15%, glycofuro 10%, poloxamer 188 5%, sodium chloride 0.6%, glycine 0.5% and meglumine 0.3%, in water for injection, pH adjusted with sodium hydroxide and hydrochloric acid.

Indications:
Dogs: METACAM (meloxicam) 5 mg/mL Solution for Injection is indicated in dogs for the control of pain and inflammation associated with osteoarthritis.

Contraindications: Dogs with known hypersensitivity to meloxicam should not receive METACAM 5 mg/mL Solution for Injection.

Warnings: Not for use in humans. Keep this and all medications out of reach of children. Consult a physician in case of accidental ingestion by humans. For IV or SQ injectable use in dogs. All dogs should undergo a thorough history and physical examination before administering any NSAID. Appropriate laboratory testing to establish hematological and serum biochemical baseline data is recommended prior to, and periodically during use of any NSAID in dogs.

Owner should be advised to observe their dogs for signs of potential drug toxicity.

Precautions: The safe use of METACAM 5 mg/mL Solution for Injection in dogs younger than 6 months of age, dogs used for breeding, or in pregnant or lactating bitches has not been evaluated. Meloxicam is not recommended for use in dogs with bleeding disorders, as safety has not been established in dogs with these disorders. Safety has not been established for intramuscular (IM) administration in dogs. When administering METACAM 5 mg/mL Solution for Injection, use a syringe of appropriate size to ensure precise dosing. As a class, cyclo-oxygenase inhibitory NSAIDs may be associated with gastrointestinal, renal and hepatic toxicity. Sensitivity to drug-associated adverse events varies with the individual patient. Dogs that have experienced adverse reactions from one NSAID may experience adverse reactions from another NSAID. Patients at greatest risk for renal toxicity are those that are dehydrated, on concomitant diuretic therapy, or those with existing renal, cardiovascular, and/or hepatic dysfunction. Concurrent administration of potentially nephrotoxic drugs should be carefully approached. NSAIDs may inhibit the prostaglandins that maintain normal homeostatic function. Such anti-prostaglandin effects may result in clinically significant disease in patients with underlying or preexisting disease that has not been previously diagnosed. Since NSAIDs possess the potential to induce gastrointestinal ulcerations and/or perforations, concomitant use with other anti-inflammatory drugs, such as NSAIDs or corticosteroids, should be avoided. If additional pain medication is needed after the administration of the total daily dose of METACAM Oral Suspension, a non-NSAID or noncorticosteroid class of analgesia should be considered. The use of another NSAID is not recommended. Consider appropriate washout times when switching from corticosteroid use or from one NSAID to another in dogs. The use of concomitantly protein-bound drugs with METACAM 5 mg/mL Solution for Injection has not been studied in dogs. Commonly used protein-bound drugs include cardiac, anticonvulsant and behavioral medications. The influence of concomitant drugs that may inhibit metabolism of METACAM 5 mg/mL Solution for Injection has not been evaluated. Drug compatibility should be monitored in patients requiring adjunctive therapy. The effect of cyclo-oxygenase inhibition and the potential for thromboembolic occurrence or a hypercoagulable state has not been studied.

Adverse Reactions:
Dogs: A field study involving 224 dogs was conducted.¹ Based on the results of this study, GI abnormalities (vomiting, soft stools, diarrhea, and inappetence) were the most common adverse reactions associated with the administration of meloxicam.

The following adverse reactions are based on post-approval adverse drug event reporting. The categories are listed in decreasing order of frequency by body system:

Gastrointestinal: *vomiting, diarrhea, melena, gastrointestinal ulceration*
Urinary: *azotemia, elevated creatinine, renal failure*
Neurological/Behavioral: *lethargy, depression*
Hepatic: *elevated liver enzymes*
Dermatologic: *pruritus*

Death has been reported as an outcome of the adverse events listed above. **Acute renal failure and death have been associated with the use of meloxicam in cats.**

Information For Dog Owners: Meloxicam, like other NSAIDs, is not free from adverse reactions. Owners should be advised of the potential for adverse reactions and be informed of the clinical signs associated with NSAID intolerance. Adverse reactions may include vomiting, diarrhea, lethargy, decreased appetite and behavioral changes. Dog owners should be advised when their pet has received a meloxicam injection. Dog owners should contact their veterinarian immediately if possible adverse reactions are observed, and dog owners should be advised to discontinue METACAM therapy.

Effectiveness:
Dogs: The effectiveness of METACAM 5 mg/mL Solution for Injection was demonstrated in a field study involving a total of 224 dogs representing various breeds, all diagnosed with osteoarthritis.¹ This placebo-controlled, masked study was conducted for 14 days. Dogs received a subcutaneous injection of 0.2 mg/kg METACAM 5 mg/mL Solution for Injection on day 1. The dogs were maintained on 0.1 mg/kg oral meloxicam from days 2 through 14. Variables evaluated by veterinarians included lameness, weight-bearing, pain on palpation, and overall improvement. Variables assessed by owners included mobility, ability to rise, limping, and overall improvement.

In this field study, dogs showed clinical improvement with statistical significance after 14 days of meloxicam treatment for all variables.

Reference: 1. FOI for NADA 141-219 METACAM (meloxicam) 5 mg/mL Solution for Injection.

Manufactured for:
Boehringer Ingelheim Vetmedica, Inc.
St. Joseph, MO 64506 U.S.A.

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Revised 08/2014

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06/2018



Out in the open: Queenstown Veterinary Hospital's exterior was designed to be warm and inviting, yet clean and professional. The stone exterior completes the coastal look and the clear signage catches commuters' attention in the Baltimore and Washington, D.C., metro areas. Bonus: "The staff enter and exit through the door with a keypad," practice owner Dr. Marianne Bailey says. "This eliminated the need for any keys, which is great."

Grow with the flow

For Queenstown Veterinary Hospital in Queenstown, Maryland, bigger is better for clients, patients and the veterinary team. Find out how this tiny clinic on the coast evolved into a hospital with more than double the space and an award-winning floor plan. *By Ashley Griffin*

Sometimes, when you buy a 900-square-foot veterinary practice, you can make it work—other times, you'll need a bigger building. For Marianne Bailey, DVM, owner of Queenstown Veterinary Hospital in Queenstown, Maryland, it was definitely the latter.

"The building was a renovated gas station and had one exam room," says Dr. Bailey. "I purchased the hospital in 2014 and quickly realized the practice was far too busy for the square footage we were working in."

In order for the practice to grow (and offer the best client and patient experience), she first needed to move her team. One successful move later, and she and her team had a brand-new 1,900-square-foot veterinary hospital—that soon after earned a Merit Award in the 2018 dvm360 Hospital Design Competition.

Find out what made our judges fall for this East Coast beauty and steal these veterinary hospital hacks for your next project.

Think outside the veterinary industry

When it came to her design inspiration, Dr. Bailey didn't stick solely to veterinary hospitals. This was especially helpful when it came to designing less-clinical areas in the hospital. "The break room concept was developed after I saw a photo of a law firm's break room and loved the feel," Dr. Bailey says. "I created a Pinterest board of the looks I liked and disliked. Some photos were of veterinary hospitals, but others were from other types of businesses."

She wanted her new veterinary hospital to be clean and professional, yet warm and inviting. Sharing her Pinterest board with her architect's interior designer was an easy way to communicate the vision for the new space, Dr. Bailey says.

Take it room by room

The key to a stellar floor plan? Talk to your architect, Dr. Bailey says. Her team of architects walked her through the hospital design process, starting at the

By the numbers

Queenstown Veterinary Hospital—Queenstown, Maryland

Owner: Dr. Marianne Bailey

Number of doctors: 4

Exam rooms: 5

Total cost: \$2,043,000

Cost per square foot: \$385

Square footage: 1,900

Structure type: Freestanding, new

Architect: Mark Moore, FMD Architects

Photographer: Lori Gross, Red Leash Pet Photography

front door and moving all the way to the back of the clinic.

"As we discussed each room, they asked me what I wanted and didn't want," Dr. Bailey explains. "They visited for a day and watched us work to see how we normally did things. We also discussed the ways we were operating that I wanted to do differently in a new building."



Have you recently built or remodeled the vet clinic of your dreams?

Enter the 2019 dvm360 Hospital Design Competition at dvm360.com/hdc19entry. In addition to helping lead the profession by example, your practice could end up featured on dvm360.com and on the pages of dvm360 magazine. Visit dvm360.com/pastwinners to check out some award-winning designs.

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NEWS | Hospital design

She says the hours spent discussing workflow with her team of architects is what made her floor plan a success in the end.

Design for the felines

While some veterinary hospitals seem to be for the dogs, Dr. Bailey wanted to design for feline patients, too. "I think cats are overlooked and their needs are very different from dogs," she says. "We wanted to create a space where cats would be stimulated and have room to spread out."

This is why they strategically placed the cat condos on the opposite side of the clinic from the dogs, creating a quieter, more peaceful

boarding experience. Not only are the cat condos spacious—they can be adjusted to expand horizontally and vertically—but they can also become adjoining cages, giving cats more room to roam and relax.

"From check-in to checkout, I want our clients and their pets to be comfortable," Dr. Bailey says. "A stress-free veterinary experience helps pet owners be more proactive in their pet's veterinary care."

Ashley Griffin is a freelance writer based in Kansas City and a former content specialist for dvm360.



Room to breathe: Queenstown's lobby is the epitome of comfort with a hospitality station, plush bench seating and privacy panels. "I love the feel when you walk into the lobby," Dr. Bailey says. "The stone wall with our logo looks professional and makes me smile. I designed the logo with a local artist and I'm really proud of it." The "hardwood" floors are actually durable ceramic tile.



Keyless for convenience: Dr. Bailey wanted the break room to be colorful, quiet and relaxing for the team to enjoy. It's also designed for convenience with staff lockers for storage, flexible seating options and keyless entry.



All about the setup: These two-door exam rooms work well for Dr. Bailey and her team. They opted for bench seating for clients and skipped exam room sinks (which they haven't regretted so far). Plus, there's a peephole for team members to check before entering the room. "The best design feature in the hospital is the setup of the exam rooms leading to the charting area with the treatment room in the back," Dr. Bailey says.



All-access surgery: "The windows and lights make this a great surgery room," Dr. Bailey says. "We love having a separate AC unit as well." The pass-through cabinets from surgery prep ensure technicians have easy access to surgical supplies, and the window allows for monitoring and observation as the doctor prepares for surgery.



Cats only: The reviews are unanimous; this space is a hit! These spacious cat condos can be adjusted to expand horizontally and vertically, or even opened up into adjoining cages. "The cats love the versatility of the condos and the windows outside and into the hospital," Dr. Bailey says. "Also, it's located on the opposite side from the dog ward, which helps keep it quieter for cats."



The great outdoors: This outside space is a puppy's paradise! The team says pets are very accepting of the artificial turf and it's easy to disinfect and maintain. And, yes, they use their central vacuum outside too! "Our central vacuum system is located just inside the door so we can use our sanitation spray on the grass to disinfect," Dr. Bailey says.



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References:

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*Advanced Microcurrent Technology is a trademark of Vetnet Innovations, Inc.

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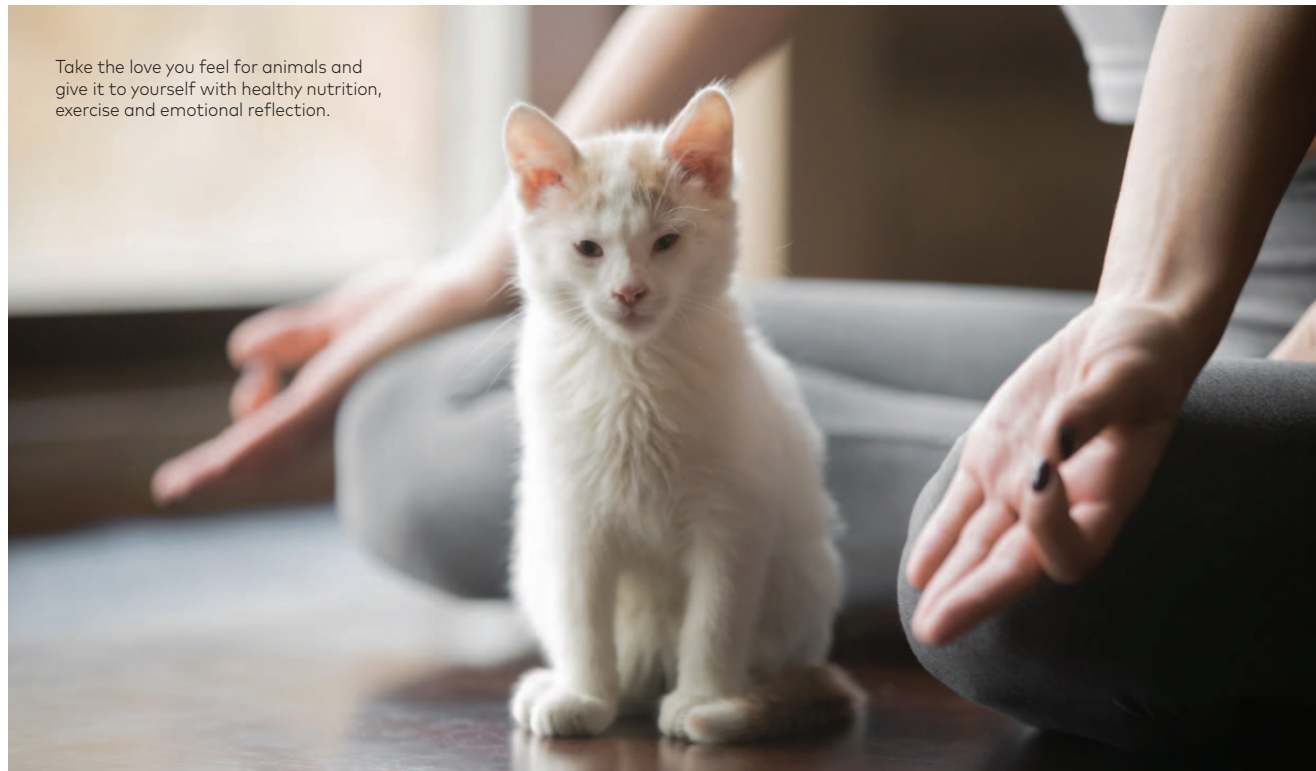
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3 steps to a healthier team

The data on stress in the veterinary profession

Veterinary medicine is a stressful profession. You know it from experience. Here's the data:

In the past year, 66 percent of practicing veterinarians—including an astonishing 79 percent of associate veterinarians—have experienced depression, anxiety, compassion fatigue, burnout and/or alcohol or drug abuse.

That's according to a comprehensive national study, the Merck Animal Health Veterinary Wellbeing Study.¹ The study was conducted in collaboration with the AVMA and Brakke Consulting.

The study also found that when veterinarians were presented a long list of issues facing the profession, "stress levels of veterinarians" was among the top three most critically important named by respondents. (High student debt and suicide among veterinarians were the other two most critically important issues.)

Though not measured in the study, veterinary team members are as vulnerable to stress as veterinarians. Moreover, illness and death of animals create stress in clients, too. Research has shown that about 30 percent of clients experience severe grief when they euthanize or otherwise lose a valued pet.²

References

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2. Adams CL, Bonnett BN, Meek AH. Predictors of owner response to companion animal death in 177 clients from 14 practices in Ontario. *J Am Vet Med Assoc* 2000;217(9):1303-1309.

Stress on the job can be healthy. It means you care about your patients and clients, and it can engage you in the moment to do your best work. But out-of-control stress can harm your emotional and physical well-being. Here are tips to manage your own stress and share that knowledge with your team. *By John Volk and Elizabeth Strand, PhD*

Stress in veterinary medicine comes from dealing with life and death, emergencies, schedule disruptions, work-life balance conflicts and the very real financial pressures that come not only from reconciling patient care with client resources, but also the student debt faced by a large number of practitioners. The stoic "game face" some people put on does not mitigate the real negative effects that unmanaged stress can take on one's mental and physical health.

Of course, stress can be beneficial, triggering the release of adrenaline that facilitates rapid reaction time and even heroic accomplishments. In that respect, stress is nature's stimulus to increase proficiency and productivity at critical times. A tree or vine under drought stress, for example, will often produce more fruit because fruit is what propagates the species. That's why the best vineyards are planted on poor, rocky soil unsuitable for most other types of agriculture.

In and of itself, stress is not problematic. In fact, a life without any stress may feel boring and without meaning. We feel stressed when we're engaging in work or relationships and activities that we care about. Stress becomes problematic when it's not acknowledged or managed. Chronic

and poorly managed stress can be debilitating and result in poor physical and mental health. It can tear at the fabric that holds a team together. Therefore, it's important to take proactive measures to manage personal and team stress. Here are some ways you can do that.

1. Don't be afraid to talk about it

Recognize and acknowledge that stress is part of the environment in veterinary practice. Openly discussing stress gives people "permission" to acknowledge their own stressors and deal with them. It also brings relief to those who feel burdened by stress but feel isolated in their experience.

Discuss stress at your next team meeting. Share some of the data from the Merck Animal Health Veterinary Wellbeing Study (get the findings at vetwellbeing.com). Encourage people to recognize stress in their own lives and the circumstances that most often trigger it.

2. Nourish well-being

"Well-being" is a well-established psychological construct. It's basically a subjective measure of how people feel about their lives compared to

Take a bite out of Lyme.



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NexGard® (afoxolaner) is the only product approved by the FDA for the prevention of infections that cause Lyme disease in dogs as a result of killing black-legged ticks.



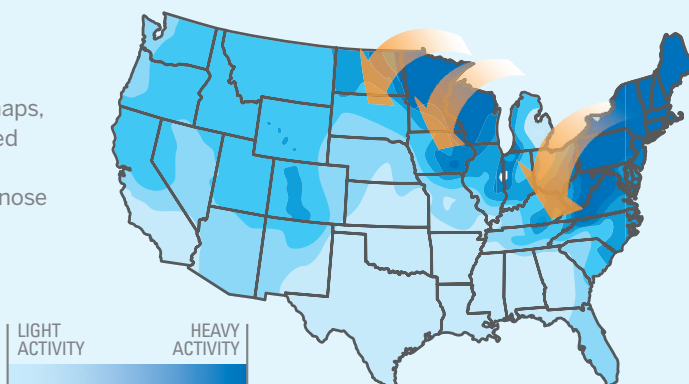
Lyme disease is spreading

According to the CAPC Parasite Prevalence maps, Lyme disease is the most commonly diagnosed tick-borne disease in dogs in the US.¹ It's a debilitating illness that can be difficult to diagnose and treat – but easy to prevent in dogs.

Straight from the CAPC:

"Nationwide, dogs exposed to the agent of Lyme disease are continuing to be discovered in areas outside recognized endemic regions."²

LYME DISEASE - CAPC FORECAST



Proven Results against *B. burgdorferi* transmission³

The ability of NexGard (afoxolaner) to prevent the transmission of *Borrelia burgdorferi* by killing infected ticks

- The study evaluated two groups of dogs: an untreated control group and a NexGard-treated group.
- The dogs in the treated group received NexGard on day 0.
- All dogs were:
 - Infested with ~50 adult *Ixodes scapularis* ticks (with a *B. burgdorferi* infection rate of 63.1%) on day 28.
 - Tested using Lyme Quant C6® and SNAP® 4DX® on days 48, 62, 76, 90, and 102.
 - Tested for the presence of *B. burgdorferi* DNA via PCR testing. Skin biopsies collected on day 104.

Detection of <i>Borrelia burgdorferi</i> infection	Untreated Control Group	NexGard-treated Group
Lyme Quant C6 & SNAP 4DX	ALL dogs tested positive	ALL dogs tested negative
PCR	ALL dogs tested positive	ALL dogs tested negative
		100% PROTECTED

NexGard is a Merial product. Merial is now part of Boehringer Ingelheim.

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IMPORTANT SAFETY INFORMATION: NexGard is for use in dogs only. The most frequently reported adverse reactions include vomiting, pruritus, lethargy, diarrhea and lack of appetite. The safe use of NexGard in pregnant, breeding, or lactating dogs has not been evaluated. Use with caution in dogs with a history of seizures or neurologic disorders. For more information, see the full prescribing information or visit www.NexGardForDogs.com.



**Boehringer
Ingelheim**

NexGard® (afoxolaner) Chewables

CAUTION: Federal (USA) law restricts this drug to use by or on the order of a licensed veterinarian.

Description:

NexGard® (afoxolaner) is available in four sizes of beef-flavored, soft chewables for oral administration to dogs and puppies according to their weight. Each chewable is formulated to provide a minimum afoxolaner dosage of 1.14 mg/lb (2.5 mg/kg). Afoxolaner has the chemical composition 1-Naphthalenecarboxamide, 4-[5- [3-chloro-5-(trifluoromethyl)-phenyl]-4, 5-dihydro-5-(trifluoromethyl)-3-isoxazolyl]-N-[2-oxo-2-[(2,2,2-trifluoroethyl)amino]ethyl].

Indications:

NexGard kills adult fleas and is indicated for the treatment and prevention of flea infestations (*Ctenocephalides felis*), and the treatment and control of Black-legged tick (*Ixodes scapularis*), American Dog tick (*Dermacentor variabilis*), Lone Star tick (*Amblyomma americanum*), and Brown dog tick (*Rhipicephalus sanguineus*) infestations in dogs and puppies 8 weeks of age and older, weighing 4 pounds of body weight or greater, for one month. NexGard is indicated for the prevention of *Borrelia burgdorferi* infections as a direct result of killing *Ixodes scapularis* vector ticks.

Dosage and Administration:

NexGard is given orally once a month, at the minimum dosage of 1.14 mg/lb (2.5 mg/kg).

Dosing Schedule:

Body Weight	Afoxolaner Per Chewable (mg)	Chewables Administered
4.0 to 10.0 lbs.	11.3	One
10.1 to 24.0 lbs.	28.3	One
24.1 to 60.0 lbs.	68	One
60.1 to 121.0 lbs.	136	One
Over 121.0 lbs.	Administer the appropriate combination of chewables	

NexGard can be administered with or without food. Care should be taken that the dog consumes the complete dose, and treated animals should be observed for a few minutes to ensure that part of the dose is not lost or refused. If it is suspected that any of the dose has been lost or if vomiting occurs within two hours of administration, redose with another full dose. If a dose is missed, administer NexGard and resume a monthly dosing schedule.

Flea Treatment and Prevention:

Treatment with NexGard may begin at any time of the year. In areas where fleas are common year-round, monthly treatment with NexGard should continue the entire year without interruption.

To minimize the likelihood of flea reinfestation, it is important to treat all animals within a household with an approved flea control product.

Tick Treatment and Control:

Treatment with NexGard may begin at any time of the year (see **Effectiveness**).

Contraindications:

There are no known contraindications for the use of NexGard.

Warnings:

Not for use in humans. Keep this and all drugs out of the reach of children. In case of accidental ingestion, contact a physician immediately.

Precautions:

Afoxolaner is a member of the isoxazoline class. This class has been associated with neurologic adverse reactions including tremors, ataxia, and seizures. Seizures have been reported in dogs receiving isoxazoline class drugs, even in dogs without a history of seizures. Use with caution in dogs with a history of seizures or neurologic disorders (see **Adverse Reactions** and **Post-Approval Experience**).

The safe use of NexGard in breeding, pregnant or lactating dogs has not been evaluated.

Adverse Reactions:

In a well-controlled US field study, which included a total of 333 households and 615 treated dogs (415 administered afoxolaner; 200 administered active control), no serious adverse reactions were observed with NexGard.

Over the 90-day study period, all observations of potential adverse reactions were recorded. The most frequent reactions reported at an incidence of > 1% within any of the three months of observations are presented in the following table. The most frequently reported adverse reaction was vomiting. The occurrence of vomiting was generally self-limiting and of short duration and tended to decrease with subsequent doses in both groups. Five treated dogs experienced anorexia during the study, and two of those dogs experienced anorexia with the first dose but not subsequent doses.

Table 1: Dogs With Adverse Reactions.

	Treatment Group			
	Afoxolaner		Oral active control	
	N ¹	% (n=415)	N ²	% (n=200)
Vomiting (with and without blood)	17	4.1	25	12.5
Dry/Flaky Skin	13	3.1	2	1.0
Diarrhea (with and without blood)	13	3.1	7	3.5
Lethargy	7	1.7	4	2.0
Anorexia	5	1.2	9	4.5

¹Number of dogs in the afoxolaner treatment group with the identified abnormality.

²Number of dogs in the control group with the identified abnormality.

In the US field study, one dog with a history of seizures experienced a seizure on the same day after receiving the first dose and on the same day after receiving the second dose of NexGard. This dog experienced a third seizure one week after receiving the third dose. The dog remained

enrolled and completed the study. Another dog with a history of seizures had a seizure 19 days after the third dose of NexGard. The dog remained enrolled and completed the study. A third dog with a history of seizures received NexGard and experienced no seizures throughout the study.

Post-Approval Experience (July 2018):

The following adverse events are based on post-approval adverse drug experience reporting. Not all adverse events are reported to FDA/CVM. It is not always possible to reliably estimate the adverse event frequency or establish a causal relationship to product exposure using these data.

The following adverse events reported for dogs are listed in decreasing order of reporting frequency for NexGard:

Vomiting, pruritus, lethargy, diarrhea (with and without blood), anorexia, seizure, hyperactivity/restlessness, panting, erythema, ataxia, dermatitis (including rash, papules), allergic reactions (including hives, swelling), and tremors.

Contact Information:

For a copy of the Safety Data Sheet (SDS) or to report suspected adverse drug events, contact Merial at 1-888-637-4251 or www.nexgardfordogs.com.

For additional information about adverse drug experience reporting for animal drugs, contact FDA at 1-888-FDA-VETS or online at <http://www.fda.gov/AnimalVeterinary/SafetyHealth>.

Mode of Action:

Afoxolaner is a member of the isoxazoline family, shown to bind at a binding site to inhibit insect and acarine ligand-gated chloride channels, in particular those gated by the neurotransmitter gamma-aminobutyric acid (GABA), thereby blocking pre- and post-synaptic transfer of chloride ions across cell membranes. Prolonged afoxolaner-induced hyperexcitation results in uncontrolled activity of the central nervous system and death of insects and acarines. The selective toxicity of afoxolaner between insects and acarines and mammals may be inferred by the differential sensitivity of the insects and acarines' GABA receptors versus mammalian GABA receptors.

Effectiveness:

In a well-controlled laboratory study, NexGard began to kill fleas four hours after initial administration and demonstrated >99% effectiveness at eight hours. In a separate well-controlled laboratory study, NexGard demonstrated 100% effectiveness against adult fleas 24 hours post-infestation for 35 days, and was >93% effective at 12 hours post-infestation through Day 21, and on Day 35. On Day 28, NexGard was 81.1% effective 12 hours post-infestation. Dogs in both the treated and control groups that were infested with fleas on Day -1 generated flea eggs at 12- and 24-hours post-treatment (0-11 eggs and 1-17 eggs in the NexGard treated dogs, and 4-90 eggs and 0-118 eggs in the control dogs, at 12- and 24-hours, respectively). At subsequent evaluations post-infestation, fleas from dogs in the treated group were essentially unable to produce any eggs (0-1 eggs) while fleas from dogs in the control group continued to produce eggs (1-141 eggs).

In a 90-day US field study conducted in households with existing flea infestations of varying severity, the effectiveness of NexGard against fleas on the Day 30, 60 and 90 visits compared with baseline was 98.0%, 99.7%, and 99.9%, respectively.

Collectively, the data from the three studies (two laboratory and one field) demonstrate that NexGard kills fleas before they can lay eggs, thus preventing subsequent flea infestations after the start of treatment of existing flea infestations.

In well-controlled laboratory studies, NexGard demonstrated >97% effectiveness against *Dermacentor variabilis*, >94% effectiveness against *Ixodes scapularis*, and >93% effectiveness against *Rhipicephalus sanguineus*, 48 hours post-infestation for 30 days. At 72 hours post-infestation, NexGard demonstrated >97% effectiveness against *Amblyomma americanum* for 30 days. In two separate, well-controlled laboratory studies, NexGard was effective at preventing *Borrelia burgdorferi* infections after dogs were infested with *Ixodes scapularis* vector ticks 28 days post-treatment.

Animal Safety:

In a margin of safety study, NexGard was administered orally to 8 to 9-week-old Beagle puppies at 1, 3, and 5 times the maximum exposure dose (6.3 mg/kg) for three treatments every 28 days, followed by three treatments every 14 days, for a total of six treatments. Dogs in the control group were sham-dosed. There were no clinically-relevant effects related to treatment on physical examination, body weight, food consumption, clinical pathology (hematology, clinical chemistry, or coagulation tests), gross pathology, histopathology or organ weights. Vomiting occurred throughout the study, with a similar incidence in the treated and control groups, including one dog in the 5x group that vomited four hours after treatment.

In a well-controlled field study, NexGard was used concomitantly with other medications, such as vaccines, anthelmintics, antibiotics (including topicals), steroids, NSAIDs, anesthetics, and antihistamines. No adverse reactions were observed from the concomitant use of NexGard with other medications.

Storage Information:

Store at or below 30°C (86°F) with excursions permitted up to 40°C (104°F).

How Supplied:

NexGard is available in four sizes of beef-flavored soft chewables: 11.3, 28.3, 68 or 136 mg afoxolaner. Each chewable size is available in color-coded packages of 1, 3 or 6 beef-flavored chewables.

NADA 141-406, Approved by FDA

Marketed by: Frontline Vet Labs™, a Division of Merial, Inc.

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¹ Parasite Prevalence Maps. Companion Animal Parasite Council website. <https://www.capcvet.org/maps/#2017/all/lyme-disease/dog/united-states/>. Accessed August 15, 2018.

² Elevated risk of heartworm disease and Lyme disease continues in 2018. Companion Animal Parasite Council website. <https://www.capcvet.org/articles/elevated-risk-of-heartworm-disease-and-lyme-disease-continues-in-2018/>. Accessed August 15, 2018.

³ Freedom of Information Summary, Supplemental NADA 141-406. NexGard (afloxolaner). July 13, 2018.

the best or worst possible lives they can imagine. Our study found that, on average, older veterinarians had higher levels of well-being and younger veterinarians lower compared to the general population.

Well-being and stress can be related. The study found that higher levels of well-being were associated with people who:

- > Travel for pleasure
- > Read for pleasure
- > Spend time with family
- > Socialize with friends
- > Have a hobby
- > Exercise regularly.

These activities represent a person's investment in self-care and work-life balance. They should be encouraged and celebrated in the work environment. Here's a way to do that: Periodically, in team meetings, invite people to talk about their hobbies, what they did on their last vacation or what their favorite social activity is when they get together with friends. Give a Starbucks gift card to the person voted by the team with the most unusual hobby, most novel vacation, etc.

What else can you do to reduce stress and foster well-being in practice?

- > Bring healthy snacks like nuts, trail mix or fruit to team meetings or the break room, instead of doughnuts or sweets. Evidence is growing about the way nutrition affects mental health.
- > Hang inspirational or motivational posters in work areas. They foster positive thinking. Such posters are widely available from Internet suppliers and office supply stores.
- > Provide a comfortable space of an entire room for veterinary team members to briefly exercise or do yoga, or even to get away for a few minutes of reading or reflection. It's amazing what a few minutes of downtime after a stressful episode can do to refresh people.
- > Periodically invite a mental health professional from the community to speak to your team about the importance of self-care, stress management plans and well-being (see "Manage your mental messes").

3. Publicize resources

Every practice should post a list of outside resources that people can turn to when needed. Distribute this list to practice employees and put the list in the employee manual. Include:

Manage your mental messes

In addition to healthy activities, it's valuable for each individual to have a personal stress management plan. Such a plan includes activities you commit to doing daily. It's likely impossible to do everything on your stress management plan every day, but committing to one activity per day is doable and necessary to maintain health as a veterinary professional. Here are some examples:

> **Five to seven minutes of high-intensity interval training (HIIT).** HIIT generally involves a brief warm-up followed by physical activity (for example, fast walking, jogging, jumping jacks or stair climbing) followed by a brief cool-down period. The goal is to have a 2:1 ratio of work to recovery. HIIT works not only to reduce stress and improve condition, but also to improve glucose metabolism.

> **Breathing exercises.** Here's how one model, 4-7-8, works: Breathe in through your nose for four counts, hold your breath for seven counts, and breathe out for eight counts. Repeat. This can help you calm down during the day or fall back asleep at night by engaging the parasympathetic nervous system.

> **Relaxation techniques.** Here's a sample: Sit in a chair or lie still and concentrate on relaxing each part of your body, one limb at a time. Start with, say, your left foot, then left leg, right foot, then right leg, and so on. Keep each limb relaxed as you progress. Relax your head and neck last.

> **Eat yogurt.** Getting enough probiotics in your diet can help your central nervous system manage stress.¹

> **Eat snacks.** Eating plenty of fruits, veggies and nuts is not only good for your body but also supports positive improvement in mood.^{2,3}

> **Practice mindfulness.** Five minutes of mindfulness could look like this: Sit in a chair or cross-legged on the floor with your back straight. (If on the floor, sit on a pillow to raise your hips off the floor.) Breathe in and out for one count. Count your breaths out until you reach five. Start again. If you get to 10, you may notice your mind has wandered. That's OK and expected. Just start again. Consider downloading the app Insight Timer at insighttimer.com. It's free and includes several resources for learning to practice mindfulness.

> **Call a friend.** In this day and age, when we spend so much time emailing and texting, it's good to actually have a conversation. Call a personal friend or family member—a connection outside of work and someone positive who lifts your spirits. Even a 10-minute conversation can help put work stress into perspective.

People should pick the stress relief strategies that work best for them.

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Financial planners. Our study demonstrated that financial pressures, often caused by high student debt loads, were one of the biggest sources of stress for associate veterinarians. A financial plan can help an associate determine how to best deal not only with student debt but also with other needs such as home and car purchases, child care and perhaps even saving for retirement or investing in a

,veterinary practice. Identify certified financial planners in the community and share their contact information with employees.

Community social workers and psychologists. Nearly 10 percent of veterinarians younger than 45 years old are suffering from severe psychological distress, according to our study. Only about half are receiving professional treatment. Identify

mental health professionals in the community, and share the list with employees so it's available if and when they need it. Employees should be encouraged to work with counselors when needed. Just as important, the practice should allow employees time off for these appointments.

Telebehavioral health services.

Phone calls, video chats and message boards are a new way employees can work with a counselor. There are several available through e-counseling.com. Another novel service is 7cups.com, a free, anonymous and confidential online text chat service with trained listeners, online therapists and counselors.

Veterinary organization resources.

Many professional veterinary organizations now have services or more information on stress available online. These include dvm360.com, AVMA, AAHA, VIN and many state veterinary medical associations. Those resources can be found on the organizations' websites.

Local mobile crisis units. If someone appears to be facing an immediate mental health crisis, help is available in virtually every community by typing "mobile crisis" into your computer search engine.

911. Any time you suspect that someone may be a danger to themselves or others, dial 911 immediately.

Suicide prevention hotline. If you suspect that someone you know is feeling suicidal, the National Suicide Prevention Hotline is 800-273-8255. You can also text "HELLO" to 741741 for the Crisis Text Line or visit crisistextline.org, and a live trained counselor will respond.

Stress is an inescapable component of veterinary practice. However, stress in and of itself is not "bad." It's necessary for living a productive and meaningful life and is the result of caring about what you do. Stress can be managed on an individual as well as practice level, and you'll enjoy the benefits of higher personal well-being as well as better employee morale.

Elizabeth Strand, PhD, is director of Veterinary Social Work at University of Tennessee College of Veterinary Medicine. John Volk is senior consultant at Brakke Consulting. Both authors were investigators in the Merck Animal Health Veterinary Wellbeing Study.

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Letter to dvm360: Hot water bottles in the hot seat

A surgery article recommending hot water bottles as patient warming devices draws concern due to patient burn risks.

I received the July 2018 issue of *dvm360* magazine today. I enjoy the opinions and expert tips but was very concerned about some information presented in the article titled, “6 savvy tips and tricks to try in the surgical suite.”

In this article, Jennifer Wardlaw, DVM, MS, DACVS-SA, recommends using hot water bottles to keep patients warm, but hot water bottles can cause serious burns in our patients and should never be used.

In the past, our veterinary hospital routinely used hot water bottles (IV bags heated in the microwave) to help us keep pets warm. These were always warmed by an experienced nurse and were always wrapped in fleece or a towel before being placed next to a patient.

However, several years ago, we used hot water bottles wrapped in fleece to warm a surgical patient and the patient ended up with third-degree burns. The burns were severe enough that, despite three surgical procedures and round-the-clock critical care, the dog passed away after nine days.

In the last several years I have spoken with many veterinarians who’ve had similar experiences with hot water bottles for warming. Hot water bottle burns have also been reported in online forums.

Last year, I was granted a certificate in patient safety and quality from the Institute of Healthcare Improvement. In taking classes for this certificate, one of my biggest learnings was that in order to improve

in healthcare, we must talk openly about risks and work to make our hospitals “mistake-proof.” For heating, that means we should only use methods that have no risk of burns to patients.

*Beth Davidow, DVM, DACVECC
Consultant, VIN*

Dr. Wardlaw’s response

Anytime you’re using a self-heated item like a water bottle, blanket, tube sock or gel pack on a veterinary surgery patient, it’s important to first test it on the inside of your arm before placing it near the patient—even if it’s wrapped in a blanket or fleece. This practice is very similar to what you do when you warm a baby bottle. You must test the temperature of the liquid first before giving it to the infant.

Since surgery patients are anesthetized, they are unable to move away and are at risk of sustaining burns if the heating device is too hot. So if you are not using an FDA-approved heating device, extra precautions are necessary to minimize any potential risk to the patient.

I consider this to be a common-sense safety precaution for heating devices, so it was not covered in this brief article. Device malfunctioning was also not covered. I would never advocate for electrical heating blankets as these will have hot spots in short circuits. Only FDA-approved warming blankets (such as the Hot Dog or ChillBuster) should be even remotely considered.

*Jennifer Wardlaw, DVM, MS,
DACVS-SA
Owner and chief surgeon
Gateway Veterinary Surgery*

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Brief Summary: Before using Loxicom Oral Suspension, consult the product insert, a summary of which follows.

Caution: Federal law restricts this drug to use by or on the order of a licensed veterinarian.

Description: Meloxicam is a non-steroidal anti-inflammatory drug (NSAID) of the oxicam class.

Indications: Loxicom Oral Suspension is indicated for the control of pain and inflammation associated with osteoarthritis in dogs.

Contraindications: Dogs with known hypersensitivity to meloxicam should not receive Loxicom Oral Suspension. **Do not use Loxicom Oral Suspension in cats. Acute renal failure and death have been associated with the use of meloxicam in cats.**

Warnings: Not for use in humans. Keep this and all medications out of reach of children. Consult a physician in case of accidental ingestion by humans. **For oral use in dogs only.** As with any NSAID all dogs should undergo a thorough history and physical examination before the initiation of NSAID therapy. Appropriate laboratory testing to establish hematological and serum biochemical baseline data is recommended prior to and periodically during administration. To report suspected adverse reactions, to obtain a Material Safety Data Sheet, or for technical assistance, call Norbrook at 1-866-591-5777.

Precautions: The safe use of Loxicom Oral Suspension in dogs younger than 6 months of age, dogs used for breeding,

or in pregnant or lactating dogs has not been evaluated. As a class, cyclo-oxygenase inhibitory NSAIDs may be associated with gastrointestinal, renal and hepatic toxicity. Sensitivity to drug-associated adverse events varies with the individual patient.

Patients at greatest risk for renal toxicity are those that are dehydrated, on concomitant diuretic therapy, or those with existing renal, cardiovascular, and/or hepatic dysfunction. Concurrent administration of potentially nephrotoxic drugs should be carefully approached. NSAIDs may inhibit the prostaglandins that maintain normal homeostatic function. Such anti-prostaglandin effects may result in clinically significant disease in patients with underlying or pre-existing disease that has not been previously diagnosed. Since NSAIDs possess the potential to induce gastrointestinal ulcerations and/or perforations, concomitant use with other anti-inflammatory drugs, such as NSAIDs or corticosteroids, should be avoided or closely monitored. The use of concomitantly protein-bound drugs with Loxicom Oral Suspension has not been studied in dogs. Commonly used protein-bound drugs include cardiac, anticonvulsant and behavioral medications. The influence of concomitant drugs that may inhibit metabolism of Loxicom Oral Suspension has not been evaluated. Drug compatibility should be monitored in patients requiring adjunctive therapy.

Adverse Reactions: Field safety was evaluated in 306 dogs. Based on the results of two studies, GI abnormalities (vomiting, soft stools, diarrhea, and inappetence) were the most common adverse reactions associated with the administration of meloxicam. Of the dogs that took meloxicam (n=157), forty experienced vomiting, nineteen experienced diarrhea/soft stool, five experienced inappetence, and one each experienced bloody stool, bleeding gums after dental procedure, lethargy/swollen carpus, and epiphora. Of the dogs that took the placebo (n=149), twenty-three experienced vomiting, eleven experienced diarrhea/soft stool, and one experienced inappetence. In foreign suspected adverse drug reaction (SADR) reporting over a 9 year period, incidences of adverse reactions related to meloxicam administration included: auto-immune hemolytic anemia (1 dog), thrombocytopenia (1 dog),

polyarthritis (1 dog), nursing puppy lethargy (1 dog), and pyoderma (1 dog).

Effectiveness: The effectiveness of meloxicam was demonstrated in two field studies involving a total of 277 dogs representing various breeds, between six months and sixteen years of age, all diagnosed with osteoarthritis. Both of the placebo-controlled, masked studies were conducted for 14 days. All dogs received 0.2 mg/kg on day 1. All dogs were maintained on 0.1 mg/kg oral meloxicam from days 2 through 14 of both studies. Parameters evaluated by veterinarians included lameness, weight-bearing, pain on palpation, and overall improvement. Parameters assessed by owners included mobility, ability to rise, limping, and overall improvement. In the first field study (n=109), dogs showed clinical improvement with statistical significance after 14 days of meloxicam treatment for all parameters. In the second field study (n=48), dogs receiving meloxicam showed a clinical improvement after 14 days of therapy for all parameters; however, statistical significance was demonstrated only for the overall investigator evaluation on day 7, and for the owner evaluation on day 14.

How Supplied: Loxicom Oral Suspension 1.5 mg/mL: 10, 32 and 100 mL bottles with small and large dosing syringes.

Storage: Store at controlled room temperature 68-77°F (20-25°C). Excursions permitted between 59°F and 86°F (15°C and 30°C). Brief exposure to temperature up to 104°F (40°C) may be tolerated provided the mean kinetic temperature does not exceed 77°F (25°C); however such exposure should be minimized.

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Observe label directions. Do not use Loxicom Oral Suspension in cats. Acute renal failure and death have been associated with the use of meloxicam in cats. As with any medication, side effects may occur. These are usually mild, but may be serious. The most common side effects reported in field studies were vomiting, soft stool/diarrhea and decreased appetite. If side effects occur, discontinue treatment immediately and consult a veterinarian. Dogs should be evaluated for pre-existing medical conditions prior to treatment and monitored during therapy. See product labeling for full product information.

1018-000-M02A





Rx vs. natural:

A parasiticide clash

A DVM recommending only natural flea and tick prevention is reported to the board. Will her approach be deemed negligent?

Dr. Edward Kline has practiced small animal veterinary medicine for 41 years. A well-respected practitioner and advocate, Dr. Kline has endeavored to give back to his profession by serving as an officer in his local veterinary association, taking leadership positions in other professional organizations and at his alma mater, and assisting colleagues whenever possible.

Over a span of two weeks, four of Dr. Kline's clients have come into his clinic to return their prescription topical flea and tick medications. When team members ask why, all four explain that they feel the preventives are unsafe for their pets.

On further inquiry, two of these clients mention that they've recently accompanied a friend during her pet's first visit to another local veterinarian. They say the neighboring veterinarian, Dr. Eleanor Palm, examined the pet and recommended all-natural products to prevent and control flea

and tick issues. She said she thought prescription oral and topical medications were dangerous and had even killed several of her beloved patients. She recommended that her client stop using prescription flea and tick preventives immediately, adding that she hoped irreversible damage had not already been done.

Dr. Kline absorbs these accounts, then tells his clients as tactfully as he can that the preventives are FDA-approved and he's never had any issues with them. But he also explains that he respects his clients' wishes and will be glad to recommend a natural alternative for flea and tick prevention.

Later, Dr. Kline feels unsettled and decides to call the source of his unrest. The conversation with Dr. Palm cannot be described as a collegial exchange of ideas. Dr. Palm says she thinks it's her duty to spread the word about the threat these mainstream prescription products pose, citing anecdotal evidence from her own patients. Dr. Kline tells her that such a hard-and-fast opinion is actually a disservice to her patients. Dr. Palm disagrees, and the conversation ends.

The call leaves Dr. Kline feeling aggravated and conflicted. He worries that Dr. Palm is putting the health and well-being of many pets at risk. Trying to reason with her hasn't worked. Although he's never officially complained about a colleague in 41 years of practice, Dr. Kline is convinced that the time has come.

He writes a letter to the state board in which he accuses his colleague of veterinary negligence—knowingly making medical statements to his clients that are not in the best interest of their pets and are not supported by documentable evidence. The complaint is received by the board and processed, and Dr. Palm is ordered to respond.

Dr. Palm is indignant. She states that as a licensee, she has wide latitude to

make recommendations to her clients based on her medical training as well as clinical experience. Some pets die from prescription medications, she tells the board, while zero pets die from her natural recommendations.

The board considers her response and determines that Dr. Palm hasn't been negligent, though it does find her approach to prescribing these medications unorthodox. She's advised to tell her clients she's recommending an off-label use of the all-natural products and her reasons for doing so.

Who's right—Dr. Kline or the board?
Tell us at dvmnews@ubm.com.

Dr. Rosenberg's response

A veterinary license gives a practitioner considerable discretion to use his or her judgment when caring for patients. However, this discretion comes with great responsibility. Clients can offer informed consent only when all of the facts and alternatives have been placed before them. Dr. Palm has made definitive recommendations to her clients that, while well-intentioned, are far from comprehensive.

I agree with the board in that it responded with correction instead of punishment. Dr. Kline followed his conscience in contacting the board, and I don't find fault in that either. In the end, the process in place for dealing with these types of situations worked well.

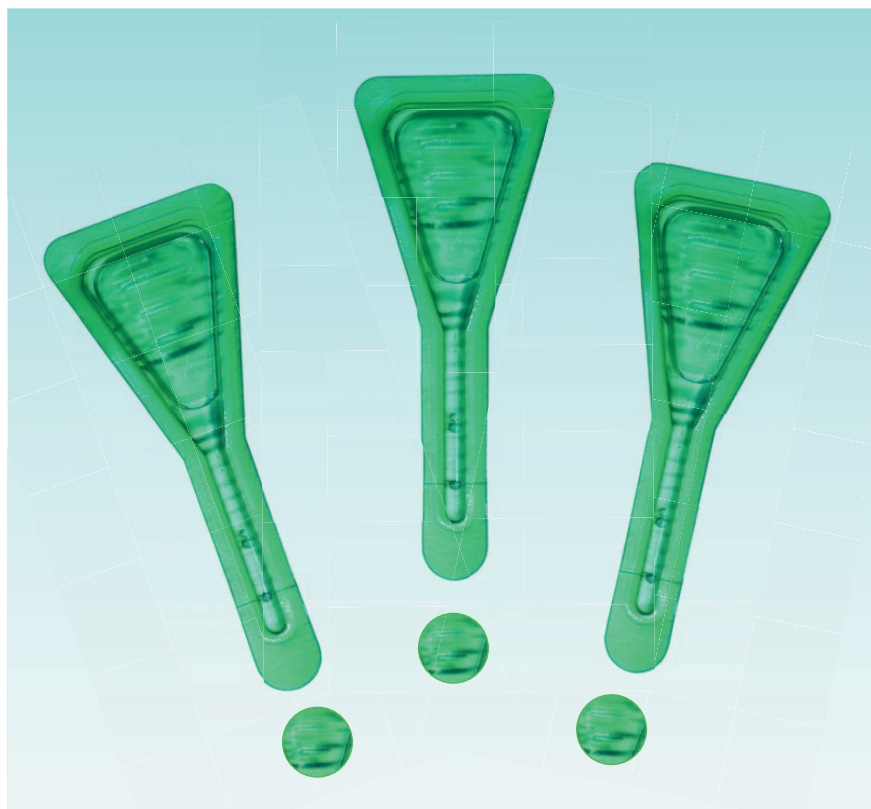
Always give clients enough information for them to make an informed decision. In this way the pets are the beneficiaries—just as it should be.

Dr. Marc Rosenberg is director of the Voorhees Veterinary Center in Voorhees, New Jersey. Although many of his scenarios in "The Dilemma" are based on real-life events, the veterinary practices, doctors and employees described are fictional.



Sample script

Our sister magazine *Firstline* showcases one way to talk natural parasite repellents with clients. See it at dvm360.com/naturalscript.





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Boss or be bossed?

That's the question that's been driving Dr. Greenskin mad for months. Now that Dr. Codger is considering a corporate buyout if she backs out, will she come up with an answer?

In the wake of the unannounced visit from Practice Gobblers Inc. (Dr. Greenskin's name for the sharp-dressed trio from last month's column; read about it at dvm360.com/bigdecision), the young associate has been more pensive about the big decision ahead. To calm herself down, she reminds herself that no decision is permanent and that the future holds options regardless of the way things head for Dr. Codger's practice. Nevertheless, she knows that if the practice goes corporate, she goes corporate, which isn't exactly an idea she finds savory. This month we explore Dr. Greenskin's tumultuous thoughts and emotions as she ponders whether to own or not to own—a decision that may alter the course of human history as we know it.

Patient care

To own: Wouldn't it be great to be able to exercise full control over how we

treat our patients and clients? I could develop the practice philosophy and make sure the entire team is onboard with my vision. I also like the idea of mentoring future associates and making sure we hire doctors who fit our mission. As a toxic team member watchdog, I would do everything in my power to create a healthy workplace culture.

Not to own: Most of my corporate colleagues *do* seem pretty happy with their ability to practice their own way. I think that's changed for the better over the past decade. Yet I think there would still be limitations as a corporate associate—things like what products we stock and relationships with vendors and referral services—that I'll just have to adapt to. I'm willing to bet, however, that the work environment has more to do with the local team, and any given corporate practice has as much of a shot at a healthy culture as an independently held one.

Work-life balance

To own: This could be nonexistent for a good many years, so I would really need to *love it*. I want to have kids someday, and I want to be involved in their lives, so I wonder if that could be a deal breaker. Maybe it wouldn't be so bad to be super busy while my children are young if it meant I could have more control over my schedule in five to 10 years when they're older and have more going on. Plus, retirement might look better with this option.

Not to own: Sure, I could have a nicer schedule and actually be off when I'm "off." But that would most likely be the case in perpetuity since I don't know if associate life would ever allow me to pay off my student loans and retire. So while the day-to-day outlook may appear better, that outlook would probably remain static for much of my natural life. In other words, I would really need to *love it*. I also have to take into account the constant squeeze of



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where it started and catch up
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reduced scheduling flexibility because I'd need to keep up my "performance" and prove my worth to the powers that be.

Basic needs (AKA benefits)

To own: It would be a huge responsibility to make sure the entire team has what they need. Dr. Codger doesn't provide health insurance for many of his employees, so you can forget about dental and vision. And I guess he doesn't figure that any of his team would ever care to retire since he won't even entertain the thought of starting a 401(k) program. Do we in vet med believe our work is so noble that retirement doesn't apply to us? I would want to do much better by all of our dedicated employees, but I'm sure that's difficult to impossible for a small business in today's environment. And with the sale price that Dr. Codger is talking about, there wouldn't be much (if any) wiggle room for new expenditures. If I want to do better in this department, I would need to bake benefits into my plan for buying the practice at the beginning.

Not to own: If the practice goes corporate, I have a much better chance of some (relatively) decent benefits being covered, and the employees (whoever decides to stay, anyway) would for sure be better off in that department. This pisses me off a little bit—that only big corporations are able to offer anything that resembles decent benefits to their employees. It makes me wonder if this situation is unique to vet med or if it's a theme in most American industries. Then again, I can't help but think of all the downsides of working for a corporation: the red tape, the protocols, the politics, the endless training modules I swear were designed to waste employees' time, and the lack of control over my future. I suppose the corporate monster offers the perceived benefit of being able to move up the ladder, but that will only happen for a select few who are uniquely talented at dealing with all of the corporate mumbo jumbo. I have no idea if I could or would want to adapt to that lifestyle. I wonder if I should take a few months to work for a corporate practice just to see if I might actually enjoy it. Don't knock it till you try it, right?

The future of Dr. Codger's practice

To own: I like to think I have a great relationship with the vast majority of our clients, but I wonder if I might be giving myself a tad too much credit. I also wonder if the veterinarian-client relationship is as important to clients as I make it out to be. I'm beginning to feel like veterinarians are a commodity to most people. I feel like back in Codger's good ole days, most clients wanted to know their veterinarian on a more personal level—or at least more than they do know. It seems like my clients feel that taking their pet to the vet is just like every other item on their to-do list, such as dropping off the dry cleaning or getting their oil changed.

Do I really want to go out on a limb and take on this huge burden if our clients aren't with me 100 percent? Or do I need to forget about all of that and honestly say that I'm buying the practice for my own future and benefit?

Not to own: I don't think Dr. Codger would do anything truly reckless with the future of his practice. I know he cares deeply about his longtime employees and clients, even though most days it seems like he doesn't give a rat's patootie. So in this regard, I think I need to be a little more humble and understand that my own feelings and emotions have very little to do with what might happen to our team and clients.

Corporate practices have grown for a reason, and I doubt they would have much success if clients or team members routinely felt underappreciated, abused, ignored or otherwise mis-

It would be a huge responsibility to make sure the entire team has what they need. Dr. Codger doesn't provide health insurance for many of his employees, so you can forget about dental and vision.

treated. Perhaps I need to reevaluate whether I can stomach a business mentality that might be essential to my success as a practice owner.

Which way is Dr. Greenskin going to go? Nobody knows at this point, but as the big day looms nearer, it certainly seems as if the future of animal and human health alike hang in the balance. The impact of her decision could ripple along for eons, affecting millions of trillions of sick pets and their desperate owners.

Editor's note: Are you itching to weigh in and affect this decision? Please write to Dr. Greenskin (you could write to Dr. Codger, but he's probably too busy hitting the links to read your message) at dvmnews@ubm.com. But hurry—there may not be much time left for you to have an effect on the future of Dr. Codger's practice.

Dr. Jeremy Campfield lives near Sacramento with his family, including an aging mini Aussie and an obstreperous pitbull mix that some mistake for a chocolate Lab (to the delight of her owners). When the family is not getting their hands dirty in the garden, Dr. Campfield indulges in his love for the outdoors with hiking, kitesurfing and climbing aboard any two-wheeled contraption. Please remember: Watch for cyclists, share the road, and pass them like you love them!



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Carnival moments in a difficult year

After two hurricanes, the Caribbean still has much to celebrate.

Life here in the Caribbean is not so much a series of events as it is a continuum. This has been made clear with the passage of the last year here. A little over one year ago, Anguilla celebrated the annual Carnival Summer Festival, a high point of celebrations that began on Aug. 1 and lasted until Aug. 12. Annual celebrations get underway with J'ouvert, a five-hour-long, island-wide “walk-about” that recognizes and celebrates the emancipation of Caribbean slaves in 1833 more than 30 years before the Emancipation Proclamation in the U.S.

The week is one long celebration of food, drink and music and a series of boat races. Last year, we went to the parade of costumed troupes that wound its way through the island on a bright clear day that gave no clue of what was to follow.

As I have shared before, at about this time a tropical disturbance was forming in the mid-Atlantic that unexpectedly developed into a hurricane with the moniker Irma that struck Anguilla with all her fury on Sept. 6 as a category 5 storm and caused catastrophic damage across the islands. Just 10 days later, Hurricane Maria, also a category 5 storm, struck, and whatever had not been damaged was laid to waste. This time, Dominica and Puerto Rico were decimated. Over 11 months later, Puerto Rico is still without power in some areas. I have visited St. Martin and Puerto Rico in the last few months and it's clear

that it will take a few years to recover.

As I write this column just a few days short of the anniversary of Hurricanes Irma and Maria, the islands are again entering peak hurricane season. Hurricane season begins in June and extends into December. The people who live here have experienced, survived and recovered from many hurricanes. My friends have spent their entire lives periodically doing battle with the god “Huracan”—the Carib Indian god of evil and the Mayan god of wind and storms.

But this season is different. We have much to celebrate. The people had never experienced a storm like Irma or Maria and aren't so sure last year was a one-off. Early in this year's predictions cycle it seemed likely we were looking at another bad season, but thanks to La Niña in the Pacific resulting in lower ocean temperatures, clouds of dust from the Sahara Desert that cover the eastern Atlantic, and the global changes in ocean conditions, recent predictions have greatly reduced the likelihood of a repeat season.

There's much awareness of global climate change among people of the Caribbean, but there is little known for certain. Right now, much of the region is baking under unprecedented heat and drought conditions. Water has always been a precious commodity in Anguilla, but this is different. Water tables are way below normal and cisterns are empty. A year ago, trees and bushes were bare because of winds; now they

are just as bare because of the drought.

But Anguilla still has much to celebrate. She and her people are special. We have come a long way in our recovery from hurricane damages, and the festival, boat races and sunshine go on as we walk across the global stage. Last year's Miss Anguilla, Dee-Ann Rogers, held court during a year of recovery. As well as having a law degree from the University of Birmingham, she is an outstanding athlete, having represented Anguilla twice in the British Commonwealth games. Recently, she was named Miss Universe Great Britain.

At the same time, Anguilla sprinter Zharnel Hughes—competing for Great Britain—set a European Championship record in the 100 meters, and Shara Proctor is a long jumper who has competed in the Olympics, World Championships, Commonwealth Games and European Championships.

Additionally, Anguilla singers demonstrated their talents on *American Idol* and on *The X Factor*. Recently, for an unprecedented second year in a row, Anguilla has been ranked the No. 1 island in the Caribbean.

So we have a lot to celebrate as Carnival 2018 ends. The rains will return and, unfortunately, so will the storms. But “God spare life”—all will be well.

Dr. Michael Paul, @mikepauldvm on Twitter, is a nationally known speaker and columnist and the principal of Magpie Veterinary Consulting. He lives in Anguilla in the British West Indies.



DVM in Irma's eye
Dr. Paul shares a personal story of a hurricane's effects on his island home at dvm360.com/irma.

MEDICINE | Neurology

Salivation abnormalities of neurogenic origin—yet another reason to perform an oral examination

Max presented with unilateral temporalis muscle atrophy but also with an accumulation of thick, foamy saliva. Let's investigate what's behind it. *By Rachel B. Song, VMD, MS, DACVIM (neurology), Eric N. Glass, MS, DVM, DACVIM (neurology), and Marc Kent, DVM, DACVIM (neurology)*

It's Monday morning. You walk into the office, back from a long weekend. You run through the list of the day's appointments and see that one of your favorite patients, Max, is on the day's schedule with the chief complaint being that the "head looks funny."

Later that day, you enter the exam room and ask, "What's going on with Max today?"

His owner replies, "Well, doc, the left side of his head completely sunk in overnight!" You take one look at Max's head and your heart sinks—you quickly recognize that the left temporalis and masseter muscles have atrophied completely. Without the muscles, the left zygomatic arch is clearly visible to the naked eye. The left eye also has become enophthalmic with an accumulation of mucoid discharge and third eyelid elevation (Figure 1).

When you turn Max's head to examine the right side, you see how well-muscled his head is on the unaffected side. He's still able to close his eyelids when you perform the palpebral reflex and the menace response. You remember that to close the eyelids, cranial nerve VII (the facial nerve) has to be functioning normally. Likewise, all the other cranial nerves appear to have normal function on your examination. When you do an oral exam on Max, you see an accumulation of thick, foamy saliva in the caudal oropharynx only on the side of the muscle atrophy. You are puzzled and take a second and more thorough look to confirm your findings. Why is there foamy saliva in the back of his mouth, you wonder?

Thinking through the causes of muscle atrophy—disuse versus neurogenic atrophy—you think that it must be neurogenic atrophy, given how quickly the owner reported the onset of the atrophy. But then which nerve? Ah, but of course! You remember your vet school neurology training and recall that cranial nerve V, the trigeminal nerve, innervates the muscles of mastication. All those mnemonics you memorized to learn the cranial nerves and their functions are paying off. But then how to account for the abnormal saliva accumulation in Max's oropharynx?

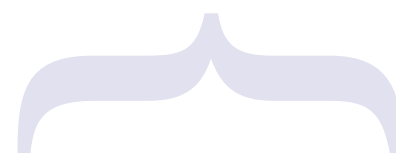
A quick trigeminal nerve review

The trigeminal nerve has three main branches—the ophthalmic, maxillary and mandibular nerves. All three branches re-



Figure 1. Max has unilateral dysfunction of the mandibular branch of cranial nerve V (trigeminal). Atrophy of the temporalis muscle (large arrow) is evident. Loss of the masseter and temporalis muscles makes the zygomatic arch more clearly defined (arrowhead). Additionally, enophthalmos of the left eye and secondary third eyelid elevation have resulted from atrophy of the pterygoid muscles.

lay sensory information from the head and face to the brain.¹ Only the mandibular branch is responsible for providing motor function to the muscles of mastication—the masseter, temporalis, lateral and medial pterygoids, rostral portion of the digastricus, and mylohyoideus muscles—as well as some lesser-known muscles such as the tensor tympani muscle (involved in modulating the ossicles in the middle ear) and the tensor veli palatani muscle (involved in opening the pharyngeal orifice of the auditory tube).



GASTROENTEROLOGY

M5

What a pain in the gut:
Canine pancreatitis

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Clinically, unilateral dysfunction of the mandibular branch of the trigeminal nerve is easy to recognize, often because of the dramatic muscle atrophy of the masseter and temporalis muscles. Pterygoid muscle atrophy is inferred by the enophthalmos, as the pterygoid muscles provide ventral and medial support of the eye's position in the orbit. The third eyelid will elevate passively with the enophthalmia.

The salivary link

What probably was not a focus in your veterinary curriculum was the role that the trigeminal nerve serves in the autonomic nervous system. Branches of the trigeminal nerve act as a conduit for the distribution of parasympathetic innervation to target organs such as the lacrimal and salivary glands.

Anyone who has suffered from dry eye (keratoconjunctivitis sicca, or KCS), dry mouth (xerostomia) or dry nose (xeromycteria) can understand the life-altering effects such conditions can cause. Since veterinary patients can't self-report symptoms, most owners don't recognize altered autonomic function until severe end-stage consequences are present. To appreciate this, one only need examine a dog with untreated KCS. The lack of tear production leads to corneal opacifica-

tion from corneal edema, neovascularization, pigment deposits, squamous metaplasia and hyperkeratinization of the cornea, which results in visual deficits.² People with xerostomia suffer from severe oral discomfort, dental caries, speech problems and difficulty eating and swallowing.³

In dogs, there are four major salivary glands—the parotid, zygomatic, sublingual and submandibular glands.⁴ Although structural diseases of the salivary glands (i.e. sialoceles, sialadenitis, salivary gland neoplasms and sialadenosis) are well-known in veterinary medicine, pure functional disturbances of the salivary glands have yet to be well-described.

Each of the salivary glands is innervated by the sympathetic and parasympathetic nervous system. As a whole, the autonomic nervous system has both afferent (sensory) and efferent (motor) components. Efferents are composed of a two-neuron system—preganglionic and ganglionic neurons. Sometimes these are referred to as first-order and second-order neurons, respectively. The preganglionic neuron is located in the central nervous system. Preganglionic axons synapse with the ganglionic neurons in various ganglia. Postganglionic axons innervate target organs such as glands, the heart, the lungs and many other organs.

For sympathetic innervation, preganglionic neurons are located in the intermediate gray matter of the thoracic and cranial lumbar spinal cord. For most of the body, the ganglionic neurons are located in the paired sympathetic trunk, which runs bilaterally along the ventrolateral aspect of the vertebral column. For structures of the head, ganglionic neurons are located in the cranial cervical ganglia near the ventral and caudal aspect of the skull. Long postganglionic axons course to their target organs. Sympathetic postganglionic axons use norepinephrine as their neurotransmitter.

For parasympathetic innervation, preganglionic neurons are located in the brain stem, adjacent to the motor neurons for cranial nerves III (oculomotor), VII (facial), XI (glossopharyngeal) and X (vagus), as well as sacral spinal cord segments. The ganglionic neurons are often located in ganglia close to their intended target organs. Short parasympathetic postganglionic axons course to their target organs and use acetylcholine as their neurotransmitter.

For the salivary glands, cranial nerves VII (facial) and IX (glossopharyngeal) provide for parasympathetic innervation.⁵ Specifically, preganglionic neurons for the parasympathetic innervation of the zygomatic and parotid glands are provided by the parasympathetic nuclei of the glossopharyngeal nerve in the medulla.⁵ Preganglionic axons travel in the glossopharyngeal nerve and synapse at the otic ganglion.⁵ The postganglionic axons course with the auriculotemporal nerve, a branch of the mandibular nerve, to arrive at the zygomatic and parotid salivary glands.⁵ Preganglionic neurons for the parasympathetic innervation of the sublingual and mandibular glands are provided by the parasympathetic nuclei of the facial nerve in the medulla.⁵ The preganglionic axons course in the facial nerve, through the tympanic cavity to join the lingual nerve, a branch of the mandibular nerve, at the level of the oval foramen. The oval foramen, located just medial to the temporomandibular joint, is also the foramen through which the mandibular nerve exits the cranial cavity. After the preganglionic axons join the mandibular nerve, they course to the mandibular and sublingual ganglia and synapse with parasympathetic ganglionic neurons. Parasympathetic postganglionic axon coursing with branches of the mandibular nerve ultimately innervate the mandibular and sublingual glands.⁵

Parasympathetic stimulation of the salivary glands mediated through acetylcholine is responsible for salivary production and flow. The sympathetic nervous system can modulate salivary secretion and composition through norepinephrine by stimulating the blood vessels and the acinar cells of the salivary glands.⁶ In general, sympathetic stimulation to the salivary glands results in vasoconstriction of the blood vessels, which reduces aqueous saliva and exocytosis of the acinar glandular cells. Overall, this results in a more proteinaceous and less voluminous saliva flow.⁶

An analysis of Max's salivation

In patients like Max with dysfunction of the trigeminal or mandibular nerve, abnormal saliva that appears foamy, ropy and stringy accumulates in the oropharynx on the side ipsilateral to the nerve deficit (Figure 2).



Figure 2. View of Max's oral cavity reveals the accumulation of thick, foamy saliva in the left caudal oropharynx.

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The saliva buildup is located just caudal to the maxillary fourth premolar, which is where the openings to the oral cavity are for the parotid gland and zygomatic gland.⁷

How can one explain the accumulation of abnormal saliva? Given the normal function of cranial nerve VII (ability to blink the eye) and cranial nerve IX (ability to swallow normally), the preganglionic parasympathetic axons to the salivary glands are likely intact. Therefore, the abnormal composition and flow of saliva produced by the parotid and zygomatic salivary glands, as evidenced by accumulation of the thickened saliva in the caudal oropharynx, is most likely due to dysfunction of the postganglionic axons that course with the branches of mandibular nerve.

In cases like Max's, we hypothesize that the dysfunction of the trigeminal or mandibular nerve also affects the postganglionic parasympathetic axons that course alongside the axons of the trigeminal or mandibular nerve to reach the salivary glands. In other words, the loss of the conduit for the postganglionic axon provided by the trigeminal or mandibular nerve results in dysfunction of the parasympathetic stimulation to the salivary glands, which alters salivary flow and composition. Normally, the parasympathetic nervous system is responsible for the

production of voluminous amounts of aqueous saliva. Parasympathetic denervation results in proteinaceous saliva that is more viscous than normal. This is appreciated clinically as an accumulation of thickened, ropy saliva that accumulates in the oropharynx on the side ipsilateral to trigeminal or mandibular nerve dysfunction.

The essentiality of salivation, and why it might go wrong

Normal salivation provides an important role in day-to-day life. Not only does it aid in food mastication and digestion but also in lubrication of the oral cavity, maintenance of normal pH of the mouth, and prevention of dental caries.⁸ Lack of salivation can cause significant oral discomfort and ulcerations as well as a detrimental decline in oral health.⁹ It's possible that with unilateral trigeminal nerve dysfunction and accumulation of abnormal saliva, there may be an increase in dental tartar on the side of the nerve dysfunction.⁷

A common cause of unilateral trigeminal nerve dysfunction is a nerve sheath neoplasm. Other causes of trigeminal nerve dysfunction include trauma, infectious or noninfectious neuritis, and other forms of neoplasia such as lymphoma. A complete physical and neurological examination may help narrow the differential diagnoses. Magnetic resonance imaging (MRI) of the head is the best way to establish a definitive diagnosis. With trigeminal nerve sheath neoplasms, MRI findings include an enlargement of the trigeminal nerve or its main branches, which display contrast enhancement, enlargement of the oval foramen from pressure necrosis from the expansive growth of the mandibular nerve, compression or invasion of the pons by the neoplasm, denervation atrophy of the masticatory muscles, and effusion in the tympanic cavity (middle ear) (Figure 3).

What to do next

Treatment options for nerve sheath neoplasms include palliative therapy with anti-inflammatory drugs or definitive therapy with radiation therapy.^{10,11} Radiation therapy can provide long-term control.¹⁰

Given the potential for long-term survival after radiation therapy in dogs with trigeminal nerve sheath neo-

plasms, it's possible that the alteration in salivation may have a significant impact on the overall health and quality of life of affected patients. It may be prudent to perform more frequent and thorough oral examinations to evaluate pharyngeal and salivary function in affected dogs. As the lack of autonomic functions to the head and face can lead to discomfort and secondary complications in our human patient counterparts, veterinarians should be aware of the potential for similar issues in dogs and cats.

Current accepted practices in dental care may provide a starting point for monitoring and planning dental procedures in affected patients.¹² In the future, more tailored evaluation protocols, preventive care measures and therapeutic interventions may be developed to minimize the negative impact abnormal autonomic function has on oral and overall health and to maintain an excellent quality of life in affected patients.

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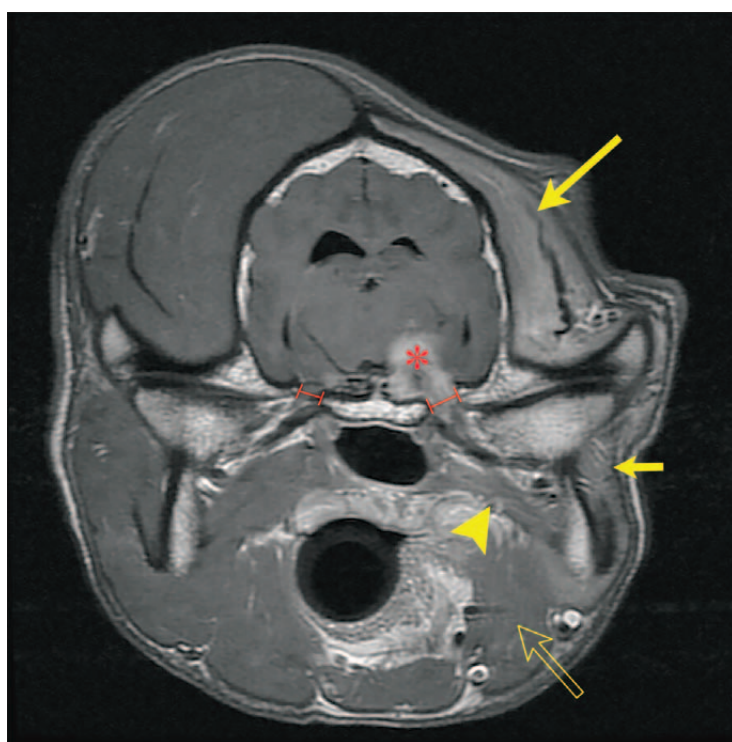


Figure 3. A transverse T1-weighted post-contrast MRI of Max's brain. A trigeminal nerve sheath neoplasm is compressing the brain stem (red asterisk) and is continuing along the mandibular branch as it exits via the oval foramen. Note the enlargement of the left oval foramen in comparison to the right. There is pronounced atrophy of the temporalis (large yellow arrow), masseter (small yellow arrow), digastricus (open yellow arrow) and pterygoid (yellow arrowhead).

What a pain in the gut: Canine pancreatitis

Everything a veterinary team needs to know about this all-too-common condition in dogs. *By Liz Hughston, MEd, RVT, CVT, VTS (SAIM, ECC)*

Mrs. Williams is on the phone concerned about her 7-year-old Yorkshire terrier, Pepper, who hasn't eaten in two days and has been vomiting and having diarrhea for the last 24 hours. This morning Mrs. Williams reports that Pepper is quite weak and seems to be uncomfortable—he isn't able to rest. You advise Mrs. Williams to bring Pepper in right away for an evaluation.

On presentation, Pepper is dehydrated, drooling and licking his lips. Even though he's weak, he cries and tries to bite the doctor during abdominal palpation. During history collection, Mrs. Williams tells you Pepper got into the garbage three days ago—garbage that contained bacon grease from the Williams' breakfast that morning.

There are likely to be a number of conditions on your veterinarian's differential diagnosis list, and pancreatitis should be near the top.

Pathophysiology

The pancreas is a glandular organ with both endocrine and exocrine functions. As an endocrine gland, the pancreas is responsible for maintaining blood glucose levels by producing and secreting two hormones: insulin to lower blood glucose and glucagon to increase blood glucose. These hormones are produced in pancreatic beta and alpha cells, respectively.

As an exocrine gland, the pancreas creates and secretes the digestive enzymes amylase and lipase, as well as trypsinogen, the precursor to trypsin, which is the primary digestive enzyme for proteins (also known as a protease). Trypsinogen is a zymogen, an inactive enzyme form that requires activation to function. Digestive zymogens and enzymes are secreted in response to the presence of chyme in the duodenum, as occurs after a meal; they are required for proper digestion of food as it enters the small intestine.

Under normal circumstances, trypsinogen is not activated to trypsin until it comes into contact with entero-kinase, an enzyme produced by the brush border cells of the duodenal lumen. This separation protects pancreatic tissue from exposure to proteases, preventing the breakdown of proteins within the pancreas and other organs.

However, if trypsin is instead activated within the acinar cells of the pancreas—possibly due to oxidative stress, excess stimulation of the cells from high-fat diets,¹ or hypotension²—it leads to autodigestion and inflammation. The local inflammation draws an influx of neutrophils and macrophages, which release additional inflammatory cytokines such as tumor necrosis factor, interleukins, platelet-activating factor and nitric oxide.

As these cytokines are activated and circulate throughout the body, severe pancreatic damage can lead to a systemic inflammatory reaction known as systemic inflammatory response syndrome (SIRS), characterized by increased capillary permeability, fever, tachycardia and hypotension and culminating in multiple organ dysfunction syndrome (MODS).³

Activation of trypsinogen within the pancreas triggers activation of the zymogens of other proteases as well, increasing the risk and rate of autodigestion. If this autodigestion continues unabated, patients may develop severe necrotizing pancreatitis, wherein portions of the pancreas are completely destroyed. In humans, the reported mortality rate due to pancreatitis is 5% to 15%, and in dogs it is reported to be much higher, ranging from 27% to 58%.²

The exact cause of pancreatitis is multifactorial and often unknown, and there is much discussion in the literature about potential causative conditions and agents that may lead to pancreatitis in canine patients. The list of patient-based risk factors

for the development of pancreatitis includes:

- > Obesity
- > Diabetes mellitus
- > Hyperadrenocorticism
- > Hypothyroidism
- > Pre-existing gastrointestinal disease
- > Middle or older age
- > Small breed.

About 25% of dogs presenting to their veterinarian with acute diabetes mellitus also have acute pancreatitis.¹ Pancreatitis is also more common in dogs that have had surgery—particularly in the abdominal cavity—within the past two weeks. In addition, dietary indiscretion (with or without the



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presence of hyperlipidemia) has been implicated often in acute pancreatitis. High-fat foods that are traditionally thought of as triggers for pancreatitis (such as bacon grease, fatty meats, turkey skin and so on) are not the only contributors; any food outside a dog's normal diet may also lead to pancreatic inflammation. Numerous drugs have also been implicated in pancreatitis induction, including azathioprine, thiazides, furosemide, tetracycline, potassium bromide and L-asparaginase.¹

Many breeds have a predisposition to developing pancreatitis (see the list at bottom left). Miniature schnauzers in particular are prone to increased serum levels of cholesterol and triglycerides, manifesting as hyperlipidemia, which may contribute to their susceptibility to pancreatitis. It isn't known whether circulating levels of lipids in the bloodstream cause pancreatic damage, leading to pancreatitis, or if the hyperlipidemia is secondary to pancreatitis and a subsequent inability to properly metabolize lipids.¹

In a 2011 study, miniature schnauzers that had recovered from acute pancreatitis were five times more likely to exhibit hyperlipidemia after clinical recovery than a control group of miniature schnauzers that did not have pancreatitis.⁴ Prepancreatitis blood samples were not available in this study, so it is unknown if high levels of circulating triglycerides were the causative agent or a secondary sequela. But it is clear that pancreatitis is a multifactorial pathologic process potentially with both genetic and environmental triggers playing a role.

Presentation and clinical signs

Patients can present with varied and nonspecific clinical signs ranging from mild to very severe. In a 1999 case series published in the *Journal of the American Veterinary Medical Association*,⁵ signs seen in patients with acute pancreatitis confirmed via histopathology performed at necropsy included:

- > anorexia (91%)
- > vomiting (90%)
- > weakness (79%)
- > abdominal pain (58%)
- > dehydration (46%)
- > diarrhea (33%).

In severe cases, the inflammation may become systemic and patients may present in shock or cardiovascular

collapse. On physical exam, the most common findings are dehydration, ptyalism and other signs of nausea (lip-licking, grimacing and so on), and cranial abdominal pain. Because the signs are nonspecific, a thorough diagnostic workup is indicated, including bloodwork and imaging.

Diagnosing pancreatitis

The first step in any good diagnosis, of course, is gathering a complete and accurate history and performing a thorough physical exam. As in the case of Pepper, the Yorkshire terrier previously described, an owner may disclose a dietary indiscretion that helps narrow the diagnostic path for the clinician, but often the clinical signs point to many potential disorders—including simple gastroenteritis, foreign body obstruction or peritonitis—and the history provided may or may not be helpful.

The next step in diagnosing pancreatitis is to perform bloodwork. A serum chemistry profile, including electrolytes, and a complete blood count (CBC) are indicated. Many patients will be azotemic (showing increased blood urea nitrogen [BUN] and creatinine levels) secondary to dehydration. Also characterized as a prerenal azotemia, the increase in BUN and creatinine is secondary to decreased blood flow through the kidneys due to hypovolemia, leading to a decrease in the kidneys' ability to excrete these waste products.

Often these patients will have increased liver enzymes, which can be attributed to pancreatic inflammation narrowing the common bile duct and causing hepatic enzymes to congest the liver rather than be excreted into the intestinal tract. If the common bile duct is obstructed or narrowed, bile cannot flow out of the canaliculi, leading to an increase in circulating serum levels of liver enzymes as they move into the bloodstream instead of through the bile duct. If this blockage or narrowing is not corrected, bile may not be able to flow normally out of the gallbladder, overloading its normal storage capacity and potentially resulting in cholecystitis.

Because pancreatitis and diabetes mellitus occur together with some regularity, hyperglycemia and hypokalemia are common abnormalities as well. Patients with septic processes (septic peritonitis, for example) may also have

hypoglycemia, so the full clinical picture is important to keep in mind.

The acid-base status in these patients can vary along with clinical signs. In severe cases, the patient may have a metabolic acidosis evident on blood gas analysis. However, if vomiting has been severe or protracted, the patient may have a metabolic alkalosis instead due to the loss of hydrochloric acid required for normal digestion.

The CBC will usually show an elevated packed cell volume (PCV) due to dehydration-induced hypovolemia, an inflammatory leukogram (characterized by neutrophilia, monocytosis and lymphopenia), and thrombocytopenia, particularly in severe cases. If the patient has a lower-than-normal platelet count, the veterinary team must be on guard for the development of disseminated intravascular coagulation (DIC), a potentially lethal complication of pancreatitis.

Most patients with pancreatitis show elevations in their serum amylase and lipase levels, which may be attributed to decreased excretion of these substances by the kidneys, due to decreased flow through the kidneys secondary to hypovolemia. For many years serum amylase and lipase values were used as markers of pancreatitis on bloodwork. However, increased levels of these enzymes are not specific to pancreatitis, because many other organs in the body also synthesize and secrete amylase and lipase.

In recent years, Texas A&M University has developed a test for canine pancreatic-specific immunoreactivity, also known as the Spec cPL, which measures only lipase that comes from the pancreas; this test is highly sensitive (93%) and moderately specific (78%).⁶ (See "Specificity vs. sensitivity" on page M7 for an explanation of sensitivity and specificity in laboratory tests.) Abaxis has recently introduced a point-of-care cPL test that offers semiquantitative results almost immediately, without the necessity of submitting to an outside lab.

Also available is the SNAP cPL test from IDEXX; however, this test provides the veterinary team only with a qualitative abnormal/normal value. For example, if the patient has an initial cPL value of 800 mcg/L (normal = < 200 mcg/L) and, after two days of therapy (see the treatment section on the next page), the value has decreased to 300

Breeds susceptible to pancreatitis

While any dog has the potential to develop pancreatitis, there is a known breed predisposition in several small-breed dogs, including:

- > Miniature schnauzer
- > Cavalier King Charles spaniel
- > Cocker spaniel
- > Sheltie
- > Toy poodle
- > Yorkshire terrier.

Source: Hand MS, Thatcher CD, Remillard RL, et al., eds. *Small Animal Clinical Nutrition*. 5th ed. Topeka, KS: Mark Morris Institute, 2010.

mcg/L, there's been good progress in reducing the amount of pancreatic lipase circulating in the patient's bloodstream. However, comparing SNAP cPL values in the same patient over the same timeframe would simply show two abnormal results, meaning the pancreatic lipase levels are somewhere above 200 mcg/L, making it not as useful for tracking your patient's progress. While both the quantitative and semi-quantitative cPL tests provide a number value, higher values do not necessarily correlate to disease severity. Remember: We treat patients, not numbers!

Pancreatitis cannot be diagnosed solely on the basis of any one test but must take into account the entire clinical presentation. Imaging plays a key role. Ultrasound is the primary imaging modality used to help confirm the diagnosis, though recent studies have shown moderate-to-low agreement between ultrasonographic diagnosis of canine pancreatitis and Spec cPL values.⁷ This may be due to interoperator differences in ultrasound skill and technique. Because the clinical signs seen at presentation can be nonspecific, a full ultrasound examination of the abdomen is warranted to rule out other differential diagnoses like foreign body obstruction or peritonitis. Abdominal radiographs can also be performed, but they're often not as helpful as ultrasound examination.

Histopathology performed on biopsies of the pancreas has been shown to definitively diagnose pancreatitis, but surgery is an invasive diagnostic tool and often cost-prohibitive. However, fine needle aspirates (FNA) of the pancreas for cytologic examination do have diagnostic value based on a 2015 retrospective study.⁸ Patients in that study also had a very low rate of complications (6.3%), and the diagnostic yield of cells was high. In several of the study subjects, histology from surgical biopsy was also available, and cytologic examination was found to correlate well with histologic examination (11/12 had complete agreement between the two examinations).

Historically, clinicians have been concerned that performing FNAs of the pancreas may lead to further cellular damage and subsequent pancreatic enzyme elevations. However, it has been shown that sampling the pancreas via FNA does not lead to an increase in measured pancreatic enzymes, which

might confound a diagnosis or lead to difficulties in monitoring treatment progress.⁹ In addition to the relative ease of sample collection via FNA (as opposed to surgical biopsy), the low complication rate is superior to the complication rate found in postsurgical patients (29% in a 2014 retrospective study).¹⁰ In cases where pancreatitis is accompanied by comorbidities—such as pancreatic abscesses identified on ultrasound, septic peritonitis or biliary obstruction—surgical intervention is warranted and pancreatic biopsies should be taken as part of the surgical procedure.

Treatment

Many of the following supportive care actions may be taken regardless of diagnosis when a systemically ill and dehydrated patient presents to the veterinary hospital. Once pancreatitis has been confirmed, the veterinary team should pursue appropriate treatment quickly to provide improved intravascular volume, better perfusion and oxygen delivery, analgesia, nausea reduction and nutrition. There is no definitive curative procedure or medication for acute pancreatitis—treatment is supportive and aimed at reduction of clinical signs.

Treatment of comorbidities identified during diagnosis should proceed alongside supportive efforts up to and including surgery if indicated. While empiric treatment of clinical signs is often successful in veterinary medicine, the veterinary team should strive to obtain a definitive diagnosis through the means previously outlined.

Intravenous fluid therapy. Dehydration, hypovolemia and electrolyte imbalances must be addressed early in

the patient's presentation. Dehydration deficits can be replaced in the first 24 to 48 hours after presentation using intravenous (IV) isotonic buffered crystalloid solutions such as Plasma-Lyte A (Baxter), Normosol-R (Hospira) or lactated Ringer's solution. Correcting dehydration and hypovolemia will improve blood flow to the kidneys, allowing normalization of kidney perfusion and function and excretion of BUN, creatinine, amylase and lipase. IV fluid therapy will also improve pancreatic perfusion, helping to restore normal function.

In cases where hypokalemia is present, potassium supplementation should be added to the IV fluid therapy plan. IV fluids can also help correct acid-base abnormalities by restoring perfusion and oxygen delivery to the tissues. In patients with septic processes (such as septic peritonitis), additional blood pressure and perfusion support may require colloid administration. Recent evidence encourages clinicians to exercise caution when using synthetic colloids in septic patients due to the potential risk for kidney injury.^{11,12} Many practitioners reach for fresh frozen plasma (FFP) to replenish protein levels, improve oncotic pressure and replace protease inhibitors lost due to consumption. A 2009 study showed no survival benefit to using FFP to treat pancreatitis,¹³ but its use is certainly indicated in patients with evidence of coagulopathies or DIC.¹

Analgesia. Even if patients show no obvious signs of abdominal pain, analgesics should be administered to any dog diagnosed with pancreatitis. Ninety percent of people suffering from acute pancreatitis report high levels of

pain,¹⁴ and we can extrapolate from that information that our veterinary patients are also painful, even if we cannot detect it on physical exam or observation. Buprenorphine at 0.01-0.05 mg/kg IV, intramuscularly or via the oral-transmucosal route can be used for mild to moderate pain. Fentanyl is an excellent choice for patients with moderate to severe pain. Fentanyl must be delivered via constant rate infusion due to its short half-life in dogs (approximately 45 minutes);¹⁵ doses range from 2-10 mcg/kg/hr, depending on the level of analgesia needed.¹

If fentanyl is not sufficient to manage the patient's pain, lidocaine (5-30 mcg/kg/min), ketamine (0.1-0.6 mg/kg/hr) or both may be added. In patients whose pain cannot be controlled with systemic analgesics, veterinary teams should consider an epidural or intra-abdominal or intrathoracic analgesia. A 2013 study in pigs demonstrated that administration of thoracic epidural analgesia resulted in better tissue perfusion and improved survival in experimentally induced acute pancreatitis.¹⁶ In human patients, studies have demonstrated that epidural analgesia increases perfusion to the pancreas and improves clinical outcomes in patients with acute pancreatitis while reducing the severe pain associated with the condition.¹⁷

Antiemetic therapy. Antiemetic therapy helps increase patient comfort and reduces ongoing fluid losses. Maropitant (Cerenia—Zoetis) is an effective antiemetic with both central and peripheral effects. It can be given IV or subcutaneously (SC) at 1 mg/kg every 24 hours or orally at 2 mg/kg every 24 hours. Maropitant can be painful on SC injection, but in my experience, refrigerating the drug appears to minimize the pain felt on injection.

Maropitant is also an excellent choice because, in addition to being an effective antiemetic, it is a neurokinin-1 antagonist that blocks the action of substance P. Substance P is produced by nerves systemically and is involved in increasing inflammation, nociception and vascular permeability throughout the body. Blocking substance P may decrease visceral pain, reduce the severity of pancreatitis, and minimize its systemic effects.¹⁸ If maropitant is not sufficient to control nausea or vomiting, ondansetron (Zofran—GlaxoSmithKline) may be added to the treatment plan at 0.1-0.2 mg/kg IV every 12 hours.¹⁹

Specificity vs. sensitivity

The terms "specificity" and "sensitivity" help practitioners determine the accuracy of diagnostic tests. Use the mnemonic SPIN and SNOUT to remember the difference between the two designations.

A test that is SPecific rules a disease IN (SPIN)

- > A positive result in a very specific test means the patient in all likelihood has the disease.
- > False positives are rare.

A test that is SeNsitive rules a disease OUT (SNOUT)

- > A negative result in a very sensitive test means the patient in all likelihood does not have the disease.
- > False negatives are rare.

While no test is 100% specific and sensitive, the higher the value ascribed to each, the more accurate the test is.

Nutrition. Early enteral nutrition is an important part of successful treatment of acute pancreatitis. Traditionally patients with pancreatitis have been ordered to have nothing by mouth for several days while hospitalized, but studies have shown that adequate nutrition, beginning as early as possible in the course of the disease, improves survival. Pancreatitis is a catabolic process wherein the body is actively destroying its own tissues to provide nutrients for cellular processes. By definition, catabolism consumes energy; by supplying exogenous energy in the form of nutrition, we can reverse the catabolic process and allow the body to return to homeostasis.²⁰ Additionally, by supplying nutrients to the lumen of the gastrointestinal tract, we are feeding and supporting the enterocytes, preserving gastrointestinal barrier function, intestinal motility and the normal flora of the gut.²¹

A recent retrospective study in the *Journal of the Veterinary Emergency and Critical Care Society* investigated the impact of providing enteral nutrition within 48 hours of hospitalization for acute pancreatitis. The researchers found that providing patients with enteral nutrition early in the course of their hospitalization led to a faster return to voluntary eating and a fewer incidences of both regurgitation and vomiting.²² On average, patients in this study were already hypo- or anorexic for 72 hours before their admission to the hospital.

In patients that have not been eating—or that are expected not to eat—for a period of 72 hours, consider placing a feeding tube. Nasogastric or nasoesophageal tubes can be placed in practice with little to no sedation or anesthesia needed. These tubes can be used to provide liquid nutrition (such as CliniCare—Zoetis or Emeraid—Lafeber) either via bolus feedings or continuous trickle feeding while patients are in the hospital. If a feeding tube will be needed after discharge from the hospital to ensure adequate caloric intake, consider placing an esophageal feeding tube as long as the patient can tolerate a short anesthetic procedure. Esophageal feeding tubes can accommodate a larger variety of diets, enabling clients to feed a more calorically dense food to meet a patient’s nutritional needs.

The best choice of diet for pancreatitis patients is one that is highly digestible, meaning it breaks down into

TABLE 1

Suggested veterinary diets for dogs with acute pancreatitis*		
	Fat percentage (target 15% or less)	Protein percentage (target 15-30%)
Canned		
Hill's i/d Low Fat	8.3%	24.5%
Hill's i/d	14.8%	25.8%
Hill's Metabolic	13.4%	28.1%
Hill's w/d	11.8%	19.4%
Purina EN Gastroenteric	10.0%	32.0%
Royal Canin Gastrointestinal Low Fat	4.2%	25.0%
Dry		
Hill's i/d	14.8%	27.0%
Hill's Metabolic	12.3%	28.4%
Hill's w/d	9.1%	18.9%
Purina EN Gastroenteric	11.9%	26.0%
Royal Canin Gastrointestinal Low Fat	4.5%	20.0%
Royal Canin Gastrointestinal Moderate Calorie	10.0%	23.0%
*Nutrients expressed as a percentage of dry matter.		
Adapted from Hand MS, Thatcher CD, Remillard RL, et al., eds. <i>Small animal clinical nutrition</i> . 5th ed. Topeka, KS: Mark Morris Institute; 2010.		

key nutritional factors that are readily absorbed. It was once thought that ultra-low-fat diets were most appropriate in pancreatitis cases, but studies have not demonstrated harm related to fat consumption in enteral nutrition. However, in patients with hyperlipidemia, it’s still best to choose a diet lower in fat.²¹ Another consideration is the caloric density of the food—choose a diet that will meet a patient’s resting energy requirement (RER) in a reasonable volume of food. To calculate a patient’s RER, use the following formula: (Body weight in kg)0.75 x 70 = total kilocalories (kcal) required per day.²¹

If a patient has not eaten for three or more days before presentation to the hospital, start feeding slowly; target one-third of RER on day one of enteral feeding and increase gradually until full RER has been reached. Provide bolus tube feedings every four to six hours, depending on the patient’s tolerance. Increase volume or frequency only if the patient is tolerating feeding well, with no signs of nausea and no vomiting. In patients that cannot tolerate enteral nutrition, as evidenced by intractable vomiting, consider parenteral nutrition. Parenteral nutrition requires specialized catheters as well as production facilities and is not generally feasible in general

practice—referral to a specialty center may be necessary in these cases.

Other therapies. Prophylactic antibiotic therapy has not been shown to increase survivability in human studies,²³ and infection is rarely a cause of acute pancreatitis in dogs. However, in experimentally induced canine pancreatitis, treatment with broad-spectrum antibiotics improved survival.¹ It is prudent for clinicians to practice good antibiotic stewardship and consider whether antibiotics are needed on a case-by-case basis. If presence of infection is demonstrated, antibiotic therapy is definitely indicated.

Avoid both steroids and nonsteroidal anti-inflammatory drugs (NSAIDs) in cases of acute pancreatitis. NSAIDs have been implicated as a class of pharmaceuticals with the potential to induce pancreatitis, and steroids have not shown any benefit in human studies.¹⁴

Client education and home care

Dogs that experience acute pancreatitis may recover fully, may suffer a relapse of acute pancreatitis, or may clinically recover but suffer from chronic pancreatitis. In cases where comorbidities are present, the success of pancreatitis treatment will depend on successful treatment or manage-

ment of the other disease process. When patients are discharged after an incidence of acute pancreatitis, clients will need guidance on what to feed and signs to look for that may indicate a recurrence of clinical disease. Counsel clients to avoid feeding unusual foods, table scraps or high-fat treats or foods to their dogs. Recommend diets that are highly digestible, with high-quality ingredients and low amounts of fat. For patients that are not hyperlipidemic at discharge, veterinary nutritionists recommend targeting a diet that contains 15% fat or less and 15% to 30% protein in the convalescent diet, as measured on a percentage dry matter basis.²⁰ For patients with evidence of hyperlipidemia, diets should contain 10% fat or less; the protein level recommendations remain the same.²⁰ See Table 1 for a list of recommended diets.

What about Pepper?

After a full physical examination, the veterinarian orders blood work to check serum chemistries and submit to the reference lab to check a cPLi. The veterinarian also performs an ultrasound and finds evidence of an inflamed pancreas. Pepper is admitted to the hospital for IV fluid therapy, pain control, antiemetic medications and nutritional support.

After three days of supportive care, Pepper is eating well on his own, with no further vomiting, and is no longer painful. He is discharged for continued at-home care by the grateful Mrs. Williams. You remind Mrs. Williams to avoid high-fat foods for Pepper and to notify your office if he gets into any more bacon grease in the future. You also educate her on the signs that would indicate Pepper is having a recurrence of pancreatitis (vomiting, inappetance, evidence of pain).

With diligent monitoring and supportive care, both in the hospital and at home, dogs can make a full recovery from acute pancreatitis.

For a list of references and suggested reading, visit dvm360.com/k9pancreatitis.

Liz Hughston is founder of VetTechXpert, past president of and webmaster for the Academy of Internal Medicine Veterinary Technicians, communications director for the National Veterinary Professionals Union and co-founder of the Veterinary Cannabis Academy.

Just ask the expert: Can laser therapy reduce anxiety in veterinary patients?

Patients undergoing photobiomodulation seem to calm down in the veterinary clinic after a few treatments. What's going on? *By Matthew Brunke, DVM, DACVSMR, CCRP, CVPP, CVA*

Q: Many of my patients with anxiety in the veterinary clinic seem to calm down after a few laser therapy sessions targeting their sore joints. Is it possible that they're making positive associations between the pain relief they're experiencing and the clinic environment, causing them to experience less stress in our hospital?

A: When we talk about photobiomodulation (laser therapy) in veterinary medicine, we're usually referring to its use for pain relief in sore muscles and arthritic joints. But we're learning about other areas where it may be helpful as well.

Arthritic patients that come into a veterinary hospital may be experiencing pain or having trouble walking. This can make them fearful of slippery floors, of being palpated, or of having to be restrained for nail trims, blood draws and so on. Many of these patients benefit directly from laser therapy. As the laser provides pain relief, we see the patient move better and be more comfortable during future veterinary visits. This alone may allow them to be less fearful of a clinic visit.

Of course, pets also associate places with feelings (we all know the dog that gets super-excited when you pull into his favorite dog park). So as they feel better, yes—they can certainly start to associate the veterinary office with pain relief and a positive environment.

You may also have veterinary patients with mobility problems that are less obvious. This could be the old dog with diabetes and Cushing's that has poor muscle mass—it may be fearful of falling. These older dogs may not have painful joints, but they may be sore because of their meta-

bolic issues. Treating dogs or cats with laser therapy before or after a potentially uncomfortable veterinary procedure can help reduce their fear and anxiety, and it can help them feel better while we address their underlying issues.

Finally, what about those patients with fear and anxiety directly associated with the veterinary clinic? Can photobiomodulation help them—even if they're not in pain? Well, first, researchers have established that we have the potential to evaluate cognitive and behavioral aspects of the canine brain (no studies on cats yet) using functional magnetic resonance imaging (fMRI).¹

Knowing that it's possible to evaluate cognitive function, can we work on directly improving it? That depends on the pathology causing fear and anxiety. Another study has shown the potential for photobiomodulation to improve cognitive function and reduce pain and anxiety in traumatic brain injury patients.² This at least opens the door for the possibility to try this with dogs and cats (those that don't have a neoplastic process causing their behavior changes) to assist them with behavioral issues. As far as settings, treatment time, frequency and so on? Determining that is the next step.

References

1. Huber L, Lamm C. Understanding dog cognition by functional magnetic resonance imaging. *Learn Behav* 2017;45(2):101-102.
2. Morries LD, Cassano P, Henderson TA. Treatments for traumatic brain injury with emphasis on transcranial near-infrared laser phototherapy. *Neuropsychiatr Dis Treat* 2015;11:2159-2175.

Dr. Matt Brunke is a pain and rehabilitation specialist with Veterinary Orthopedic and Sports Medicine Group in Annapolis Junction, Maryland.



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Exposing the 'untamed wilderness' of **genetic testing for pets**

In a recent commentary, Drs. Lisa Moses, Steven Niemi and Elinor Karlsson offer causes for concern and advice for regulation.

The pet care industry is currently booming to the tune of around \$109 billion annually, according to research firm Euromonitor International, and it has a relatively new addition that's gaining attention as well as concern: genetic testing.

Lisa Moses, VMD, DACVIM, a pain specialist at Angell Animal Medical Center in Boston and bioethicist at Yale University, has published a commentary in a recent issue of *Nature* about the science and ethics of this developing area. Along with her co-authors—Steven Niemi, DVM, DACLAM, and Elinor Karlsson, PhD—Dr. Moses states that canine genetic testing is moving faster than the speed of research needed to confirm its accuracy and usefulness. According to the commentary, there are at least 19 laboratories in the world marketing genetic-testing products and at least one U.S. veterinary hospital chain recommending genetic testing for every dog. Yet the authors assert that the practice is plagued by a lack of validation, imprecise results and interpretation, and unchecked conflicts of interest.

These problems are even more concerning in light of what the authors call the coming “tsunami of genomic data.”

Technology from human medicine will allow pet owners to have access to whole-genome sequencing for any pet of any species within the next five years, the commentary says.

“Pet genetics must be reined in,” Dr. Moses and co-authors state. “If not, some companies will continue to profit by selling potentially misleading and often inaccurate information; pets and their owners will suffer needlessly; and opportunities to improve pet health and even to leverage studies in dogs and cats to benefit human health might be lost.”

The authors aren't all doom and gloom when it comes to pet genetic testing, however. They offer five steps necessary for harnessing it for good, including establishing standards, creating guidelines to support these standards, improving transparency through data sharing, recruiting experts who can analyze and manage the incoming data, and training a team of veterinary professionals to serve as pet genetic counselors.

With the right controls in place, the authors say genetic testing could be a “powerful way to better connect people to the possibilities of genetics for treating disease.”



Mirataz™
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For topical application in cats only. Not for oral or ophthalmic use.

CAUTION: Federal law (USA) restricts this drug to use by or on the order of a licensed veterinarian.

Before using this product, please consult the product insert, a summary of which follows:

INDICATION: Mirataz™ is indicated for the management of weight loss in cats.

DOSAGE AND ADMINISTRATION: Administer topically by applying a 1.5-inch ribbon of ointment (approximately 2 mg/cat) on the inner pinna of the cat's ear once daily for 14 days. Wear disposable gloves when applying Mirataz™. Alternate the daily application of Mirataz™ between the left and right inner pinna of the ears. **See Product Insert for complete dosing and administration information.**

CONTRAINDICATIONS: Mirataz™ is contraindicated in cats with a known hypersensitivity to mirtazapine or to any of the excipients. Mirataz™ should not be given in combination, or within 14 days before or after treatment with a monoamine oxidase inhibitor (MAOI) [e.g. selegiline hydrochloride (L-deprenyl), amitraz], as there may be an increased risk of serotonin syndrome.

HUMAN WARNINGS: Not for human use. Keep out of reach of children. **Wear disposable gloves when handling or applying Mirataz™ to prevent accidental topical exposure.** After application, dispose of used gloves and wash hands with soap and water. After application, care should be taken that people or other animals in the household do not come in contact with the treated cat for 2 hours because mirazapine can be absorbed transdermally and orally. However, negligible residues are present at the application site and the body of the cat at 2 hours after dosing. In case of accidental skin exposure, wash thoroughly with soap and warm water. In case of accidental eye exposure, flush eyes with water. If skin or eye irritation occurs seek medical attention. In case of accidental ingestion, or if skin or eye irritation occurs, seek medical attention.

PRECAUTIONS: Do not administer orally or to the eye. Use with caution in cats with hepatic disease. Mirtazapine may cause elevated serum liver enzymes (see **Animal Safety** in the product insert). Use with caution in cats with kidney disease. Kidney disease may cause reduced clearance of mirtazapine which may result in higher drug exposure. Upon discontinuation of Mirazet™, it is important to monitor the cat's food intake. Food intake may lessen after discontinuation of mirtazapine transdermal ointment. If food intake diminishes dramatically (>75%) for several days, or if the cat stops eating for more than 48 hours, reevaluate the cat. Mirazet™ has not been evaluated in cats < 2 kg or less than 6 months of age. The safe use of Mirazet™ has not been evaluated in cats that are intended for breeding, pregnant or lactating cats.

ADVERSE REACTIONS: In a randomized, double-masked, vehicle-controlled field study to assess the effectiveness and safety of mirtazapine for the management of weight loss in cats, 115 cats treated with Mirataz™ and 115 cats treated with vehicle control were evaluated for safety. The vehicle control was an ointment containing the same inert ingredients as Mirataz™ without mirtazapine. The most common adverse reactions included application site reactions, behavioral abnormalities (vocalization and hyperactivity), and vomiting. **See Product Insert for complete Adverse Reaction information.** To report suspected adverse events, for technical assistance or to obtain a copy of the SDS, contact Kindred Biosciences, Inc. at 888-608-2542. For additional information about adverse drug experience reporting for animal drugs, contact FDA at 1-888-FDA-VETS or online at <http://www.fda.gov/AnimalVeterinary/SafetyHealth>.

EFFECTIVENESS: The effectiveness of Mirataz™ (mirtazapine transdermal ointment) was demonstrated in a randomized, double-masked, vehicle-controlled, multi-site field study involving client-owned cats of various breeds. Enrolled cats were ≥ 1 year of age and had existing documented medical history of $\geq 5\%$ weight loss deemed clinically significant. The most common pre-existing conditions included renal insufficiency, vomiting, and hyperthyroidism. Some cats had more than one pre-existing condition. Cats were randomized to treatment groups in a 1:1 ratio of Mirataz™ to vehicle control. A total of 230 cats were enrolled and received either Mirataz™ (115 cats) or a vehicle control (115 cats) containing the same inert ingredients without mirtazapine. The cats were 2.8-24.6 years of age and weighed 21-9.2 kg. The dosage was a 1.5-inch ribbon (approximately 2 mg/cat) mirtazapine or vehicle ointment administered topically to the inner pinna of each cat's ear. A total of 177 cats were determined to be eligible for the effectiveness analysis; 83 cats were in the Mirataz™ group and 94 cats were in the vehicle control group. The primary effectiveness endpoint was the mean percent change in body weight from Day 1 to the Week 2 Visit. At Week 2, the mean percent increase in body weight from Day 1 was 3.94% in the mirtazapine group and 0.41% in the vehicle control group. The difference between the two groups was significant ($p < 0.0001$) based on a two-sample t-test assuming equal variances. A 95% confidence interval on the mean percent change in body weight for the Mirataz™ group is (2.77, 5.11), demonstrating that the mean percent change is statistically different from and greater than 0.

STORAGE: Store below 25°C (77°F). Multi-use tube. Discard within 30 days of first use.

HOW SUPPLIED: Mirataz™ is supplied in a 5 gram aluminum tube.

MANUFACTURED FOR:

Kindred Biosciences, Inc.
1555 Bayshore Highway, suite 200
Burlingame, CA 94010

NADA 141-481, Approved by FDA

Made in USA.
NDC 86078-686-01

REG-MTZBS-008 Rev. 26Apr2018

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For more information, contact your KindredBio Sales Specialist at 1-888-608-2542, your preferred Distributor Sales Representative, or go to [kindredbio.com/Mirataz](https://www.kindredbio.com/Mirataz).

Important Safety Information

Mirataz™ (mirtazapine transdermal ointment) is for topical use in cats only under veterinary supervision. Do not use in cats with a known hypersensitivity to mirtazapine or any of the excipients. Do not use in cats treated with monoamine oxidase inhibitors (MAOIs). Not for human use. Keep out of reach of children. Wear gloves when handling/applying, wash hands after and avoid contact between the treated cat and people or other animals for 2 hours following application. Use with caution in cats with hepatic and kidney disease. Cat's food intake should be monitored upon discontinuation. Safety has not been evaluated in cats less than 2 kg, less than six months of age or in breeding, pregnant or lactating cats. The most common adverse reactions observed during clinical trials were application site reactions, behavioral abnormalities (vocalization and hyperactivity) and vomiting. **For additional safety information, see brief summary of prescribing information on page 44.**

Reference: 1. Mirataz™ (mirtazapine transdermal ointment) [package insert], Kindred Biosciences, Inc. (Burlingame, CA). Rev. 5/2018. 2. Buhles W, Quimby JM, Labelle D, et al. Single and multiple dose pharmacokinetics of a novel transdermal ointment in cats. J Vet Pharmacol Ther. In press 2018.



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Mirataz™
(mirtazapine transdermal ointment)



A standout DVM contract

Poorly written agreements are all too common, so a well-devised contract is cause for celebration. Consider these exceptional provisions benefiting both the associate and the practice.

Last week a recent veterinary school graduate from Delaware sent me an employment contract to review. The one-year agreement called for an annual salary with reasonable health insurance and many of the typical benefits. But on closer inspection, I realized that this particular document was unusual—in a good way.

In short, this three-doctor private practice put together one of the best and most inclusive associate contracts I've read in years. I want to share some of the very thoughtful terms we found in the document, which manages to reside at the intersection of propriety, consideration, and what I like to call "enforced professionalism."

Tacit recognition of the at-will relationship

Let's call the employer in this tidy little contract Professional Pet Practice. One of the introductory paragraphs in its employment contract provides that under any circumstances short of termination of the associate "for cause," the terminating party is "strongly encouraged" to provide 60 days' notice to the other. Sounds simple enough—so why is it unique?

This language recognizes that it's nearly impossible to enforce a notice requirement in an associate employment contract. Employers can sue associates who abruptly walk out the door, but they're unlikely to prevail in the many at-will employment states. Moreover, best of luck to the clinic recruiting for a vacated associate position once word is out that the last vet to hold the job was hauled into court.

If the associate is terminated without notice, she might get some traction in court should she initiate a lawsuit for lost wages. But she could still lose after time-consuming litigation during which her former employer



dredges up every minor indiscretion and disagreement that took place during the employment period, claiming that she behaved in violation of her contractual obligation to foster a collegial and pleasant work environment. And of course, one person's strong opinion is another person's contractually prohibited insubordination (which would permit instantaneous firing).

Professional Pet Practice has sidestepped this foolishness by placing the onus of providing 60 days' notice on the associate's conscience and appealing to her professionalism (and also promising to extend the same courtesy). It's inconsiderate to abandon a professional position without a solid reason and without a contractually promised notice, and that's almost exactly what my client's contract says.

Phased-in noncompetition terms

Professional Pet Practice's employment document also includes a provision that I've long championed: the laddered noncompete.

In this particular contract it says that for the first six months there will be no noncompete obligation. After six months, the noncompete is in effect for one year. After one year, the noncompete increases by one week for every week worked up to 18 months. This structure is easy to understand and likely to work well for both parties.

Courts don't like veterinary noncompetition agreements because they infringe on the rights of employed doctors and on the rights of clients to select, unimpeded, the professional who will provide services to their animals. Courts will step in and enforce them, however, when there's a reasonable balance between the risk to the employer posed by a departing associate and the ability of that associate to work elsewhere.

This laddering language fits the bill perfectly. First, it gives the associate a chance to learn about the new job and exit within six months if it simply isn't a good fit. Second, the noncompete commitment evolves slowly and gradually, as the employer seems to



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recognize that clients don't instantly attach to a new associate. The language is a win-win, allowing the associate to kick the tires of the new clinic while maximizing the ability of the employer to enforce the noncompete once it gradually comes into force.

Clear and descriptive workplace dress code

It took me a while, but I've finally learned that a person with an advanced academic degree doesn't necessarily have advanced common sense. I've hired more than my share of doctors who interviewed in professional dress, then shortly thereafter showed up to work in patently inappropriate clothing and footwear.

Some might consider putting detailed dress code verbiage in an employment contract to be over the top or kindergarten silliness, and there was a point in my career when I might have agreed. Since then, however, I've had to take doctors aside for uncomfortable chats about every imaginable clothing indiscretion—from the wearing of great big pendulous necklaces with a knack for getting caught on patients' paws to the seeing of appointments in a New York Yankees T-shirt and flip-flops.

Professional Pet Practice's employment agreement covers just about everything pertaining to attire (e.g. slacks, no jeans, closed-toed footwear, scrubs with name tag or the doctor's embroidered name). It's all there in a single, neatly drafted paragraph. Bravo. I especially like the part where doctors are expected to "maintain a fresh set of clothes on premises." Unblocking a cat is no excuse for making later appointments endure your stinkiness.

'Will,' not 'may'

Finally, the contract steers clear of a little word I detest when I review an employment agreement. In contract law, the word "may" is about as useless as negotiating with a dairy bull. It's what you say to a 4-year-old about the prospect of getting ice cream after a trip to the grocery store.

At Professional Pet Practice, every doctor knows exactly whether they will receive health coverage for the upcoming contract year. The contract simply says that the employee will be entitled to participate in the clinic's health plan, that the clinic will pay

for two-thirds of the premium, and that plan details will be provided to the associate before he or she is asked to sign the employment contract. Professional Pet Practice employees also don't wonder whether they will be reimbursed for their state license fee or attendance at the Veterinary Emergency and Critical Care symposium.

By using the word "will," the contract leaves nothing to doubt or interpret.

Clear, professional contracts pay off

Employers and associates need to embrace fairness, collegiality and commitment in agreeing to an employment contract. That way, once the ink

is dried, everyone knows where they stand and what they're expected to do.

Dr. Christopher Allen is president of Associates in Veterinary Law PC, which provides a variety of legal and consulting services to veterinarians. Call (607) 754-1510 or email info@veterinarylaw.com.

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Contraindications: GALLIPRANT should not be used in dogs that have a hypersensitivity to grapiprant.
Warnings: Not for use in humans. Keep this and all medications out of reach of children and pets. Consult a physician in case of accidental ingestion by humans. **For use in dogs only.** Store GALLIPRANT out of reach of dogs and other pets in a secured location in order to prevent accidental ingestion or overdose.
Precautions: The safe use of GALLIPRANT has not been evaluated in dogs younger than 9 months of age and less than 8 lbs (3.6 kg), dogs used for breeding, or in pregnant or lactating dogs. Adverse reactions in dogs receiving GALLIPRANT may include vomiting, diarrhea, decreased appetite, mucoid, watery or bloody stools, and decreases in serum albumin and total protein. If GALLIPRANT is used long term, appropriate monitoring is recommended. Concurrent use with other anti-inflammatory drugs has not been studied. Concomitant use of GALLIPRANT with other anti-inflammatory drugs, such as COX-inhibiting NSAIDs or corticosteroids, should be avoided. If additional pain medication is needed after a daily dose of GALLIPRANT, a non-NSAID/non-corticosteroid class of analgesic may be necessary. The concomitant use of protein-bound drugs with GALLIPRANT has not been studied. Commonly used protein-bound drugs include cardiac, anticonvulsant and behavioral medications. Drug compatibility should be monitored in patients requiring adjunctive therapy. Consider appropriate washout times when switching from one anti-inflammatory to another or when switching from corticosteroids or COX-inhibiting NSAIDs to GALLIPRANT use. The use of GALLIPRANT in dogs with cardiac disease has not been studied. It is not known whether dogs with a history of hypersensitivity to sulfonamide drugs will exhibit hypersensitivity to GALLIPRANT. GALLIPRANT is a methylbenzenesulfonamide.
Adverse Reactions: In a controlled field study, 285 dogs were evaluated for safety when given either GALLIPRANT or a vehicle control (tablet minus grapiprant) at a dose of 2 mg/kg (0.9 mg/lb) once daily for 28 days. GALLIPRANT-treated dogs ranged in age from 2 yrs to 16.75 years. The following adverse reactions were observed:

Adverse reaction*	GALLIPRANT (grapiprant tablets) N = 141	Vehicle control (tablets minus grapiprant) N = 144
Vomiting	24	9
Diarrhea, soft stool	17	13
Anorexia, inappetence	9	7
Lethargy	6	2
Buccal ulcer	1	0
Immune mediated hemolytic anemia	1	0

*Dogs may have experienced more than one type or occurrence during the study. GALLIPRANT was used safely during the field studies with other concurrent therapies, including antibiotics, parasiticides and vaccinations. To report suspected adverse drug events and/or obtain a copy of the Safety Data Sheet (SDS) or for technical assistance, call 1-888-545-5973. For additional information about adverse drug experience reporting for animal drugs, contact FDA at 1-888-FDA-VETS or online at <http://www.fda.gov/AnimalVeterinary/SafetyHealth>
Information for Dog Owners: Owners should be advised of the potential for adverse reactions and be informed of the clinical signs associated with drug intolerance. Adverse reactions may include vomiting, diarrhea, decreased appetite, and decreasing albumin and total protein. Appetite and stools should be monitored and owners should be advised to consult with their veterinarian if appetite decreases or stools become abnormal.
Effectiveness: Two hundred and eighty five (285) client-owned dogs were enrolled in the study and evaluated for field safety. GALLIPRANT-treated dogs ranging in age from 2 to 16.75 years and weighing between 4.1 and 59.6 kgs (9-131 lbs) with radiographic and clinical signs of osteoarthritis were enrolled in a placebo-controlled, masked field study. Dogs had a 7-day washout from NSAID or other current OA therapy. Two hundred and sixty two (262) of the 285 dogs were included in the effectiveness evaluation. Dogs were assessed for improvements in pain and function by the owners using the Canine Brief Pain Inventory (CBPI) scoring system.¹ A statistically significant difference in the proportion of treatment successes in the GALLIPRANT group (63/131 or 48.1%) was observed compared to the vehicle control group (41/131 or 31.3%). GALLIPRANT demonstrated statistically significant differences in owner assessed pain and function. The results of the field study demonstrate that GALLIPRANT, administered at 2 mg/kg (0.9 mg/pound) once daily for 28 days was effective for the control of pain and inflammation associated with osteoarthritis.
Storage Conditions: Store at or below 86° F (30° C)
How Supplied: 20 mg, 60 mg, 100 mg flavored tablets in 7, 30 and 90 count bottles.
NADA 141-455; Approved by FDA
US Patents: 6,710,054; 7,960,407; 9,265,756
Made in New Zealand
Manufactured for: Aratana Therapeutics, Inc., Leawood, KS 66211
Reference: 1. http://www.vet.upenn.edu/docs/default-source/VIC/canine-bpi_userguide.pdf?sfvrsn=0
Additional information is available at 1-888-545-5973.
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Brief Summary: AT1-040-16



Indication

Galliprant is an NSAID indicated for the control of pain and inflammation associated with osteoarthritis (OA) in dogs.

Important Safety Information

Not for use in humans. For use in dogs only. Keep this and all medications out of reach of children and pets. Store out of reach of dogs and other pets in a secured location in order to prevent accidental ingestion or overdose. Do not use in dogs that have a hypersensitivity to grapiprant. If Galliprant is used long term, appropriate monitoring is recommended. Concomitant use of Galliprant with other anti-inflammatory drugs, such as COX-inhibiting NSAIDs or corticosteroids, should be avoided. Concurrent use with other anti-inflammatory drugs or protein-bound drugs has not been studied. The safe use of Galliprant has not been evaluated in dogs younger than 9 months of age and less than 8 lbs (3.6 kg), dogs used for breeding, pregnant or lactating dogs, or dogs with cardiac disease. The most common adverse reactions were vomiting, diarrhea, decreased appetite, and lethargy. Please see brief summary to the left for full prescribing information.

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In my last columns, I discussed Franklin Covey's Four Disciplines of Execution (4DX) as well as the importance of narrowing your focus to a "wildly important goal" (WIG) that's most important to your business's needs. (Catch up on them at dvm360.com/salois.) This step is only the beginning. Next, you must identify the critical tasks that will help you reach your goal—and make your team accountable for progress.

The right yardstick

After setting a goal, it's time to identify the specific activities that will measure progress. Covey calls these activities "lead measures" because they're the activities that lead to the needed results. Lead measures track new behaviors that success depends on. The goal itself lags behind, so that's called a "lag measure."

Good measurements—both lead and lag measures—have a three-part formula: "From X to Y by Z." For example: "Increase revenue from new clients from 15 to 20 percent by the end of the year." In

Tools to help your team achieve goals

Ready to get started? AVMA members have free access to a broad range of tools to build and motivate your team and define and meet your business goals, including:

- > **CPR to revive your veterinary team:** avma.org/TeamCPR
- > **Lead & Learn Webinars:** avma.org/CE
- > **Client Materials:** avma.org/ClientMaterials
- > **Social Media Tools:** avma.org/SocialMedia
- > **Tools for forward-booking, client communications, inactive client engagement and more at Partners for Healthy Pets:** partnersforhealthypets.org

setting up a measurement, ask yourself, “Where am I today, where do I want to get to, and by when?”

A good lead measure has the following three characteristics:

1. It’s predictive. It has a direct impact on your goals and will clearly show when you’re making progress or falling behind.

2. It’s influenceable. You must be able to make an impact on it through decisions or actions.

3. It’s achievable. Who does what, by when? You’ll need to assign specific tasks to specific people and set deadlines for them to reach targets—and they’ll need to be able to realistically achieve those goals.

For example, a veterinary practice looking to build repeat visits and loyalty might pick a lag measure—the goal—to increase the monthly percentage of first-time clients coming back for a second visit. A lead measure—which the practice will track to monitor progress—would be the monthly percentage of first-time clients who leave with their next appointment scheduled. If experience shows that new clients are more likely to return when they get a follow-up call from the practice within a couple weeks, then a second lead measure would be the percentage of first-time clients who receive that call.

Engage the team

For anyone who doesn’t work alone, achieving goals requires teamwork. You need to make each team member aware of your goals and their roles in driving success—and you need to track the team’s progress.

This is the third step in Franklin Covey’s 4DX: keeping a compelling scoreboard. A good scoreboard is simple and highly visible. It shows both lag and lead measures. And it quickly shows if you’re winning or losing.

Figure 1 provides a sample scoreboard for our hypothetical repeat-visit-chasing clinic described above. The chart shows how the team is progressing toward its goal—and why.

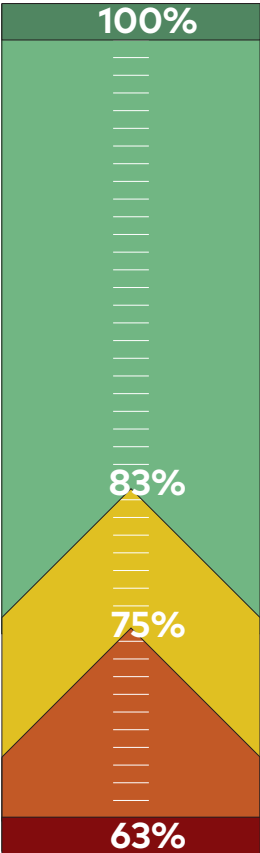
The lesson here is that people play differently when they keep score. This is a subtle but important distinction. You, as the boss, are not keeping score—the team should measure and play against itself. Give your team the sense that they’re out to win rather than using scorekeeping as a “carrot-and-stick” tool that the boss requires.

FIGURE 1

Building repeat visits and loyalty

This sample chart represents a scoreboard up on the wall for veterinary practice members to see, focusing on building repeat visits and loyalty. The chief goal or “lag measure”? Increasing the monthly percentage of first-time clients coming back for a second visit. Two metrics to get you there—“lead measures”—are the number of first-time clients who leave with their next appointment scheduled and the number of first-time clients who receive a call-back in the first two weeks.

Let’s excel to 83%
Percentage of new clients returning for repeat visits



HOW MANY can we get?

Number of each day’s first-time clients who leave with next appointment scheduled

0 of 3	0 of 4	3 of 8

HOW MANY can we get?

Number of each day’s first-time clients who are contacted within two weeks

0 of 3	2 of 4	6 of 8

High-quality commitments

The scoreboard supports a final discipline: creating a cadence of accountability. Here are two ways to that:

Hold team meetings at a frequency that works for your team. Ask team members to make commitments with a clear impact on your lead measures. High-quality commitments are specific, measurable, aligned to the goal and timely. For instance, to increase repeat visits and loyalty, each veterinarian in the practice might commit to make one of those follow-up calls to every first-time client within two weeks. The technicians might commit to explaining to each new client why it’s beneficial to schedule the next exam before leaving the hospital, while the practice manager or receptionist commits to asking the client to schedule that visit at checkout.

Have a specific agenda at these meetings. Report on successes, and ask

team members to update the scoreboard and assess whether the previous commitments were effective. Then, together, make new commitments for the coming period.

As your team watches progress and works to improve the lead measures, you’ll see progress toward your veterinary hospital’s ultimate goal.

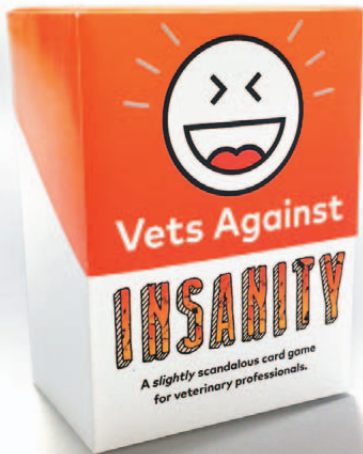


Dr. Matthew Salois is chief economist and Veterinary Economics Division director at the AVMA. He has worked in private industry, government and academia, most recently serving as director of global scientific affairs and policy at Elanco Animal Health. Before that he was chief economist with the Florida Department of Citrus. Dr. Salois earned his PhD in food and resource economics from the University of Florida.



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FDA warns veterinarians of risks associated with **altrenogest exposure**

Equine, swine products used to regulate estrus may cause reproductive disorders in people.

The FDA is alerting veterinary professionals that a synthetic progesterone product often used in horses and pigs may cause reproductive disorders in people exposed to the drug. Some of these adverse effects have occurred in teenage girls, the agency reports in a media release.

Altrenogest is a progestin used to suppress estrus in mares and to synchronize estrus in gilts (young female pigs). It's marketed under several brand names, including the equine products Regumate, Ovamed and Altren and the swine products Matrix, Chronomate and Swinamate. The equine products are available via veterinary prescription and can be administered directly on the base of the mare's tongue or on the mare's feed. The swine products are available over-the-counter and are administered with feed.

The FDA has received reports of adverse effects involving altrenogest exposure in 137 people over the last 30 years—115 women and 22 men. Eighteen of the women were teenage girls, some as young as 14 years old. Reproductive system issues have included abnormal or absent menstrual cycles in women and, in men, decreased libido, the FDA states. Headaches, fever,

abdominal pain, nausea, diarrhea, vomiting and rash have also been reported.

Most people were exposed when the drug contacted their skin, although some exposures occurred when people who did not administer the drug touched product residue on barn surfaces, equipment or treated animals, the FDA says. Most of the reports involved the product Regumate and the rest involved Matrix, but generic altrenogest products are used in the same manner and on the same animal populations, so they have the same risk for adverse events, the agency warns.

The labeling for all altrenogest products includes warnings against human exposure as the hormone is readily absorbed through intact skin, the FDA says. People who should not handle altrenogest products include:

- > Women who are or suspect they are pregnant
- > Anyone with thrombophlebitis or thromboembolic disorders or a history of these problems
- > Anyone with cerebral-vascular or coronary-artery disease
- > Women with known or suspected carcinoma of the breast
- > People with known or suspected estrogen-dependent neoplasia

> Women with unexplained vaginal bleeding

> People with benign or malignant tumors that developed during the use of oral contraceptives or other estrogen-containing products

> Anyone with liver dysfunction or disease.

Product labeling directs the use of impermeable, nonporous protective gloves when handling these products.

The FDA has been in contact with Merck, which markets Regumate and Matrix, to discuss ways the labeling and packaging of these products could be modified to enhance safety to the user. Any changes to the labeling of these pioneer products must, by law, be applied to any generic products. The agency has issued a warning letter to Bimeda, which markets Ovamed, a generic altrenogest equine product, because an ad for the product did not include important risk information associated with the product, it says.

Veterinary professionals, horse owners, and operators and employees of swine and equine facilities are encouraged to report adverse drug events to product manufacturers, who in turn are required to report this information to the FDA.



FDA warns against using products made by King Bio

High levels of microbial contamination have rendered the product unsafe.

The FDA has issued a warning to veterinarians and pet owners not to use drug products, including homeopathic drug products, made by King Bio of Asheville, North Carolina, and labeled as Dr. Kings. These products may pose a safety risk because of high levels of microbial contamination identified at the manufacturing site, according to an agency release.

King Bio expanded its voluntary recall a second time to include all water-based drug products marketed for animal use. The company recommends

that pet owners stop using the products and dispose of them immediately.

The company manufactures a range of products for pets, as well as children and adults. The affected pet products are intended for use in pets that have urinary incontinence or need digestion relief, according to the release. The full list of recalled products can be found on King Bio's website.

The use of these products can have an increased risk of serious infection that could require medical attention because of the high levels of microbial

contamination, the release states.

King Bio voluntarily recalled three homeopathic products because of confirmed microbial contamination in July. Since then it expanded the recall to include 32 products on August 22. On August 23, the FDA recommended the company expand the recall to include all products that use water as an ingredient, according to the release.

Veterinary professionals and pet owners should report adverse events or quality problems associated with the use of King Bio to the FDA.

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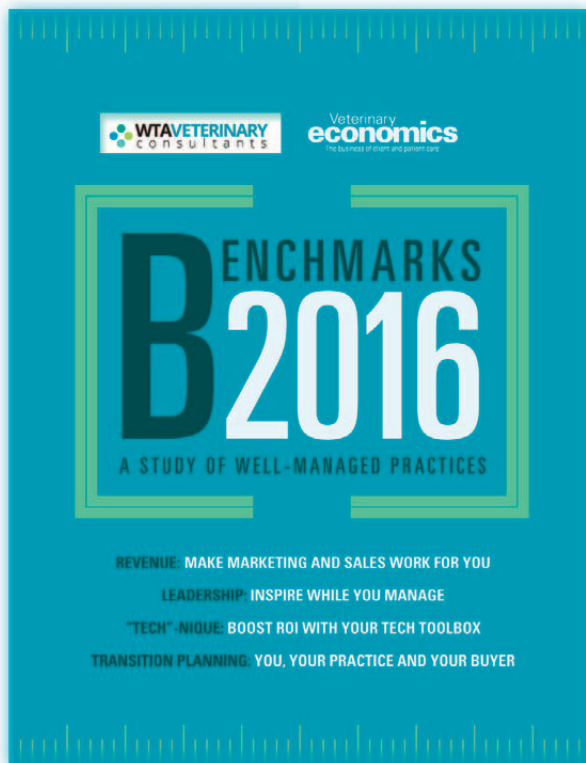


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Technology. Are you paying other companies to use technology you already have? Set tech goals, and start leveraging your own tools like websites, mobile apps and social media for maximum ROI.

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For a full listing of events in 2018, visit dvm360.com/calendar

December 13-16, 2018

Fetch dvm360 in
San Diego
(800) 255-6864, ext. 6
fetchdvm360.com/sd

May 2-5, 2019

Fetch dvm360 in
Baltimore
(800) 255-6864, ext. 6
fetchdvm360.com/baltimore



Here are CE opportunities coming in the next few months

October 7

It's What's Up
Front That Counts
Indianapolis, IN
(303) 674-8169
vmc-inc.com

October 9-11

Exotic Medicine Small
Mammals and Reptiles
Albuquerque, NM
(888) 488-3882
vetvacationce.com

October 11-12

Equine Encore 2018
Athens, GA
(706) 542-1451
vet.uga.edu

October 11-12

Financial Boot Camp
Denver, CO
(303) 674-8169
vmc-inc.com

October 12-14

Veterinary Orthotics
and Prosthetics in
Canine Rehabilitation
Westminster, CO
(303) 424-3325
caninerehabinstitute.com/orthopedics_proesthetics.lasso

October 13-14

Veterinary Dental
Extraction Course
Weekend Dog &
Cat Wet Lab

Dallas, TX

(941) 276-9141
veterinarydentistry.net

October 13-14

Internal Medicine 2018
Athens, GA
(706) 542-1451
vet.uga.edu

October 13-14

Veterinary Dentistry
For Technicians
Weekend Extravaganza
Dallas, TX
(941) 276-9141
veterinarydentistry.net

October 14

Fear Free in Practice:
A one-day workshop
presented by Fear Free
and NAVTA
Atlanta, GA
(303) 952-0585
fearfreepets.com

October 15

Indispensable Associate Initiative: Professional Skills Workshop
Conroe, TX
(800) 252-2242
aaha.org

October 15-19

VMC School of
Veterinary Practice
Management
Aurora, CO
(303) 674-8169
vmc-inc.com

October 18-19

2018 Haygard
Bluegrass Equine
Symposium's "Poor
Performance in the
Equine Athlete"
Lexington, KY
(303) 674-8169
haygard.com

October 18-21

14th Annual
Promoting Excellence
Equine Symposium
Naples, FL
(407) 851-3862
faep.net

October 19-20

Sports Horse Medicine & Orthopedics—A
2-Day Practical Course
Stillwater, MN
(844) 870-6097
vetpd.com

October 19-23

Canine Rehabilitation
Veterinary Nursing
Module
Wheat Ridge, CO
(303) 424-3325
caninerehabinstitute.com/canine_rehab_veterinary_nursing.lasso

October 20-21

Feline Dentistry CE
Course and Dental
Extraction Wet Lab
Orlando, FL

(941) 276-9141

veterinarydentistry.net

October 21-23

2018 WVC Hands-On
Lab: Intensive
Abdominal Ultrasound
Las Vegas, NV
(702) 739-6698
oquendocenter.org

October 24-27

American College of
Veterinary Surgeons
(ACVS) Surgery Summit
Phoenix, AZ
(301) 916-0200
eventscribe.com

October 21-23

2018 WVC Hands-On
Lab: Comprehensive
Small Animal Dentistry
Las Vegas, NV
(702) 739-6698
oquendocenter.org

October 27-28

Canine Dentistry CE
Course and Dental
Extraction Wet Lab
Orlando, FL
(941) 276-9141
veterinarydentistry.net

November 03-07

Introduction to
Canine Rehabilitation
Coral Springs, FL
(303) 424-3325
caninerehabinstitute.com/intro_cr.lasso

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1. Outside County Paid/Requested Mail Subscriptions Stated on PS Form 3541	38,465	38,472
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F. Total Distribution (Sum of 15c and e)	50,528	50,489
G. Copies not Distributed	70	37
H. Total (Sum of 15f and g)	50,598	50,526
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Kristina Bildeaux, Audience Development Director

Kristina Bildeaux

Date: 9/30/18

I certify that the statements made by me above are correct and complete.



Droughts and sandy soil: A recipe for disaster

Dr. Brock learned a lot about bovine toxicology the hard way.

It's been a long, hot, dry summer in Lamesa, Texas. Until one recent night, we'd received only 2.5 inches of rain all year with 40 days over 100 degrees. I've lived in Lamesa for nearly 30 years and I've seen this weather pattern before.

The year after I moved here we had a drought similar to the one we're experiencing now. One smoking hot Thursday afternoon I got a call from a local rancher. His voice was desperate as he told me what was happening.

One of his pastures was home to about 150 cows, and what this man described sounded more like a bad horror movie than a cattle ranch in West Texas. I listened intently for a few minutes and then told him I'd be there as fast as I could.

I was still fairly new to the area and was a whopping 29 years old. What I saw as I came over the hill made my jaw drop and brought a tear to my eye. Twenty or so cows were standing belly-deep in the watering tank, slobbering and bellowing mournfully. Scattered on the bank around the tank were about 75 dead cows, and another 25 were doing strange things next to the water.

One cow was standing with its left front leg planted firmly on the ground and was spinning in circles with its other three legs. It had paced out a deep circle, and the pivot leg was a good 10 inches deep in the hole it had worn into the dirt. Two other cows were standing with their necks arched, looking as straight up as a cow can possibly look. One was pawing at her mouth with her front legs and had slobber pouring out of her mouth.

Piles of diarrhea covered the bank of the pond and almost as many piles

of slobber. Three of the cows I had previously assumed were dead suddenly came to life and had seizures. One cow jumped up post-seizure and ran headlong into a tree.

As I pulled up next to the ranch owner in his pickup, he rolled down the window and told me not to get out. He said there were four or five cows running around that would attack you if they saw you. Two cows on the bank were knuckled over on all four legs and standing on the top of their fetlocks.

I needed to use a lifeline to call some folks smarter than me on my bag phone at the time. I drove to the top of a hill and began making calls. One after another, smart people verified my worries—it was salt toxicity.

Over the next few days it all came together. The water was tested and found to have roughly 20 times more salt and sulfates than the ocean. You may wonder why the other three pastures weren't having the same problem. That's an interesting story.

The rancher had a well up on the caprock, and he'd piped water down to one tank in each of his four pastures. This was done to ensure that each pasture would always have water even if it didn't rain. All of the pastures except the one with the dead cows in it had at least two tanks.

The drought that year was bad, but the other three pastures still had water in the tanks that were not receiving water from the well. This prompted me to test the water coming from the well and, sure enough, the well water was terrible.

The rancher couldn't believe it. He'd had the water from the well tested two years earlier and it had been won-

derful. How could underground well water go bad in such a short time? I was on a mission to find out.

I called people from everywhere I could think of and finally found a fella at a university who had the answer.

We live in an area with sandy soil. We are also very flat. When it does rain, the water stacks up in large areas called playa lakes. These things can cover two or three square miles when large rains come, and then they evaporate and sink into the ground and may be gone for years until another big rain comes.

As these lakes evaporate, salt that has washed in from the surrounding soil becomes concentrated. And since the soil is so sandy, the now highly concentrated saltwater leaches down into the aquifer, resulting in good water becoming toxic. It's a natural process that the university guy says happens in our area once every 25 or 30 years when we have a year of big rains followed by a hot, dry year.

We slowly introduced the cows in the pasture that were still alive to fresh water. If you give it to them too fast, it will kill them. That rancher stayed with the surviving cattle 24 hours a day, giving them small quantities of water hourly until they were rehydrated. There is no other treatment than this.

I've learned a lot over the last 30 years, and I've taught every producer in our area about saltwater toxicity. We haven't had another case since then.

Bo Brock, DVM, owns Brock Veterinary Clinic in Lamesa, Texas. His latest book is Crowded in the Middle of Nowhere: Tales of Humor and Healing From Rural America.

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♦Source: Among veterinary brands. Survey conducted among small animal veterinarians who recommended oral joint health supplements.

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SOP™ Locking Plates

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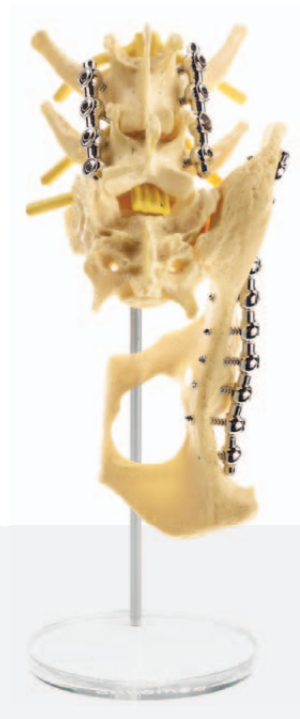
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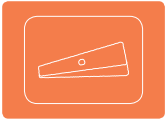
for Patella Luxation



SOP™

for Fracture Repair

Course Outline



Canine Cruciate Disease

MMP - A progression of the TTA procedure for treatment of hindlimb lameness caused by cranial cruciate ligament insufficiency

Benefits of MMP

- ✓ MMP is suitable for referral and primary-care veterinary surgeons
- ✓ Suitable for a wide range of dogs from small to large
- ✓ Complication rates are acceptably low
- ✓ Shorter surgery time
- ✓ Shorter convalescence
- ✓ Simpler, cost-effective surgery




Patient: Happy **Surgeon:** Tommy Hargittai DVM MRCVS **Practice:** Anderson Veterinary Group

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Course Content

The Modified Maquet Procedure (MMP) is an evolution of the traditional TTA procedure for treatment of lameness due to cranial cruciate disease.

Canine cranial cruciate ligament disease is the most common cause of lameness seen in canines and this course will cover many of the current controversies surrounding this subject. You will then learn about the rationale behind the development of the MMP procedure, how to perform it then followed by a practical session.

Course Agenda

- Canine cruciate ligament disease and it's treatment
- Cranial cruciate controversies
- Cruciate surgery outcomes
- An introduction to MMP and OrthoFoam™
- How to perform the MMP procedure with confidence
- Clinical experience and publications

Key Learning Objectives

By the end of this course delegates will have an understanding of:

- Why we developed another cruciate surgical technique
- Controversies surrounding cruciate failure and the surgeries available
- Biomechanics and theoretical foundation of the MMP procedure
- Ability to perform the MMP procedure

Course Locations & Dates

Orlando:

January 24th

Atlanta:

January 26th, September 12th

Las Vegas, Oquendo Center:*

March 30th, November 14th

San Antonio:

April 25th

Chicago:

April 27th, September 14th

Philadelphia:

April 29th

Orange (CA), Improve Intl:*

June 1st-2nd

Phoenix:

June 3rd

Toronto:

July 14th

Miami, Improve Intl:*

October 10th-11th

RACE No. 844-15586

6 hours CE credits for the full day course
 (Canine Cruciate Disease & Patella Luxation)

\$600.00*

(Canine Cruciate Disease + Patella Luxation)

or \$900 for Fracture Repair + Canine Cruciate Disease + Patella Luxation

* Different pricing for Oquendo Center and Improve International courses
 * Denotes Wet-lab

Course Outline



Patella Luxation

RidgeStop™ - An innovative surgical technique and novel implant for treatment of patella luxation

Benefits of RidgeStop™

- ✓ Removes the need for an aggressive sulcoplasty
- ✓ Minimally traumatic
- ✓ Minimally invasive
- ✓ Minimal joint interference
- ✓ Implant is made from medical grade UHMW polyethylene



Patient: Vader


Surgeon: Rafael Garrido Ldo Veterinaria MRCVS

Practice: Vets4Pets Sidcup

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Course Content

This surgical technique is a simple alternative to an aggressive sulcoplasty and uses a medical-grade implant that can be used alone or as an adjunct to re-alignment operations. The course explains the pathogenesis and treatment selection in patella luxation as well as a review of current surgical treatment options available.

This will then be followed by an introduction to RidgeStop™ - the implant and surgical technique, followed by a practical session.

Course Agenda

- Overview of patella luxation pathophysiology
- Diagnosis and current surgical treatments for patella luxation
- Classifying the degree of luxation and associated deformities
- The development and rationale of RidgeStop™
- The RidgeStop™ procedure

Key Learning Objectives

By the end of the course, delegates will have an understanding of:

- Diagnosis and classifying degree of patella luxation
- Treatment selection in patella luxation
- The concept of RidgeStop™
- Ability and confidence to carry out the RidgeStop™ procedure



Course Locations & Dates

Orlando:

January 24th

Atlanta:

January 26th, September 12th

Las Vegas, Oquendo Center:*

March 30th, November 14th

San Antonio:

April 25th

Chicago:

April 27th, September 14th

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June 3rd

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July 14th

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October 10th-11th

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 (Canine Cruciate Disease & Patella Luxation)

\$600.00*

(Canine Cruciate Disease + Patella Luxation)

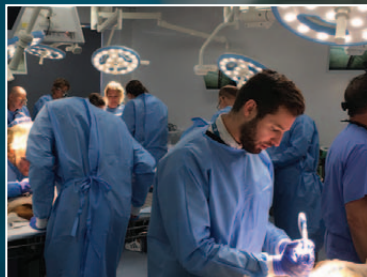
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Las Vegas Oquendo Center Wet-lab

March 2019:

- 30th - Canine Cruciate Disease
 - Patella Luxation
- 31st - Fracture Repair

November 2019:

- 14th - Canine Cruciate Disease
 - Patella Luxation
- 15th - Fracture Repair

Single Day \$1000.00

Canine Cruciate Disease + Patella Luxation
or
Fracture Repair

Both Days \$1800.00

Canine Cruciate Disease + Patella
Luxation + Fracture Repair



Orange (CA) Improve International Wet-lab

June 1st-2nd 2019:

- Canine Cruciate Disease
- Patella Luxation
- Fracture Repair

Miami Airport Marriot (Day 1)
Miller School of Medicine (Day 2)

Miami Improve International

October 10-11th 2019:

- Canine Cruciate Disease
- Patella Luxation
- Fracture Repair

Hilton Hotel Anaheim (Day 1)
Irvine University (Day 2)

Both Days \$1800.00

Canine Cruciate Disease + Patella
Luxation + Fracture Repair



Course Outline



Fracture Repair

SOP™ - A locking plate system with great flexibility and multiple applications

Benefits of SOP™

- ✓ Available in 3 sizes: (2.0mm, 2.7mm and 3.5mm)
- ✓ Greater plate pull-out force
- ✓ Uses standard cortical screws
- ✓ Exact contouring not required
- ✓ A cost effective system




Patient: Dave **Surgeon:** Scott Rutherford BVMS CertSAS DipECVS MRCVS RCVS **Practice:** frank. Pet Surgeons.

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Course Content

The SOP™ (String of Pearls) was designed to serve as a locking plate system that can be thought of mechanically as an internal – external fixator.

The course will teach you how this versatile plate system differs from other conventional locking plate systems and demonstrate the wide range of applications that it can be used for.

Course Agenda

- Fracture repair systems – the flaws and failings
- Locking plate technology
- Features and biomechanics of the SOP™ system
- Where and how to use it
- Case reviews
- Publication overview
- Half a day practical session using a variety of anatomical sawbones

Key Learning Objectives

By the end of the course, delegates will have an understanding of:

- Why SOP™ is a unique system for fracture repair
- Advantages over conventional plates
- Case selection and clinical applications of SOP™
- The technical ability to use the SOP™ system in a range of applications



Course Locations & Dates

Orlando:

January 25th

Atlanta:

January 27th, September 13th

Las Vegas, Oquendo Center:*

March 31st, November 15th

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April 26th

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April 28th, September 15th

Philadelphia:

April 30th

Orange (CA), Improve Intl:*

June 1st-2nd

Phoenix:

June 4th

Toronto:

July 15th

Miami, Improve Intl:*

October 10th-11th

RACE No. 844-15588

6 hours CE credits for the full day course
 (Fracture Repair)

\$400.00*

for the full day course (Fracture Repair)

or \$900 for Fracture Repair + Canine Cruciate Disease + Patella Luxation

* Different pricing for Oquendo Center and Improve International courses
 * Denotes Wet-lab

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About Orthomed

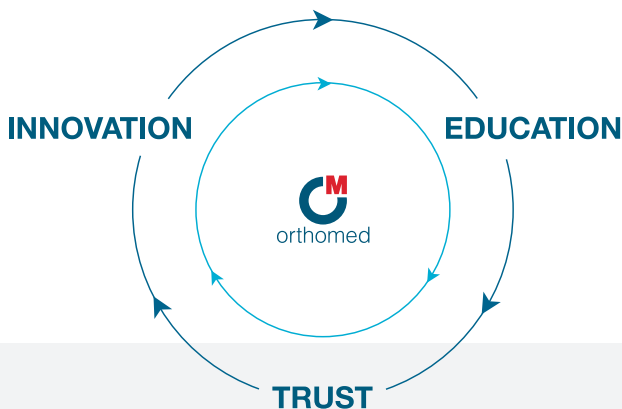
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Patient: Bruno **Surgeon:** Robert White BVetMed PG Cert SAS MRCVS **Practice:** Donaldson's Vets **Surgery Type:** RidgeStop™

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Scott Rutherford

BVMS, CertSAS, DipECVS, MRCVS
 RCVS Recognised and European Specialist in Small Animal Surgery

After graduating from Glasgow University in 2001, Scott spent six years in general practice before moving to Croft Veterinary Hospital in Northumberland in 2007 where he completed

an ECVS residency in Small Animal Surgery in 2012. Scott became a European Veterinary Specialist in Small Animal Surgery in 2013 and an RCVS Recognised Specialist in 2014. He spent two years at both North Downs Specialist Referrals and then Willows Referral Services. He is a co-founder and director of frank. Pet Surgeons. Scott is actively involved in clinical research and teaching and he recently became an Associate Tutor at Chester University.



Peter Early

Clinical Professor, Neurology and Neurosurgery, DVM, ACVIM

Dr. Early is a graduate of the University of Florida, College of Veterinary Medicine. He spent two years at Cornell University, where he first completed a small animal rotating internship, followed by a second year as a

staff veterinarian. He completed a Neurology/Neurosurgery residency at North Carolina State University and is a Diplomate of the American College of Veterinary Internal Medicine. He presently serves as a Clinical Associate Professor in Neurology and Neurosurgery at NCSU and provides regular locum work at multiple university and specialty hospitals throughout the country. Dr. Early's special interests include neurosurgery, specifically decompression and stabilization techniques.



Malcolm Ness

BVetMed, CertSAO, DipECVS, FRCVS and European Specialist in Surgery

Malcolm Ness is recognised globally as a specialist in Small Animal Surgery by RCVS and ECVS. With hundreds of presentations made across the globe as an invited speaker, Dr Ness also has; over 20 first author papers in veterinary

peer reviewed journals, commissioned editorials and numerous commissioned articles in open access veterinary and lay magazines and periodicals. His clinical interests include most aspects of orthopedic and spinal surgery and Dr Ness is actively engaged in the research and development of novel implants and orthopedic surgical techniques.



Dr. Karl Kraus

DVM, MS, Diplomate ACVS

Dr. Kraus is Chief of Small Animal Surgery at Lloyd Veterinary Medical Center at Iowa State University and diplomate of the American College of Veterinary Surgeons. He graduated from Kansas State University in 1985, completed residency training at University

of Missouri-Columbia in 1989 and was professor of surgery at Tufts University from 1989 to 2007. He also held a joint appointment at Harvard University where he helped develop neurosurgical procedures on humans at Brigham and Women's Hospital from 1989 to 1998. His major areas of interest include fracture repair, external fixation, ACL repair, spinal stabilisation, and neurosurgery.



Robert L. Bergman

DVM, MS, Diplomate ACVIM (Neurology)

Dr. Bergman received his DVM from the University of Georgia. Following internship, he pursued a residency in neurology and neurosurgery at the Virginia-Maryland Regional College of Veterinary Medicine. Concurrently, he completed a Master's Degree at Virginia

Tech with a focus on neuroscience and cerebrospinal fluid analysis. He became a diplomate of ACVIM specialty of neurology in 2001. Dr. Bergman recently served 5 years and was chair of the ACVIM Neurology Certification Exam Committee. While busy in private practice, he enjoys teaching neurosurgery to residents and those interested in the advancement of veterinary neurosurgery. He has a particular interest in spinal fusion, spinal trauma and neuro-oncology.

Locations & dates

Course Locations

United States and Canada




- | | | | | |
|-----------|---------------|-----------|----------------|---------------|
| 1 Atlanta | 3 Las Vegas | 5 Miami | 7 Philadelphia | 9 San Antonio |
| 2 Chicago | 4 Orange (CA) | 6 Orlando | 8 Phoenix | 10 Toronto |

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January	February	March
Orlando 24th - Canine Cruciate Disease (Sawbone) - Patella Luxation (Sawbone) 25th - Fracture Repair (Sawbone)		Las Vegas, Oquendo Center* 30th - Canine Cruciate Disease (Wet-lab) - Patella Luxation (Wet-lab) 31st - Fracture Repair (Wet-lab)
Atlanta 26th - Canine Cruciate Disease (Sawbone) - Patella Luxation (Sawbone) 27th - Fracture Repair (Sawbone)		
April	May	June
San Antonio 25th - Canine Cruciate Disease (Sawbone) - Patella Luxation (Sawbone) 26th - Fracture Repair (Sawbone)		Orange (CA), Improve International* 1st-2nd - Canine Cruciate Disease (Wet-lab) - Patella Luxation (Wet-lab) - Fracture Repair (Wet-lab)
Chicago 27th - Canine Cruciate Disease (Sawbone) - Patella Luxation (Sawbone) 28th - Fracture Repair (Sawbone)		Phoenix 3rd - Canine Cruciate Disease (Sawbone) - Patella Luxation (Sawbone) 4th - Fracture Repair (Sawbone)
Philadelphia 29th - Canine Cruciate Disease (Sawbone) - Patella Luxation (Sawbone) 30th - Fracture Repair (Sawbone)		
July	August	September
Toronto 14th - Canine Cruciate Disease (Sawbone) - Patella Luxation (Sawbone) 15th - Fracture Repair (Sawbone)		Atlanta 12th - Canine Cruciate Disease (Sawbone) - Patella Luxation (Sawbone) 13th - Fracture Repair (Sawbone)
		Chicago 14th - Canine Cruciate Disease (Sawbone) - Patella Luxation (Sawbone) 15th - Fracture Repair (Sawbone)
October	November	December
Miami, Improve International* 10th-11th - Canine Cruciate Disease (Wet-lab) - Patella Luxation (Wet-lab) - Fracture Repair (Wet-lab)	Las Vegas, Oquendo Center* 14th - Canine Cruciate Disease (Wet-lab) - Patella Luxation (Wet-lab) 15th - Fracture Repair (Wet-lab)	

* Denotes Wet-lab

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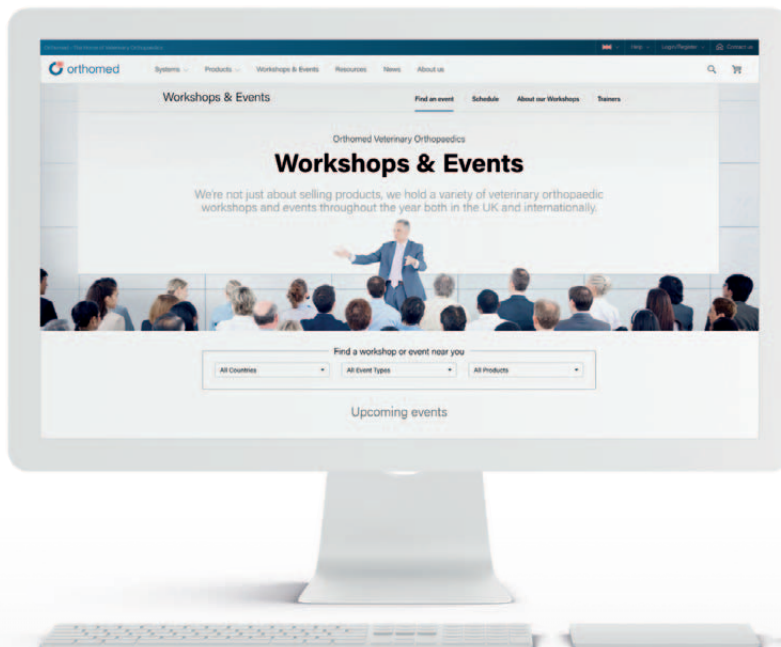
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