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Trends magazine

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A Once-Daily Injection for Most Dogs[1]

EXPERIENCE THE DIFFERENCE

All Insulins Are Not Created Equal

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ProZinc®
(protamine zinc recombinant human insulin)

1. PROZINC® (protamine zinc recombinant human insulin) [Freedom of Information Supplement; NADA 141-297]. St. Joseph, MO: Boehringer Ingelheim Vetmedica, Inc.; 2019.

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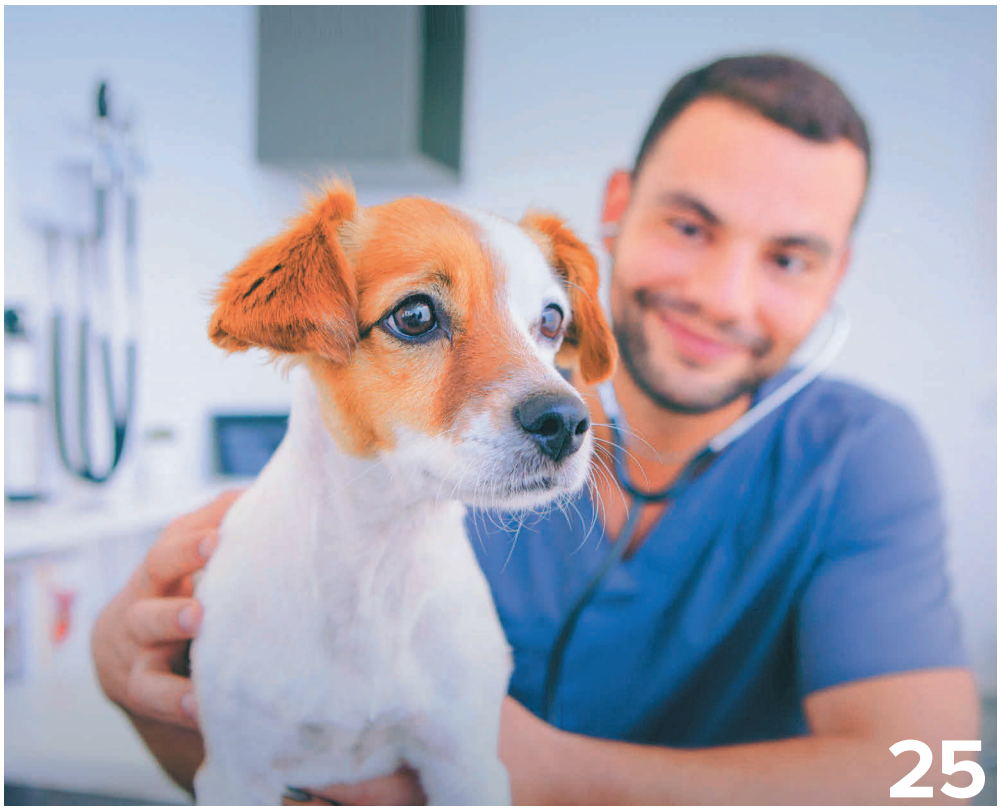
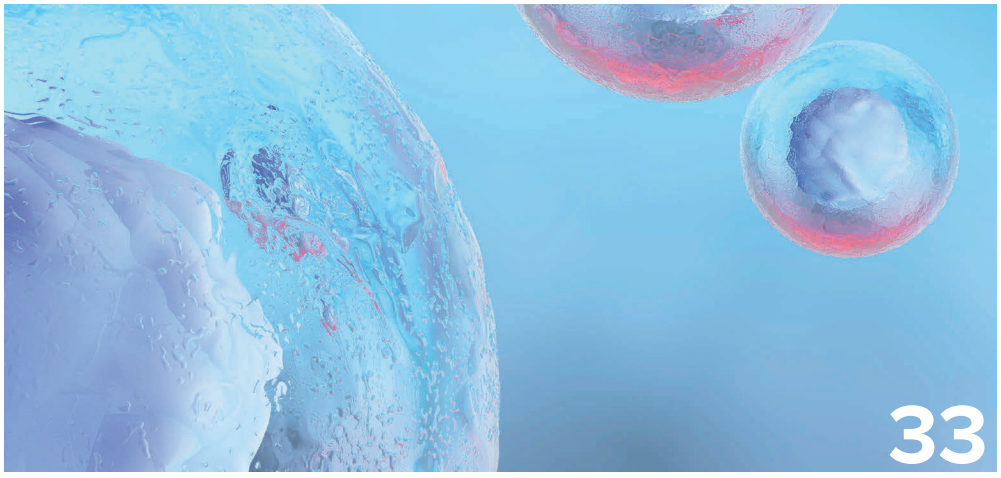
features





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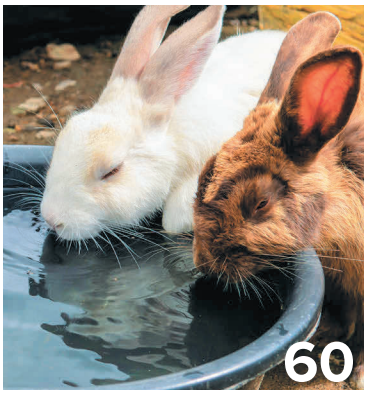
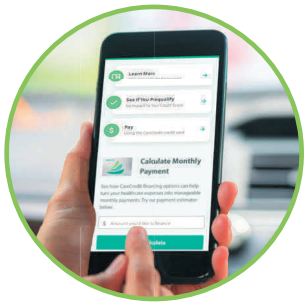
departments



the usual

The budget-friendly solution for **veterinary care** *is friendlier than ever.*



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from the editor's desk

EVER WONDER HOW SOME PEOPLE ARE "CHOSEN" TO REPRESENT THE VETERINARY PROFESSION on TV or radio interviews? The truth is, these individuals actively seek out opportunities with media outlets. The good news is, you can do it, too! With some preparation and planning (and a little bit of jumping on opportunities as they arise), you can be a voice for the profession in your area. This month's feature, by award-winning professional journalist and long-time *Trends* contributor Jen Reeder, explores ways that practices can reach out to media and offer to do interviews or be an expert source for a news article.

As we at AAHA continue to support technicians and the varied roles techs can fill in a practice, we have an article this month on volunteer opportunities. Yes, these are unpaid, but the reward for helping out in an emergency or immediately following a natural disaster can be immense in its own way. Also in this issue is an update on stem cells, including some useful tips on managing clients' high expectations for this type of treatment.

And in our monthly podcast recap, Katie Berlin, DVM, host of *Central Line: The AAHA Podcast,* talks to Erin Frey, DVM, MPH, DACVPM, and Jennifer Granick, DVM, MS, PhD, DACVIM, about antimicrobial resistance and their participation in the task force that brought you the *2022 AAFP/AAHA Antimicrobial Stewardship Guidelines*.

DO YOU LIKE FREE MONEY?

Don't forget about our Employee of the Month contest! Eligible practices can enter the contest online by filling in a few details about why your employee is the best, and then we will randomly select one winner each month to win a $500 Amazon gift card, courtesy of our friends at CareCredit. If you don't win, don't worry, you can enter again the next month! Try it today at aaha.org/EOTM.

COMING NEXT MONTH

Coming up in January is our Team Issue! Much of the magazine will be focused on the "Team"—from practice culture, to human resources, to technician utilization, we've got it covered.

As always, let me know what you think at trends@aaha.org.

—Ben Williams, Editor

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View from the Board

Consider Regenerative Medicine

As we search for new and innovative ways to help our patients, we should be considering regenerative medicine. Regenerative medicine is becoming increasingly popular in both human and veterinary medicine for treatment of multiple disease processes. Recent studies have demonstrated its efficacy in managing numerous orthopedic conditions in humans, dogs, and horses, including osteoarthritis and soft tissue injuries. I have used regenerative medicine in my practice for many years.

I started out using stem cell therapy but today mostly use platelet rich plasma (PRP). The reason I use more PRP today is because of the lower client cost and ease of sample collection and administration as well as its similar effectiveness with stem cell therapy. I apply a multimodal approach to regenerative medicine, using it as an adjunct to surgical, medical, and rehabilitation therapy. Our practice has a busy rehabilitation service, so combination therapy is second nature.

For our practice, PRP therapy is a staple. PRP therapy is a minimally invasive procedure that typically can be performed on an outpatient basis. It can be used as a single injection into the joint or tissue or as a series of one to three injections, with two weeks between each injection. In my experience, if PRP is being used to manage moderate to severe osteoarthritis by itself, about 50% of dogs require multiple doses. The most common side effect is discomfort associated with the injection, which can be managed with pain medications; it typically resolves within 12 to 24 hours after the injection. I try to avoid therapeutic ultrasound, electrostimulation, hydrotherapy, steroids, and nonsteroidal anti-inflammatory drugs during the two to four weeks following PRP therapy because of the lack of information on their potential interactions with PRP.

Stem cells are another important part of regenerative medicine. Almost all veterinary research has focused on adult stem cells, specifically derived from bone marrow or adipose tissue. I prefer the adipose tissue source in dogs for several reasons: ease of access, low morbidity and pain associated with collection, and high-yielding stem cell count compared to bone marrow. I have done less stem cell work recently, but I still believe in the value.

Many factors play a role in how you choose what modality, frequency, and combination of PRP or stem cells to use for each patient. Finding the balance between medicine, surgery, rehabilitation, and regenerative therapy is the art of our profession.

The business of veterinary medicine has become increasingly more complicated over the last 20 years. Finding another profit center can be a welcome addition for your practice as well as a life changer for your patients. Regenerative medicine has a low cost of entry. Getting a regenerative therapy program started at your practice requires doctor and staff training, but the benefits will far exceed the initial discomfort.

If you commit yourself to continued learning, your professional development extends to everyone around you, ensuring that your team also develops the habit of acquiring skills, knowledge, and abilities to become better at their jobs. After all, isn't that what we all strive for?

Mark Thompson, DVM, CCRP, is AAHA's president-elect. Thompson is owner of Country Hills Pet Hospital, the 2018 AAHA-Accredited Practice of the Year winner.

This month in AAHA's Publicity Toolbox . . .

Here are the downloadable social media images available for AAHA-accredited members at **aaha.org/publicity** this month:

National Cat Lovers Month

If you're cold, they're cold: Keep pets indoors.

Season's Greetings!

Happy New Year's Eve!

Why does AAHA not do unplanned inspections of accredited practices?

Much of the pushback I get from colleagues about AAHA is that the standards are great, but many places skirt by inspections because they are planned/scheduled, leading to practices letting standards lapse in between. I do find that hard to argue.

AAHA | Community

AAHA members: Log in to see the full discussion at community.aaha.org. Questions about your membership? Email aaha@aaha.org.

Anthony Merkle, CVT, Regional Manager, AAHA Member Experience:

Thank you for your question. In the past, AAHA has been viewed as an "inspection" agency, but we've found this approach to be limiting. Our goal, above all else, is to simplify the journey toward excellence for all veterinary practices. Rather than being "inspectors," we have emphasized the team approach.

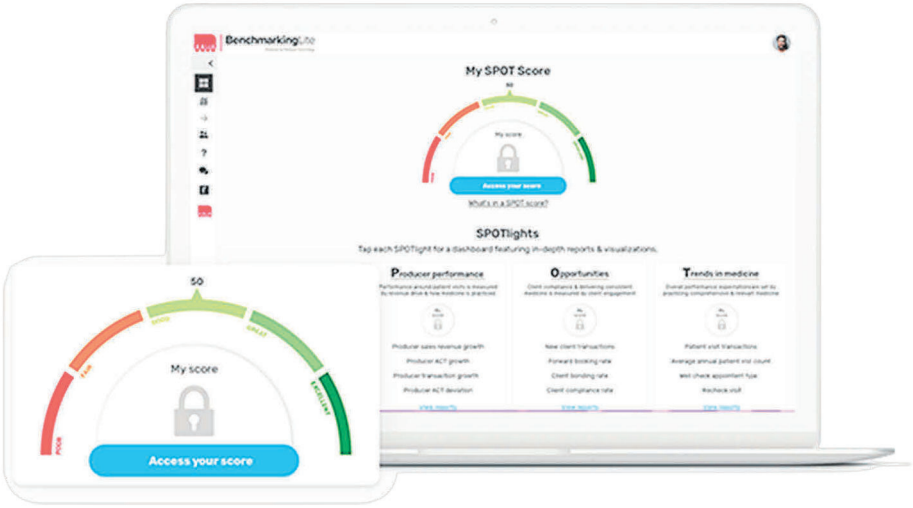
Having scheduled visits and evaluations allows us to truly become a part of practice team to work closely with them. We aim to help above all else—and we've found that structuring accreditations this way has produced better buy-in and understanding than being feared as arbitrary inspectors. We want to be partners in the process and to create relationships that allow us to understand the workplace culture at all accredited practices, as well as how implementing the standards will benefit their entire ecosystem.

Benchmarking Tools for AAHA Members

Ever wonder the true number of times a pet walks through the door every year? How about how successful you and others are at getting the pet back in for a medical progress visit?

AAHA has teamed up with Petabyte Technology to bring the veterinary community a digital tool that uses live practice data feeds and advanced benchmarking analytics to help practices save time, increase revenue, and practice better medicine.

Get insight into how a pool of practices is doing from revenue trends to medical performance, and even see how you're doing, side-by-side, live, regardless of your practice management software.



Lose the spreadsheets. Focus on your patients. AAHA Benchmarking: Simplifying the path to a thriving practice so you can focus on providing the best medicine.

Get started with AAHA Benchmarking today at aaha.org/getbenchmarking

AAHA

Congratulations

— TO AAHA'S INAUGURAL —

Veterinary Technician of the Year 2023

Nicole Jameson Fritz AHT, RVT, VTS(ECC)
Technician Supervisor

Canada West Veterinary Specialists
Burnaby, British Columbia

Be sure to listen to Nicole's story on an upcoming edition of Central Line: The AAHA Podcast.

Approved by FDA under
NADA # 141-177

MOMETAMAX®
(GENTAMICIN SULFATE, MOMETASONE FUROATE MONOHYDRATE, AND CLOTRIMAZOLE, OTIC SUSPENSION)

VETERINARY
For Otic Use in Dogs Only

CAUTION Federal law restricts this drug to use by or on the order of a licensed veterinarian.
Keep this and all drugs out of the reach of children.

DESCRIPTION Each gram of MOMETAMAX Otic Suspension contains gentamicin sulfate, equivalent to 3 mg gentamicin base; mometasone furoate monohydrate equivalent to 1 mg mometasone furoate; and 10 mg clotrimazole, in a mineral oil-based system containing a plasticized hydrocarbon gel.

PHARMACOLOGY
Gentamicin: Gentamicin sulfate is an aminoglycoside antibiotic active against a wide variety of gram-negative and gram-positive bacteria. *In vitro* tests have determined that gentamicin is bactericidal and acts by inhibiting normal protein synthesis in susceptible microorganisms. In clinical trials, gentamicin was shown to have a range of activity against the following organisms commonly isolated from infected canine ears: *Pseudomonas* spp. (including *P. aeruginosa*), coagulase-positive staphylococci, *Enterococcus faecalis, Proteus mirabilis* and beta-hemolytic streptococci.
Mometasone: Mometasone furoate monohydrate is a synthetic adrenocorticoid characterized by a novel (2) furoate 17-ester having chlorine at the 9 and 21 positions, which have shown to possess high topical potency.

Systemic absorption of mometasone furoate ointment was found to be minimal (2%) over 1 week when applied topically to dogs with intact skin. In a 6-month dermal toxicity study using 0.1% mometasone ointment on healthy intact skin in dogs, systemic effects typical of corticosteroid therapy were noted.

The extent of percutaneous absorption of topical corticosteroids is determined by many factors including the integrity of the epidermal barrier. Topical corticosteroids can be absorbed from normal, intact skin. Inflammation can increase percutaneous absorption. Once absorbed through the skin, topical corticosteroids are handled through pharmacokinetic pathways similar to systemically administered corticosteroids.
Clotrimazole: Clotrimazole is a broad-spectrum antifungal agent that is used for the treatment of dermal infections caused by various species of dermatophytes and yeast. The primary action of clotrimazole is against dividing and growing organisms.

In vitro, clotrimazole exhibits fungistatic and fungicidal activity against isolates of *Trichophyton rubrum*, *Trichophyton mentagrophytes*, *Epidermophyton floccosum*, *Microsporum canis*, *Candida* spp., and *Malassezia pachydermatis*. Resistance to clotrimazole is very rare among the fungi that cause superficial mycoses. In an induced otitis externa study using dogs infected with *Malassezia pachydermatis*, 1% clotrimazole in the vehicle formulation was effective both microbiologically and clinically in terms of reduction of exudate, odor, and swelling.

In studies of the mechanism of action, the minimum fungicidal concentration of clotrimazole caused leakage of intracellular phosphorus compounds into the ambient medium with concomitant breakdown of cellular nucleic acids and accelerated potassium efflux. These events began rapidly and extensively after addition of the drug. Clotrimazole is very poorly absorbed following dermal application.
Gentamicin-Mometasone-Clotrimazole: By virtue of its three active ingredients, MOMETAMAX Otic Suspension has antibacterial, anti-inflammatory, and antifungal activity. In clinical field trials, MOMETAMAX Otic Suspension was effective in the treatment of otitis externa associated with bacteria and *Malassezia pachydermatis*. MOMETAMAX Otic Suspension reduced discomfort, redness, swelling, exudate, and odor.

INDICATIONS MOMETAMAX Otic Suspension is indicated for the treatment of otitis externa in dogs caused by susceptible strains of yeast (*Malassezia pachydermatis*) and bacteria (*Pseudomonas* spp. [including *P. aeruginosa*], coagulasepositive staphylococci, *Enterococcus faecalis, Proteus mirabilis,* and beta-hemolytic streptococci).

CONTRAINDICATIONS If hypersensitivity to any of the components occurs, treatment should be discontinued and appropriate therapy instituted. Concomitant use of drugs known to induce ototoxicity should be avoided. Do not use in dogs with known perforation of eardrums.

WARNINGS The use of these components has been associated with deafness or partial hearing loss in a small number of sensitive dogs (eg, geriatric). The hearing deficit is usually temporary. If hearing or vestibular dysfunction is noted during the course of treatment, discontinue use of MOMETAMAX Otic Suspension immediately and flush the ear canal thoroughly with a nonototoxic solution.

Corticosteroids administered to dogs, rabbits, and rodents during pregnancy have resulted in cleft palate in offspring. Other congenital anomalies including deformed forelegs, phocomelia, and anasarca have been reported in offspring of dogs that received corticosteroids during pregnancy.

Field and experimental data have demonstrated that corticosteroids administered orally or parenterally to animals may induce the first stage of parturition if used during the last trimester of pregnancy and may precipitate premature parturition followed by dystocia, fetal death, retained placenta, and metritis.

PRECAUTIONS Before instilling any medication into the ear, examine the external ear canal thoroughly to be certain the tympanic membrane is not ruptured in order to avoid the possibility of transmitting infection to the middle ear as well as damaging the cochlea or vestibular apparatus from prolonged contact.

Administration of recommended doses of MOMETAMAX Otic Suspension beyond 7 days may result in delayed wound healing.

If overgrowth of nonsusceptible bacteria or fungi occurs, treatment should be discontinued and appropriate therapy instituted.

Avoid ingestion. Adverse systemic reactions have been observed following the oral ingestion of some topical corticosteroid preparations. Patients should be closely observed for the usual signs of adrenocorticoid overdosage which include sodium retention, potassium loss, fluid retention, weight gain, polydipsia, and/or polyuria. Prolonged use or overdosage may produce adverse immunosuppressive effects.

Use of corticosteroids, depending on dose, duration, and specific steroid, may result in endogenous steroid production inhibition following drug withdrawal. In patients presently receiving or recently withdrawn from corticosteroid treatments, therapy with a rapidly acting corticosteroid should be considered in especially stressful situations.

TOXICOLOGY Field and safety studies with MOMETAMAX Otic Suspension have shown a wide safety margin at the recommended dose level in dogs (see **PRECAUTIONS/ADVERSE REACTIONS**).

ADVERSE REACTIONS
Gentamicin: While aminoglycosides are absorbed poorly from skin, intoxication may occur when aminoglycosides are applied topically for prolonged periods of time to large wounds, burns, or any denuded skin, particularly if there is renal insufficiency. All aminoglycosides have the potential to produce reversible and irreversible vestibular, cochlear, and renal toxicity.
Mometasone: ALP (SAP) and ALT (SGPT) enzyme elevations, weight loss, anorexia, polydipsia, polyuria, neutrophilia, and lymphopenia have occurred following the use of parenteral, high-dose, and/or prolonged or systemic synthetic corticosteroids in dogs. Cushing's syndrome in dogs has been reported in association with prolonged or repeated steroid therapy.
Clotrimazole: The following have been reported occasionally in humans in connection with the use of clotrimazole: erythema, stinging, blistering, peeling, edema, pruritus, urticaria, and general irritation of the skin not present before therapy.

MOMETAMAX Otic Suspension: In field studies following once daily treatment with MOMETAMAX Otic Suspension, ataxia, proprioceptive deficits, and increased water consumption were observed in less than 1% of 164 dogs. In a field study following twice-daily treatment with MOMETAMAX Otic Suspension, inflammation of the pinna and diarrhea were observed in less than 1% of 141 dogs.

DOSAGE AND ADMINISTRATION
The external ear canal should be thoroughly cleaned and dried before treatment. Verify that the eardrum is intact. For dogs weighing less than 30 lbs, instill 4 drops from the 7.5 g, 15 g, and 30 g bottles (2 drops from the 215 g bottle) of MOMETAMAX Otic Suspension once daily into the ear canal. For dogs weighing 30 lbs or more, instill 8 drops from the 7.5 g, 15 g, and 30 g bottles (4 drops from the 215 g bottle) once daily into the ear canal. Therapy should continue for 7 consecutive days.

HOW SUPPLIED MOMETAMAX Otic Suspension is available in 7.5 g (NDC 0061-1246-05), 15 g (NDC 0061-1246-04), 30 g (NDC 0061-1246-01), and 215 g (NDC 0061-1246-02) plastic bottles.

Store between 2° and 25°C (36° and 77°F). Shake well before use.
USE WITHIN 28 DAYS OF FIRST USE.

For patent information:
http://www.merck.com/product/patent/home.html

Intervet Inc (d/b/a Merck Animal Health)
Madison, NJ 07940

Made in Germany

Rev. 02/2021

MERCK Animal Health

Once-a-day

Mometamax®

(GENTAMICIN SULFATE, MOMETASONE FUROATE MONOHYDRATE, AND CLOTRIMAZOLE, OTIC SUSPENSION)

DOGGONE EFFECTIVE FIRST-LINE OTITIS EXTERNA TREATMENT

A convenient once-daily, triple-combination treatment applied for 7 days for mild to moderate cases of otitis externa associated with susceptible strains of yeast and bacteria in dogs.

ANTI-INFLAMMATORY ACTION **Mometasone Furoate Monohydrate**	• Reduces discomfort and irritation[1] • Mometasone rapidly controls inflammation without adrenocortical suppression[2]
ANTIFUNGAL ACTIVITY **Clotrimazole**	• Effective against dermal infections caused by susceptible strains of yeast (*Malassezia pachydermatis*)[1]
ANTIBACTERIAL EFFECT **Gentamicin**	• Effective against a wide variety of gram-negative and gram-positive bacteria[1]

Available in 7.5 g, 15 g, 30 g, and 215 g plastic bottles.

IMPORTANT SAFETY INFORMATION:

Do not use MOMETAMAX® Otic Suspension in pregnant dogs. The use of these components has been associated with deafness or partial hearing loss in a small number of sensitive dogs (e.g., geriatric), although it is usually temporary. If hearing or vestibular dysfunction is noted, discontinue use immediately and flush the ear canal thoroughly with a non-ototoxic solution. If hypersensitivity to any of the components occurs, treatment should be discontinued and appropriate therapy instituted. Concomitant use of drugs known to induce ototoxicity should be avoided. Do not use in dogs with known tympanic perforation. Administration of recommended doses beyond 7 days may result in delayed wound healing. Avoid ingestion. Keep out of the reach of children. For complete safety information, refer to the product label.

See prescribing information for full information including side effects, precautions, warnings, and contraindications.

[1] Mometamax® Otic Suspension [gentamicin sulfate, mometasone furoate monohydrate, clotrimazole] [Product Information]. Madison, NJ: Intervet Inc.; 2021.
[2] Reeder CJ, Griffin CE, Polissar NL, et al. Comparative adrenocortical suppression in dogs with otitis externa following topical otic administration of four different corticosteroid-containing medications. *Vet Ther.* 2008;9:111-121.

MERCK Animal Health

notebook

QUOTE OF THE MONTH

"Making the lives of others better, doing something of lasting value. That's the meaning of life; it's that simple."

—Temple Grandin

Decoding Canine Cognition

Scientists at Emory University used functional magnetic resonance imaging (fMRI) and machine-learning technology to decode a dog's brain activity patterns in order to reconstruct what the dog sees. The technique, used to investigate human perception, has been applied to only a handful of other species. The *Journal of Visualized Experiments* published the study that suggests that dogs are more attuned to actions than to who or what is performing the actions.

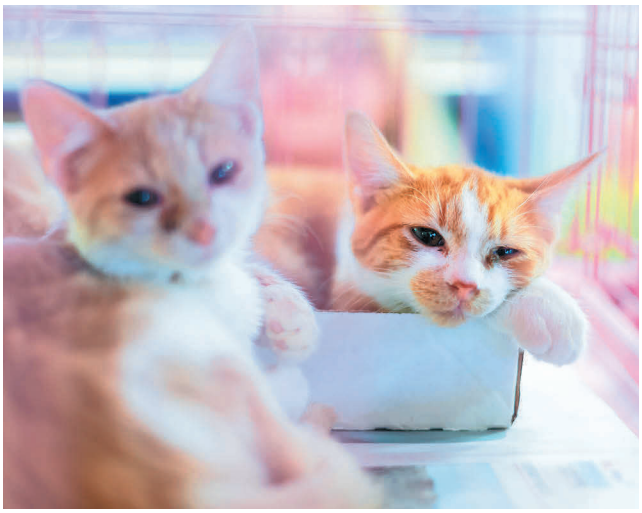
"We showed that we can monitor the activity in a dog's brain while it is watching a video and, to at least a limited degree, reconstruct what it is looking at," said Gregory Berns, Emory professor of psychology and corresponding author of the paper.

Two awake, unrestrained dogs watched 90 minutes of video (in three 30-minute sessions) inside an fMRI scanner while researchers recorded the dogs' neural data. The researchers then analyzed the patterns in the neural data with a machine-learning algorithm.

"While our work is based on just two dogs, it offers proof of concept that these methods work on canines," said Erin Phillips, first author of the paper and a research specialist in Berns' Canine Cognitive Neuroscience Lab.

Challenged to create a video that would capture a dog's attention, the Emory research team shot footage from a dog's perspective and created scenes related to dogs' lives: activities with people such as being petted and receiving treats, sniffing, playing, eating, or walking on a leash. They also showed other activities such as cars, bikes, or scooters on a road; a cat walking in a house; a deer crossing a path; and people sitting, hugging, kissing, or eating.

"Dogs appear to be less concerned with who or what they are seeing and more concerned with the action itself," said Berns.



ablokhin/iStock via Getty Images Plus

Effects of a Decline in Spay-Neuter Surgeries During the COVID-19 Pandemic

A team of researchers from the University of Florida investigated the impact of a decline in the number of surgical procedures performed by spay-neuter clinics due to the COVID-19 pandemic on the overpopulation control of dogs and cats. Their study, published in *Frontiers of Veterinary Science*, is based on data from 212 clinics that focus on spay-neuter and preventive healthcare services. Using 2019 as a baseline, researchers found that from January 2020 through December 2021, 190,818 fewer surgeries than expected were performed at the clinics.

Lead author Simone Guerios, DVM, PhD, a clinical assistant professor of shelter medicine at the University of Florida, put the decline in perspective. "The high level of spay-neuter achieved over the past five decades is the single most important driver of reduced pet overpopulation and euthanasia in animal shelters. The rise in subsidized spay-neuter access [reduced] the euthanasia of shelter pets in the United States from an estimated 13.5 million in 1973 to 1.5 million in 2019."

Sharp declines in spay-neuter surgeries after the initial pandemic lockdown is just one of the impacts of COVID-19. The nationwide shortage of veterinarians is especially acute in shelters and spay-neuter clinics. Other impacts include staffing shortages, overcrowding, and lagging pet adoption rates.

"Currently, shelters are in crisis mode," Guerios said.

Genetic Discovery Could Lead to Better Treatments for Canine Soft Tissue Carcinoma

Every year, as many as 95,000 dogs in the United States are diagnosed with canine soft tissue sarcoma, and 20% to 30% die from the disease. There are several subtypes of sarcomas, however, and because they present similar characteristics and are difficult to diagnose, they are treated similarly and often unsuccessfully.

Recently, a team of researchers and veterinarians at Washington State University examined the genetic makeup of the three most common subtypes of the tumor and identified several therapeutic targets that might form the basis of new treatments. A study detailing their findings was published in the journal *PLoS One*.

"The different subtypes of soft tissue sarcomas can look so similar even trained pathologists have trouble distinguishing one from another. Yet it turns out they are not all the same—they are a very diverse group of cancers," said Eric Shelden, an associate professor in Washington State University's School of Molecular Biosciences and the study's corresponding author.

The Washington State University study was the first to examine gene expression patterns in canine soft tissue sarcomas using RNA sequence analysis of tumor samples to differentiate between the tumors, understand the biology that drives their behavior, and identify candidates for drug therapies.

"We looked at thousands of genes and their expression patterns at once, and then we tried to unravel computationally whether there are differences between the different tumor types, and there are," Shelden said. "While it will probably take some years before the effect of this study is actually felt in a clinical setting, the hope is that this will make people realize that you shouldn't just treat these tumors similarly, because they are, in fact, biologically different."

He added that follow-up studies are needed to validate the findings and identify drugs better suited to treat the different tumors.

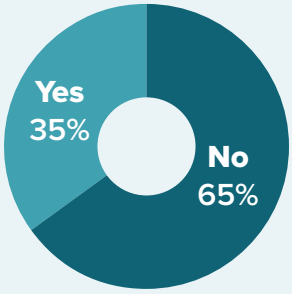
VHMA Survey: What Do Clients Want?

Surveying clients about your practice is an important way to measure their satisfaction with what the practice offers and to find out what else they might want.

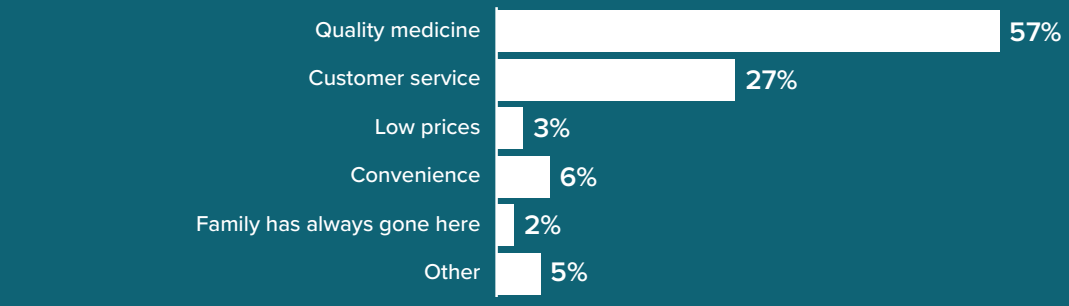
Recently, the Veterinary Hospital Managers Association (VHMA) surveyed veterinary practices asking what they think their clients want. How does the practice find out what clients want? What has the practice learned by asking?

Here are the questions and responses to the VHMA survey.

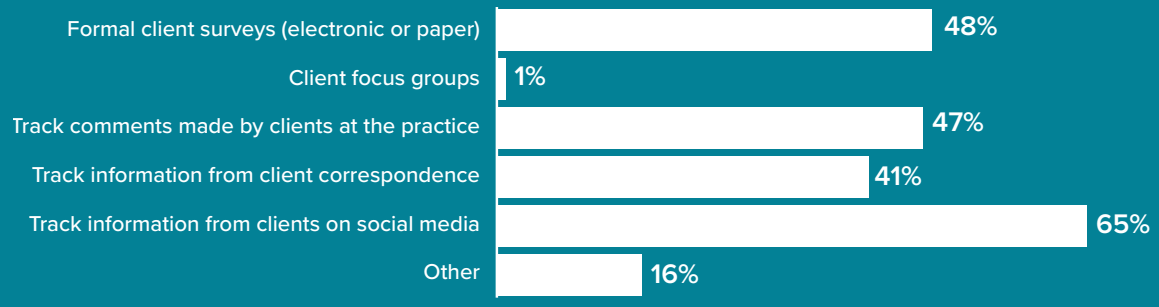
Do you survey your clients on why they initially selected your practice?



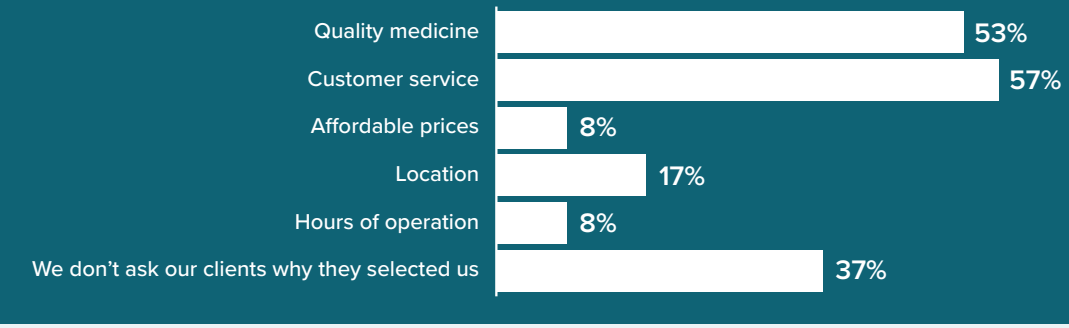
What do you think the majority of your clients most want?



How do you collect information about your clients' wants and needs?



If you survey your clients, what does the data tell you about why they selected or stay with your practice?



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FDA Update: Fluorouracil Approved for Human Use Can Be Deadly When Ingested by Pets

In response to reports involving fatalities in dogs that ingested fluorouracil (a US Food and Drug Administration [FDA]-approved medication used to treat cancers in people), the FDA has issued a consumer pet safety update warning that fluorouracil ingestion by pets can be deadly in as little as 6 to 12 hours.

Pets can be exposed to fluorouracil, also called "5-FU" or "5-fluorouracil," by chewing on containers, usually tubes, of topical fluorouracil or by licking the skin where a person applied the medicine. The containers may include the brand names Efudex, Carac, Tolak, and Fluoroplex or state, "fluorouracil."

The FDA has not yet received any reports of fluorouracil poisoning in cats or other pets but recommends that the drug be kept away from all pets.

The following precautions will protect pets from fluorouracil:

- Store the container in a closed cabinet or on a shelf pets cannot reach.
- Dispose of empty containers in areas inaccessible to pets.
- Ask a healthcare provider about covering skin treated with fluorouracil to prevent pets from licking it.

Signs of fluorouracil poisoning in pets can start within 30 minutes and include vomiting, shaking, seizures, difficulty breathing, and diarrhea. Pet owners whose pets have had contact with fluorouracil should seek immediate veterinary care and bring the container of fluorouracil with them.

FDA to Increase Availability of Novel Treatments for Rare Diseases

The FDA's Center for Veterinary Medicine announced that, in December 2022, it will increase the availability of novel treatments, also known as "minor use" drugs, for rare diseases and conditions in dogs and cats.

To qualify for minor use status, a new animal drug must be intended to treat a disease or condition:

- in a major species;
- that occurs infrequently or in limited geographic areas;
- and occurs in less than a "threshold number" of animals annually.

The FDA's increase in the "threshold numbers" that help a medicine qualify as a minor use means that more treatments for dogs and cats are likely to meet the criteria. For dogs, the new threshold is 80,000 cases annually, up from 70,000. For cats, the number increased from 120,000 to 150,000 cases annually.

Medicines that meet the definition of minor use allow patients access to safe medications that are reasonably expected to be effective while full effectiveness data is being collected.

The FDA is taking this step because the overall number of dogs and cats has increased. Before the COVID-19 pandemic, the American Veterinary Medical Association (AVMA) estimated that 77 million dogs were members of 38% of US households. More than 58 million cats were members of a quarter of US households. During the pandemic, these numbers increased. AVMA now estimates that 45% of US households have at least one dog, which is nearly 84 million dogs, and cats are now in 26% of homes and total at least 60 million.

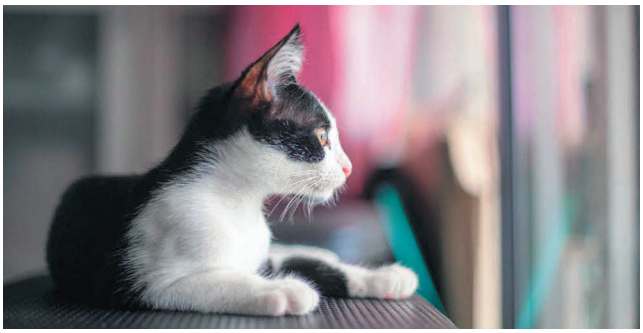
Early Diagnosis of FIP Is Goal of New Guidelines

Veterinarians now have a resource of essential information for diagnosing feline infectious peritonitis (FIP) in cats: the recently released *2022 AAFP/EveryCat Feline Infectious Peritonitis Diagnosis Guidelines*.

FIP is a viral disease that can affect any organ in the body, and it is caused by the feline coronavirus (FCoV). FIP is fatal when untreated and nearly every small animal veterinary practitioner will see FIP cases. FIP can be challenging to diagnose because of the lack of clinical signs or laboratory changes, especially when no physical symptoms are present.

These guidelines, released by the American Association of Feline Practitioners (AAFP) and EveryCat Health Foundation, address the critical problem of obtaining a correct diagnosis of FIP by providing veterinarians with essential information to assist them in recognizing cats presenting with the disease.

"First recognized over 50 years ago, feline infectious peritonitis has been one of the most important infectious diseases and causes of death in cats, especially affecting



young cats less than two years old," said Vicki Thayer, DVM, DABVP (Feline), task force co-chair. "Further, FIP can be challenging to diagnose in some cases and is often considered an enigma by the veterinary profession. [. . .] The *2022 AAFP/EveryCat Feline Infectious Peritonitis Diagnosis Guidelines* serve as a critical resource for veterinary practitioners diagnosing FIP in their cat patients."

Susan Gogolski, DVM, PMP, DABVP (Canine/Feline), task force co-chair commented, "These guidelines were written with the intent of providing the most current knowledge available in one comprehensive format combined with extensive supplemental resources. [. . .] The guidelines will be an invaluable resource to veterinary teams around the world."

Study Shows Safety of Long-Term Daily Cannabidiol Use in Healthy Dogs

A safety study published in *Frontiers in Veterinary Science* has demonstrated that a daily oral dose of cannabidiol (CBD) at the studied concentration and duration was well tolerated by a cohort of clinically healthy adult dogs. The study was run by the Waltham Petcare Science Institute, part of Mars Petcare.

The randomized, placebo-controlled, blinded study had two aims:

- To demonstrate tolerance of a once-daily oral dose (4 mg/kg of body weight) well characterized, broad-spectrum THC-free CBD distillate over a six-month period to healthy adult dogs.
- To quantify the level of CBD in the dogs' fasted plasma, urine, and feces over the same period.

The study participants included 40 healthy dogs—17 Labrador retrievers; 8 beagles; and 15 Norfolk terriers—randomized and balanced across two parallel treatment groups: CBD and placebo.

Researchers assessed health of participants through various measures, including biochemistry, hematology, and urinalysis, in addition to monthly veterinary examinations, twice daily well-being observations, and a daily quality-of-life survey. CBD concentrations were measured at the same intervals in plasma, feces, and urine.

"I'm heartened to see this study on the safety of CBD for dog health. We continue to receive questions from pet owners on whether it's safe to give their pets CBD. We hope, with continued research, to be able to provide science-based guidance our clients expect and rely on," said Jennifer Welser, DVM, DACVO, chief medical officer of Mars Veterinary Health.

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159637-002

VETMEDIN®

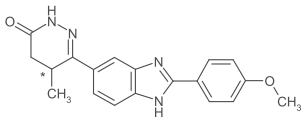
(pimobendan)

Chewable Tablets

Cardiac drug for oral use in dogs only

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

Description: VETMEDIN (pimobendan) is supplied as oblong half-scored chewable tablets containing 1.25, 2.5, 5 or 10 mg pimobendan per tablet. Pimobendan, a benzimidazole-pyridazinone derivative, is a non-sympathomimetic, non-glycoside inotropic drug with vasodilatative properties. Pimobendan exerts a stimulatory myocardial effect by a dual mechanism of action consisting of an increase in calcium sensitivity of cardiac myofilaments and inhibition of phosphodiesterase (Type III). Pimobendan exhibits vasodilating activity by inhibiting phosphodiesterase III activity. The chemical name of pimobendan is 4,5-dihydro-6-[2-(4-methoxyphenyl)-1H-benzimidazole-5-yl]-5-methyl-3(2H)-pyridazinone. The structural formula of pimobendan is:



Indications: VETMEDIN (pimobendan) is indicated for the management of the signs of mild, moderate, or severe (modified NYHA Class II[a], III[b], or IV[c]) congestive heart failure in dogs due to atrioventricular valvular insufficiency (AVVI) or dilated cardiomyopathy (DCM). VETMEDIN is indicated for use with concurrent therapy for congestive heart failure (e.g., furosemide, etc.) as appropriate on a case-by-case basis.

[a] A dog with modified New York Heart Association (NYHA) Class II heart failure has fatigue, shortness of breath, coughing, etc. apparent when ordinary exercise is exceeded.

[b] A dog with modified NYHA Class III heart failure is comfortable at rest, but exercise capacity is minimal.

[c] A dog with modified NYHA Class IV heart failure has no capacity for exercise and disabling clinical signs are present even at rest.

Dosage and Administration: VETMEDIN should be administered orally at a total daily dose of 0.23 mg/lb (0.5 mg/kg) body weight, using a suitable combination of whole or half tablets. The total daily dose should be divided into 2 portions that are not necessarily equal, and the portions should be administered approximately 12 hours apart (i.e., morning and evening). The tablets are scored and the calculated dosage should be provided to the nearest half tablet increment.

Contraindications: VETMEDIN should not be given in cases of hypertrophic cardiomyopathy, aortic stenosis, or any other clinical condition where an augmentation of cardiac output is inappropriate for functional or anatomical reasons.

Warnings: Only for use in dogs with clinical evidence of heart failure. At 3 and 5 times the recommended dosage, administered over a 6-month period of time, pimobendan caused an exaggerated hemodynamic response in the normal dog heart, which was associated with cardiac pathology (See **Animal Safety**).

Human 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.

Precautions: The safety of VETMEDIN has not been established in dogs with asymptomatic heart disease or in heart failure caused by etiologies other than AVVI or DCM. The safe use of VETMEDIN has not been evaluated in dogs younger than 6 months of age, dogs with congenital heart defects, dogs with diabetes mellitus or other serious metabolic diseases, dogs used for breeding, or pregnant or lactating bitches.

Adverse Reactions: Clinical findings/adverse reactions were recorded in a 56-day field study of dogs with congestive heart failure (CHF) due to AVVI (256 dogs) or DCM (99 dogs). Dogs were treated with either VETMEDIN (175 dogs) or the active control enalapril maleate (180 dogs). Dogs in both treatment groups received additional background cardiac therapy (See **Effectiveness** for details and the difference in digoxin administration between treatment groups).

The VETMEDIN group had the following prevalence (percent of dogs with at least one occurrence) of common adverse reactions/new clinical findings (not present in a dog prior to beginning study treatments): poor appetite (38%), lethargy (33%), diarrhea (30%), dyspnea (29%), azotemia (14%), weakness and ataxia (13%), pleural effusion (10%), syncope (9%), cough (7%), sudden death (6%), ascites (6%), and heart murmur (3%). Prevalence was similar in the active control group. The prevalence of renal failure was higher in the active control group (4%) compared to the VETMEDIN group (1%).

Adverse reactions/new clinical findings were seen in both treatment groups and were potentially related to CHF, the therapy of CHF, or both. The following adverse reactions/new clinical findings are listed according to body system and are not in order of prevalence: CHF death, sudden death, chordae tendineae rupture, left atrial tear, arrhythmias overall, tachycardia, syncope, weak pulses, irregular pulses, increased pulmonary edema, dyspnea, increased respiratory rate, coughing, gagging, pleural effusion, ascites, hepatic congestion, decreased appetite, vomiting, diarrhea, melena, weight loss, lethargy, depression, weakness, collapse, shaking, trembling, ataxia, seizures, restlessness, agitation, pruritus, increased water consumption, increased urination, urinary accidents, azotemia, dehydration, abnormal serum electrolyte, protein, and glucose values, mild increases in serum hepatic enzyme levels, and mildly decreased platelet counts.

See Table 1 for mortality due to CHF (including euthanasia, natural death, and sudden death) and for the development of new arrhythmias (not present in a dog prior to beginning study treatments) by treatment group and type of heart disease (AVVI or DCM) in the 56-day field study.

Table 1: CHF Death and New Arrhythmias in the 56-Day Field Study

	VETMEDIN® Group	Active Control Group
Dogs that died due to CHF	14.3% n = 175	14.4% n = 180
	9 of 126 dogs with AVVI	16 of 130 dogs with AVVI
	16 of 49 dogs with DCM	10 of 50 dogs with DCM
Dogs that developed new arrhythmias[a]	39.4% n = 175	45.0% n = 180
	45 of 126 dogs with AVVI	59 of 130 dogs with AVVI
	24 of 49 dogs with DCM	22 of 50 dogs with DCM

[a] New arrhythmias included supraventricular premature beats and tachycardia, atrial fibrillation, atrioventricular block, sinus bradycardia, ventricular premature beats and tachycardia, and bundle branch block

Following the 56-day masked field study, 137 dogs in the VETMEDIN group were allowed to continue on VETMEDIN in an open-label extended-use study without restrictions on concurrent therapy. The adverse reactions/new clinical findings in the extended-use study were consistent with those reported in the 56-day study, with the following exception: One dog in the extended-use study developed acute cholestatic liver failure after 140 days on VETMEDIN and furosemide.

In foreign post-approval drug experience reporting, the following additional suspected adverse reactions were reported in dogs treated with a capsule formulation of pimobendan: hemorrhage, petechia, anemia, hyperactivity, excited behavior, erythema, rash, drooling, constipation, and diabetes mellitus.

To report suspected adverse reactions, to obtain a Safety Data Sheet (SDS), or for technical assistance, contact Boehringer Ingelheim Animal Health USA Inc. at 1-888-637-4251. For additional information about adverse drug experience reporting for animal drugs, contact the FDA at 1-888-FDA-VETS or online at http://www.fda.gov/reportanimalae.

Clinical Pharmacology: Pimobendan is oxidatively demethylated to a pharmacologically active metabolite which is then conjugated with sulfate or glucuronic acid and excreted mainly via feces. The mean extent of protein binding of pimobendan and the active metabolite in dog plasma is >90%. Following a single oral administration of 0.25 mg/kg VETMEDIN tablets the maximal mean (± 1 SD) plasma concentrations (Cmax) of pimobendan and the active metabolite were 3.09 (0.76) ng/ml and 3.66 (1.21) ng/ml, respectively. Individual dog Cmax values for pimobendan and the active metabolite were observed 1 to 4 hours post-dose (mean: 2 and 3 hours, respectively). The total body clearance of pimobendan was approximately 90 mL/min/kg, and the terminal elimination half-lives of pimobendan and the active metabolite were approximately 0.5 hours and 2 hours, respectively. Plasma levels of pimobendan and active metabolite were below quantifiable levels by 4 and 8 hours after oral administration, respectively. The steady-state volume of distribution of pimobendan is 2.6 L/kg indicating that the drug is readily distributed into tissues. Food decreased the bioavailability of an aqueous solution of pimobendan, but the effect of food on the absorption of pimobendan from VETMEDIN tablets is unknown.

In normal dogs instrumented with left ventricular (LV) pressure transducers, pimobendan increased LV dP/dtmax (a measure of contractility of the heart) in a dose dependent manner between 0.1 and 0.5 mg/kg orally. The effect was still present 8 hours after dosing. There was a delay between peak blood levels of pimobendan and active metabolite and the maximum physiologic response (peak LV dP/dtmax). Blood levels of pimobendan and active metabolite began to drop before maximum contractility was seen. Repeated oral administration of pimobendan did not result in evidence of tachyphylaxis (decreased positive inotropic effect) or drug accumulation (increased positive inotropic effect). Laboratory studies indicate that the positive inotropic effect of pimobendan may be attenuated by the concurrent use of a β-adrenergic blocker or a calcium channel blocker.

Effectiveness: In a double-masked, multi-site, 56-day field study, 355 dogs with modified NYHA Class II, III, or IV CHF due to AVVI or DCM were randomly assigned to either the active control (enalapril maleate) or the VETMEDIN (pimobendan) treatment group. Of the 355 dogs, 52% were male and 48% were female; 72% were diagnosed with AVVI and 28% were diagnosed with DCM; 34% had Class II, 47% had Class III, and 19% had Class IV CHF. Dogs ranged in age and weight from 1 to 17 years and 3.3 to 191 lb, respectively. The most common breeds were mixed breed, Doberman Pinscher, Cocker Spaniel, Miniature/Toy Poodle, Maltese, Chihuahua, Miniature Schnauzer, Dachshund, and Cavalier King Charles Spaniel. The 180 dogs (130 AVVI, 50 DCM) in the active control group received enalapril maleate (0.5 mg/kg once or twice daily), and all but 2 received furosemide. Per protocol, all dogs with DCM in the active control group received digoxin. The 175 dogs (126 AVVI, 49 DCM) in the VETMEDIN group received pimobendan (0.5 mg/kg/day divided into 2 portions that were not necessarily equal, and the portions were administered approximately 12 hours apart), and all but 4 received furosemide. Digoxin was optional for treating supraventricular tachyarrhythmia in either treatment group, as was the addition of a β-adrenergic blocker if digoxin was ineffective in controlling heart rate. After initial treatment at the clinic on Day 1, dog owners were to administer the assigned product and concurrent medications for up to 56±4 days.

The determination of effectiveness (treatment success) for each case was based on improvement in at least 2 of the 3 following primary variables: modified NYHA classification, pulmonary edema score by a masked veterinary radiologist, and the investigator's overall clinical effectiveness score (based on physical examination, radiography, electrocardiography, and clinical pathology). Attitude, pleural effusion, coughing, activity level, furosemide dosage change, cardiac size, body weight, survival, and owner observations were secondary evaluations contributing information supportive to product effectiveness and safety.

Based on protocol compliance and individual case integrity, 265 cases (134 VETMEDIN, 131 active control) were evaluated for treatment success on Day 29. See Table 2 for effectiveness results.

Table 2: Effectiveness Results for the 56-Day Field Study

	VETMEDIN® Group	Active Control Group
Treatment Success on Day 29	80.7% n=134	76.3% n=131
	88 of 101 dogs with AVVI	77 of 100 dogs with AVVI
	20 of 33 dogs with DCM	23 of 31 dogs with DCM
Treatment Success on Day 56	71.1% n=113	67.2% n=110
	66 of 85 dogs with AVVI	56 of 85 dogs with AVVI
	13 of 28 dogs with DCM	17 of 25 dogs with DCM
No increase in furosemide dose between Day 1 and Day 29	78.3% n=130	68.6% n=126

At the end of the 56-day study, dogs in the VETMEDIN group were enrolled in an unmasked field study to monitor safety under extended use, without restrictions on concurrent medications.

VETMEDIN was used safely in dogs concurrently receiving furosemide, digoxin, enalapril, atenolol, spironolactone, nitroglycerin, hydralazine, diltiazem, antiparasitic products (including heartworm prevention), antibiotics (metronidazole, cephalexin, amoxicillin-clavulanate, fluoroquinolones), topical ophthalmic and otic products, famotidine, theophylline, levothyroxine sodium, diphenhydramine, hydrocodone, metoclopramide, and butorphanol, and in dogs on sodium-restricted diets.

Palatability: In a laboratory study, the palatability of VETMEDIN was evaluated in 20 adult female Beagle dogs offered doses twice daily for 14 days. Ninety percent (18 of 20 dogs) voluntarily consumed more than 70% of the 28 tablets offered. Including two dogs that consumed only 4 and 7% of the tablets offered, the average voluntary consumption was 84.2%.

Animal Safety: In a laboratory study, VETMEDIN chewable tablets were administered to 6 healthy Beagles per treatment group at 0 (control), 1, 3, and 5 times the recommended dosage for 6 months. See Table 3 for cardiac pathology results. The cardiac pathology/histopathology noted in the 3X and 5X dose groups is typical of positive inotropic and vasodilator drug toxicity in normal dog hearts, and is associated with exaggerated hemodynamic responses to these drugs. None of the dogs developed signs of heart failure and there was no mortality.

Table 3: Incidence of Cardiac Pathology/ Histopathology in the Six-month Safety Study

Severe left ventricular hypertrophy with multifocal subendocardial ischemic lesions	One 3X and two 5X dogs[a]
Moderate to marked myxomatous thickening of the mitral valves	Three 5X dogs
Myxomatous thickening of the chordae tendineae	One 3X and two 5X dogs
Endocardial thickening of the left ventricular outflow tract	One 1X, two 3X, and two 5X dogs
Left atrial endocardial thickening (jet lesions) in 2 of the dogs that developed murmurs of mitral valve insufficiency	One 3X and one 5X dog
Granulomatous inflammatory lesion in the right atrial myocardium	One 3X dog

[a] Most of the gross and histopathologic findings occurred in these three dogs

Murmurs of mitral valve insufficiency were detected in one 3X (Day 65) and two 5X dogs (Days 135 and 163). These murmurs (grades II-III of VI) were not associated with clinical signs.

Indirect blood pressure was unaffected by VETMEDIN at the label dose (1X). Mean diastolic blood pressure was decreased in the 3X group (74 mmHg) compared to the control group (82 mmHg). Mean systolic blood pressure was decreased in the 5X group (117 mmHg) compared to the control group (124 mmHg). None of the dogs had clinical signs of hypotension.

On 24-hour Holter monitoring, mean heart rate was increased in the 5X group (101 beats/min) compared to the control group (94 beats/min). Not counting escape beats, the 3X and 5X groups had slightly higher numbers of isolated ventricular ectopic complexes (VEs). The maximum number of non-escape VEs recorded either at baseline or in a control group dog was 4 VEs/24 hours. At either Week 4 or Week 20, three 3X group dogs had maximums of 33, 13, and 10 VEs/24 hours, and two 5X group dogs had maximums of 22 and 9 VEs/24 hours. One 1X group dog with no VEs at baseline had 6 VEs/24 hours at Week 4 and again at Week 20. Second-degree atrioventricular heart block was recorded in one 3X group dog at Weeks 4 and 20, and in one dog from each of the 1X and 5X groups at Week 20. None of the dogs had clinical signs associated with these electrocardiogram changes.

Treatment was associated with small differences in mean platelet counts (decreased in the 3X and 1X groups), potassium (increased in the 5X group), glucose (decreased in the 1X and 3X groups), and maximum blood glucose in glucose curves (increased in the 5X group). All individual values for these variables were within the normal range. Three 1X and one 5X group dogs had mild elevations of alkaline phosphatase (less than two times normal). Loose stools and vomiting were infrequent and self-limiting.

Storage Information: Store at 20° to 25°C (68° to 77°F), excursions permitted between 15° and 30°C (between 59° and 86°F).

How Supplied:

VETMEDIN® (pimobendan) Chewable Tablets:

Available as 1.25, 2.5, 5 and 10 mg oblong half-scored chewable tablets - 50 tablets per bottle.

NDC 0010-4480-01-1.25 mg - 50 tablets
NDC 0010-4482-01-5 mg - 50 tablets
NDC 0010-4481-01-2.5 mg - 50 tablets
NDC 0010-4479-01-10 mg - 50 tablets

Approved by FDA under NADA # 141-273

Marketed by:
Boehringer Ingelheim Animal Health USA, Inc.
Duluth, GA 30096

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448005-01
Revised 06/2020

US-PET-0205-2021

vetmedin®

(pimobendan) CHEWABLE TABLETS

FOR THE HEART *from the start.*

- In clinical studies, dogs treated with VETMEDIN lived almost twice as long from the start of treatment,[1] and required less intensification of therapy to maintain quality of life, than those treated with an ACE inhibitor[2]
- In the US, VETMEDIN has supported over 1 million dogs[3]
- Recommended by the ACVIM as part of standard treatment for dogs with congestive heart failure[4]

Studies show using VETMEDIN from the start gives dogs with CHF the opportunity for better days and longer lives.[5]

IMPORTANT SAFETY INFORMATION: VETMEDIN is for use in dogs with clinical evidence of heart failure only. The most common side effects reported in field studies were poor appetite, lethargy, diarrhea, dyspnea, azotemia, weakness, and ataxia. VETMEDIN should not be given in case of hypertrophic cardiomyopathy, aortic stenosis, or any other clinical condition where an augmentation of cardiac output is inappropriate for functional or anatomical reasons. **For more information, please see full prescribing information.**

References: [1] Häggström J, Boswood A, O'Grady M, et al. Effect of pimobendan or benazepril hydrochloride on survival times in dogs with congestive heart failure caused by naturally occurring myxomatous mitral valve disease: the QUEST study. *J Vet Intern Med.* 2008;22(5):1124–1135. [2] Häggström J, Boswood A, O'Grady M, et al. Longitudinal analysis of quality of life, clinical, radiographic, echocardiographic, and laboratory variables in dogs with myxomatous mitral valve disease receiving pimobendan or benazepril: the QUEST study. *J Vet Intern Med.* 2013;27(6):1441–1451. [3] The number of dogs treated with VETMEDIN in the US is estimated by IDEXX Laboratories, Inc. based on transaction data from a representative sample of US veterinary practices. Data on file at IDEXX Laboratories, Inc. Westbrook, Maine USA. [4] Keene BW, Atkins CE, Bonagura JD, Fox PR, Häggström J, Fuentes VL, et al. ACVIM consensus guidelines for the diagnosis and treatment of myxomatous mitral valve disease in dogs. *J Vet Intern Med.* 2019, 33:1127–1140. [5] Lombard CW, Jöns O, Bussadori CM; for the VetSCOPE study. Clinical efficacy of pimobendan versus benazepril for the treatment of acquired atrioventricular valvular disease in dogs. *J Am Anim Hosp Assoc.* 2006;42(4):249–261.

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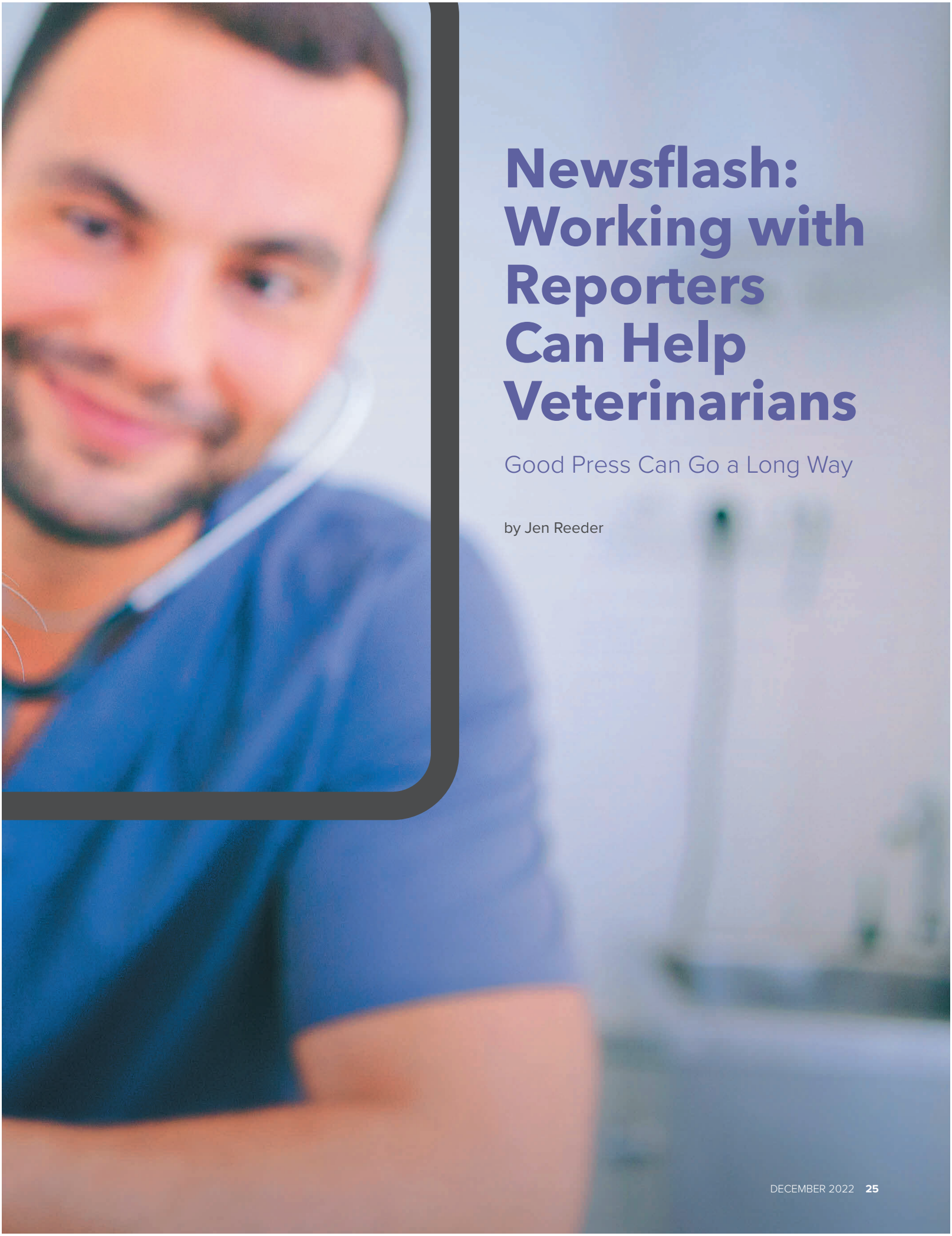

Newsflash: Working with Reporters Can Help Veterinarians

Good Press Can Go a Long Way

by Jen Reeder

HEATHER LOENSER, DVM, WAS SCROLLING THROUGH SOCIAL MEDIA one night when a casting call for a reality TV show piqued her interest. They wanted a veterinarian who does emergency medicine and surgery.

People auditioning for the gig needed to send a "sizzle reel." So she Googled "sizzle reel," and asked a friend to film her at work to show what the life of an emergency room vet is like.

She submitted it—and heard nothing.

Eventually, Loenser emailed the publicist to follow up and learned the showrunners had decided to cover Australian veterinarians caring for dolphins and koalas instead.

Then the publicist asked, "But could you do CPR on 'Fox and Friends' this week? One of the vets I'm working with can't go."

She answered "yes." The publicist gave her media training to get ready for the TV appearance—which went so well, they asked if she could come back the next week to share tips for introducing a new baby to your dog. (The topic was timely because Prince William and Princess Kate were about to bring home their first child.)

Nearly a decade later, Loenser is a sought-after expert who has appeared on the *TODAY* show, Hallmark Channel, Martha Stewart Radio, and most of the news networks in New York, Philadelphia and Washington, DC. She's also a guest blogger on numerous pet lifestyle blogs.

In 2016, the American Pet Products Association awarded her the Excellence in Journalism and Outstanding Contributions to the Pet Industry Award at Global Pet Expo.

"Just be brave and say yes to stuff, even if you think it's crazy," she advised.

Loenser, who is Chief Veterinary Officer at Suveto and former Chief Medical Officer at AAHA, says there are numerous benefits of working with the media for veterinary professionals. It helps build a strong reputation while sharing valuable information with pet owners. Plus, it can be fun—and educational.

> "It is safer to have a media trainer—just the same way you get mentored when you're learning a new surgery."
>
> —DR. HEATHER LOENSER

"A lot of people want to write client education material or start blogging or start a podcast," she said. "By being a guest in somebody else's content, you can learn a lot."

If she has to say no to a media request, she still responds quickly—and suggests colleagues as alternate sources.

She definitely recommends hiring a media trainer before jumping into TV.

"It is safer to have a media trainer—just the same way you get mentored when you're learning a new surgery," she said. "In a new communications technique, it's a whole new world."

Veterinarians can often find success working with local news outlets, according to Mary Tan, a former broadcast journalist who spent 13 years reporting for regional TV stations, CNN, and Fox before switching to public relations for the pet industry as the principal of Whisker Media. She is also Public Information Officer for the nonprofit Animal Humane Society in metro Minneapolis, Minnesota.

"I feel like there's no reason why a veterinarian or a veterinary hospital cannot get coverage," she said. "There are so many amazing stories."

One of her contacts at a local news station even told her ratings increase by 20% when they showcase an animal or run a story on pets.

Tan recommends reaching out to local reporters about holidays like National Dog Day but to also be quick to respond to breaking news. For instance, when controversy erupted after a police officer shot a dog, she successfully pitched a veterinary behaviorist to a local TV station to discuss signs of a dangerous dog.

"Pitch right after the event happens," she said. "You have a very short window. It's called 'newsjacking.'"

For print and digital interviews, Tan always encourages her clients to offer a phone interview rather than asking the reporter to email questions they can respond to in writing.

"A reporter will appreciate you more in a phone interview," she said. "They can ask follow-up questions."

Preparation is key before any interview, according to Laura T. Coffey, a senior writer and editor for the website of NBC's *TODAY* show, TODAY.com. She's also former vice president of the Dog Writers Association of America and author of the national bestseller *My Old Dog: Rescued Pets with Remarkable Second Acts*.

For print and digital interviews, she suggests thinking about one or two points you'd really like to make during the interview, then consider how to convey those points in a clear, concise, and conversational manner. Before a TV interview, practice in front of a mirror or have a trusted friend record a video of you answering mock interview questions.

"Yes, it can be a cringe-worthy experience to watch a video of yourself like that, but the experience can improve your public speaking for years to come," she said. "It will help you to avoid pitfalls like saying 'ummm' or 'uhhh' too often or talking in long, rambling sentences."

She recommends speaking in full, coherent sentences and repeating the TV reporter's question—particularly in pretaped interviews. So if they ask, "Why is it that so many dogs are itchy and can't stop scratching during the month of May?" try responding with, "That's an excellent question. Many dogs are itchy and can't stop scratching during the month of May because…"

Coffey noted the journalism industry has been under assault in recent years, but veterinarians should try to approach interviews with trust and respect.

"The term 'fake news' has been batted around so much that far too many people believe a sinister, behind-the-scenes badness permeates most news organizations," she said. "In my more than 30 years in journalism, though, I've never once encountered a journalist who wanted to get anything wrong."

At a time when journalists are facing so much public mistrust, Coffey noted that credible sources are invaluable in news and feature stories.

"I think being accredited by an organization like the American Animal Hospital Association can help a veterinary source get called upon for interviews and potentially become a relied-upon expert source," she said.

After a piece runs, she suggests emailing a brief thank you to the journalist and sharing the story on social media.

Veterinarians who want to become a go-to source but aren't being contacted by journalists should examine

> "I feel like there's no reason why a veterinarian or a veterinary hospital cannot get coverage."
>
> —MARY TAN

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Pro Tips: Avoid These Issues When Working with the Media

Laura T. Coffey, a senior writer and editor for the website of NBC's *TODAY* show, shared these pitfalls to avoid when working with the media:

- Don't give a whole interview and then say, "Can I see this before it goes to print?" Credible news organizations do not allow journalists to share stories with sources before publication.
- Don't ask to speak "off the record." This especially holds true after you just said something interesting during an on-the-record interview.
- Don't blow off interview requests entirely. If you're too busy to prepare for and participate in an interview, that's fine—just send a brief, thoughtful, and appreciative note explaining that you're not available at the moment, but you'd love to be interviewed at a future time.
- Don't be late for the interview and/or keep rescheduling it. Remember that journalists are under intense pressure at work. Do what you can to make their jobs easier, not harder.
- Don't be upset if all your credentials and academic accomplishments aren't included in print. Unlike academic publications, mainstream publications are all about clarity and speed for the reader. Long lists of credentials can clunk up the flow of a story — and can potentially make a reader stop reading.

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how easy it is for reporters to find them, according to freelance journalist Jodi Helmer, whose work has appeared many publications, including *Entrepreneur, The Guardian, National Geographic Traveler,* AARP*, Modern Farmer, WebMD,* and *CNNMoney*.

"I often want to reach out to a source only to discover that their clinic has no email or is completely nonresponsive to media inquiries," she said. "Consider adding a media tab to your clinic's website or offer up a dedicated media address for emails and respond to those inquiries quickly."

Helmer said availability and responsiveness are the reasons why the same veterinarians are quoted repeatedly in the press. She also appreciates veterinary sources who can explain things in easy-to-understand terms.

"Sometimes pet owners are searching Google to try to decide what might be wrong with their pet and the added stress of needing to decipher an article filled with jargon or looking up additional medical terms will make them click away," she said. "It's always helpful if veterinarians can explain things in the same way they would talk to a client in a clinic."

Linda Kaplan, MHA and president of BluePrints Veterinary Marketing Group in California, said publicists can be extremely helpful to independent practitioners—both in prepping for interviews and landing them.

"When your story is picked up somewhere, that's a third party endorsing your practice," she said.

BluePrints offers clients step-by-step guidance, starting with:

- Build relationships and treat journalists with respect. During the holidays, BluePrints also makes donations in honor of journalists to Not One More Vet in appreciation for their work.
- Develop a long-term plan rather than focusing on a single story.
- Know the tools you need to use to communicate with reporters. For instance, understand when to offer a press release, a pitch letter, a white paper, a photo opportunity, or a media alert, Kaplan noted.
- Develop a media list for community news. "Oprah is not going to care that you just got a new CT machine.

> "I think being accredited by an organization like the American Animal Hospital Association can help a veterinary source get called upon for interviews and potentially become a relied-upon expert source."
>
> ——LAURA T. COFFEY

Good Morning America is not going to call," Kaplan quipped. "Who are the people that are going to care about your extended hours? Local news is going to care because they're going to feed that information to the pet parents and the community who will benefit from that."

While general-assignment reporters might be unfamiliar with the veterinary industry, some journalists specialize in pets. Freelance journalist Lavanya Sunkara started covering animals after adopting her dogs, Indu and Andy. In addition to *Trends*, she's written for publications like *Reader's Digest, Forbes, National Geographic*, *The New York Times,* and *USA Today* and cofounded the Pet Creatives Network, a community of about 16 pet writers who support one another.

"We have definitely discussed the topic of how to help veterinarians, especially in light of what we've learned about what's happening in the industry," she said. "One way we want to help is sharing contacts amongst ourselves of who can benefit from the press."

As a woman of color, Sunkara is passionate about interviewing diverse sources. She hopes veterinarians of color will reach out to her through her website at nature-traveler.com. She also writes frequently about telehealth because she believes it will lessen the burden on veterinarians and ER doctors.

Sunkara wants veterinarians to know that plagiarism is a huge sin in journalism, so sources should never email interview answers that are copied from other interviews, articles, or the internet—even from their own blog.

Natalie Marks, DVM, CVJ, previous owner of AAHA-accredited Blum Animal Hospital in Chicago, Illinois, and owner of Marks DVM Consulting, is a go-to veterinary source who's been featured in *The New York Times, Real Simple, Chicago Tribune,* the *TODAY* show, and *CBS Nightly News*.

Marks prefers email interviews and tries to answer questions "as if I'm sitting in a coffee shop across from a reader with my Starbucks in hand and we're having an active discussion." For TV appearances, she takes a breath while being asked each question to calm her response and body language and really listens to the questions being asked rather than trying to remember talking points.

She hopes more veterinary professionals will make media appearances for the good of themselves, their practices, and the veterinary industry.

"We need more veterinary professionals in the media. So many pet parents adopted family members during the pandemic and never met their veterinary team, and that is a barrier to trust," she said. "Look for journalists in your current client base, follow them on Twitter, and even reach out to local radio and TV stations with your willingness to be a subject matter expert when animal news presents." ※

Jen Reeder began narrowing her focus as a journalist to pets over a decade ago after she and her husband adopted a Lab mix named Rio. She has the utmost respect and gratitude for the sources who helped with this article. Visit her online at: JenReeder.com.

Photographer/collection via Getty Images

Brief Summary

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 a 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, anorexia, 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).

Approved by FDA under NADA # 141-213

Marketed by:
Boehringer Ingelheim Animal Health USA Inc.
Duluth, GA 30096

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86998696/86998653
Revised 08/2019

Brief Summary

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%, glycofurol 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 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 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 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 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 noncorticosteriod 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 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 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 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 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.

Approved by FDA under NADA # 141-219

Marketed by:

Boehringer Ingelheim Animal Health USA Inc.
Duluth, GA 30096

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METACAM® (meloxicam) gives you the outstanding flexibility to prescribe your patients the lowest effective dose while still putting powerful osteoarthritis pain relief in the hands of dog owners.[1,2] Trust METACAM and its proven track record to get your canine osteoarthritis patients back on their paws again.

Metacam®
(meloxicam)

IMPORTANT SAFETY INFORMATION: METACAM® (meloxicam oral suspension) is for use in dogs only. METACAM (meloxicam) Solution for Injection is approved for use in dogs or cats (not indicated for osteoarthritis in 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 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, then monitored regularly while on therapy. Concurrent use with another NSAID, corticosteroid, or nephrotoxic medication should be avoided or monitored closely. **For more information, please see full prescribing information.**

1. METACAM® (meloxicam oral suspension) [prescribing information]. St. Joseph, MO: Boehringer Ingelheim Vetmedica, Inc.; 2019.
2. METACAM® (meloxicam) Solution for Injection [prescribing information]. St. Louis, MO: Boehringer Ingelheim Vetmedica, Inc.; 2019.

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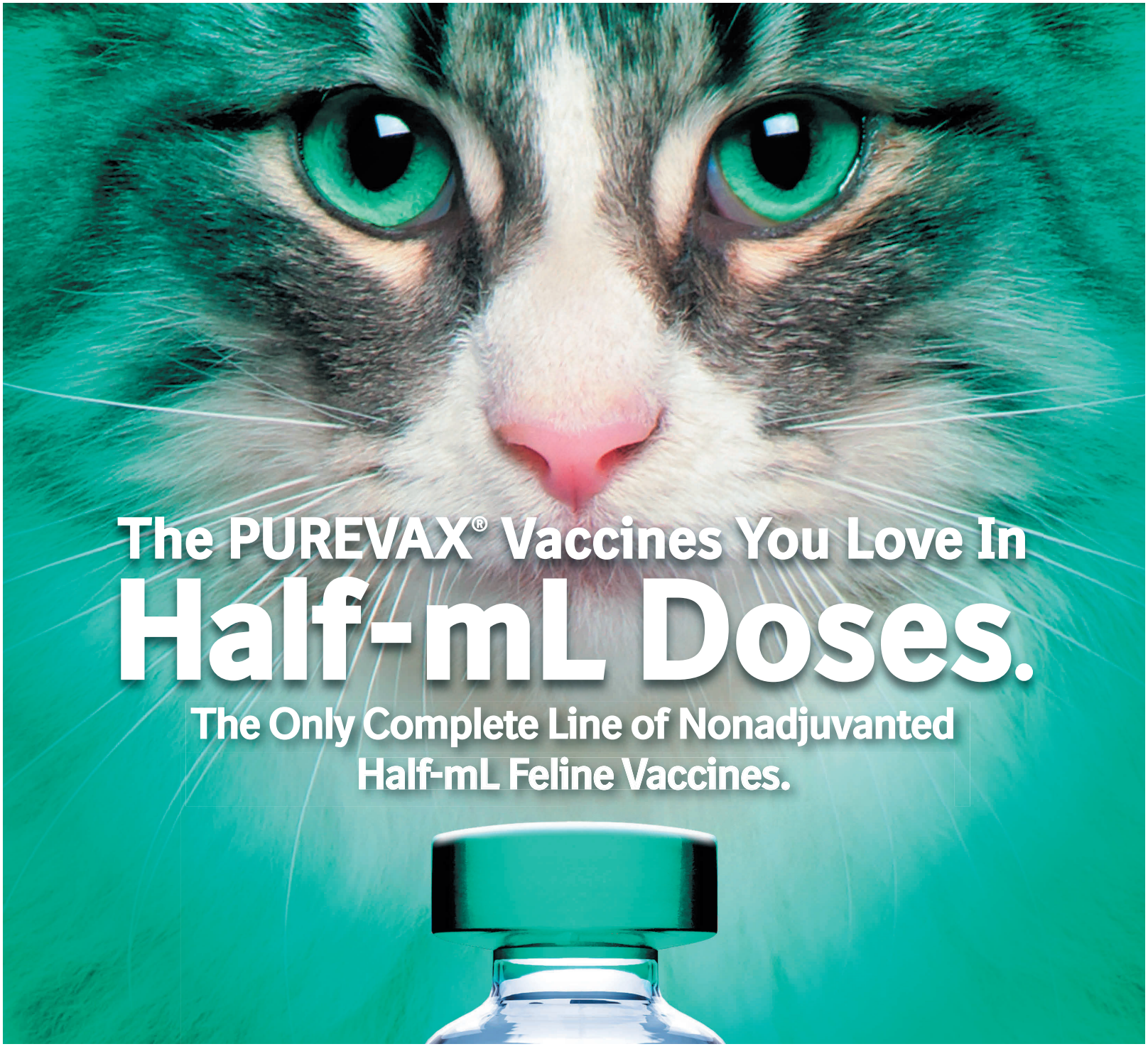

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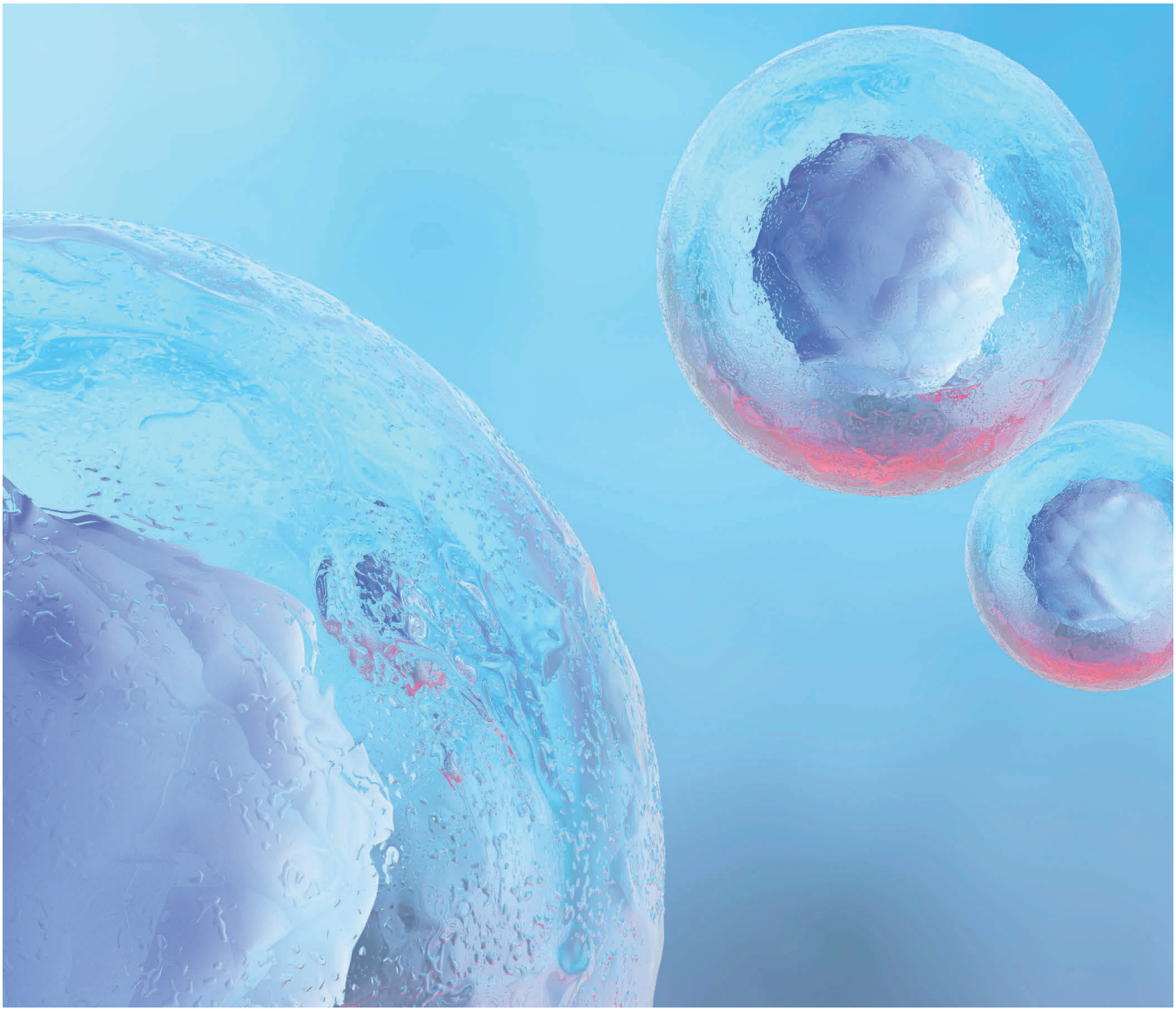

Stem Cells in Veterinary Medicine

Where Are We Now?

by Emily Singler, VMD

STEM CELL THERAPY GAINED TRACTION in the mid-1990s to early 2000s, when it was first used in the United States for the treatment of ligament injuries in horses and osteoarthritis in dogs. The use of stem cells in both clinical practice and research studies has expanded over the years, and there continues to be cause for hope of further breakthroughs in the use of stem cells to treat diseases in both animals and humans.

As pet owners become more interested in advanced treatment options for their pets, they may look to their veterinary team for guidance on the use of stem cells to treat various diseases and injuries. It can be helpful to review what is known about stem cells, how they are being used, and how to set reasonable expectations for pet owners.

Stem Cells: A Refresher

Stem cells are undifferentiated cells with self-renewal properties and the ability to differentiate into many kinds of cells. They can be derived from many different sites, including embryonic, hematopoietic, and mesenchymal tissues. Embryonic stem cells have the greatest potential for differentiation but come with the highest ethical

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Stem cells are undifferentiated cells with self-renewal properties and the ability to differentiate into many kinds of cells.

considerations for use. Hematopoietic stem cells, including those found in cord blood, can be useful for conditions involving immune cells, red blood cells, and platelets.

By far the most used category of stem cell, however, is the mesenchymal stem cell (MSC), which can differentiate into bone, cartilage, ligaments, tendons, fat, skin, muscle, and connective tissues. In veterinary medicine, where stem cells are most often used to treat dogs, cats, and horses, the two sites that have been found to yield the highest quantities of MSCs are bone marrow and adipose (fat) tissue. Because adipose tissue is much more easily harvested than bone marrow, it is often a preferred site for the acquisition of samples.

Although it was initially postulated that stem cell therapy worked by stimulating the formation of new cells in the tissue being treated, subsequent research and clinical trials now suggest that the benefit to stem cell therapy lies in its capacity to modify the immune system and aid in tissue repair (immunomodulation) as well as the ability to migrate throughout the body to the site of disease or injury (homing).

It has been suggested that the name of the cell be changed to "medicinal signaling cell" (still MSC for short) because of the demonstrated ability of these cells to detect injury or tissue damage, travel to the site, and help to coordinate healing of the affected tissue.

Mechanisms of Action

Because more recent studies have shown that stem cells do not replace inflamed, damaged, or diseased cells in the target tissue, it is important to understand how they function and the reasons to consider using them to treat veterinary patients. There are multiple mechanisms by which stem cells may help to heal tissues in various parts of the body. They include paracrine function, extracellular vesicle secretion, immunomodulation through apoptosis, and mitochondria transfer.

Through these mechanisms, MSCs can suppress or change the function of immune cells that can cause inflammation while stimulating wound healing and new blood vessel growth. They can also undergo apoptosis (cell death) when exposed to cytotoxic cells, which draws in macrophages that suppress the inflammatory response in the affected tissue. MSCs have been shown to transfer their mitochondria through nanotubes to diseased cells with nonfunctioning mitochondria. This transfer can enhance the recipient cell's ability to reduce inflammation and repair tissue.

Clinical Applications

Although stem cells were originally introduced to treat arthritis and other injuries in animals, they are now being used, either experimentally or in practice, for a much wider variety of conditions.

Tendons and Ligaments

Experimentally, MSCs derived from adipose tissue (ADMSCs) or bone marrow (BMMSCs) have been shown to aid the healing of injuries to tendons in horses when injected into the area of the lesion. Instead of producing only fibrous scar tissue, which is not as functional and more prone to reinjury than tendon tissue, horses injected with MSCs were found to have more normal tendon tissue at the site of their previous injury.

In dogs with a ruptured cranial cruciate ligament, intra-articular or IV injections of MSCs after surgical stabilization resulted in anti-inflammatory effects that lasted more than eight weeks after the injection. With partial tears that were not surgically repaired, injections of BMMSCs in combination with platelet-rich plasma helped to prevent progression of degenerative changes in the joint and ligament rupture in the other leg.

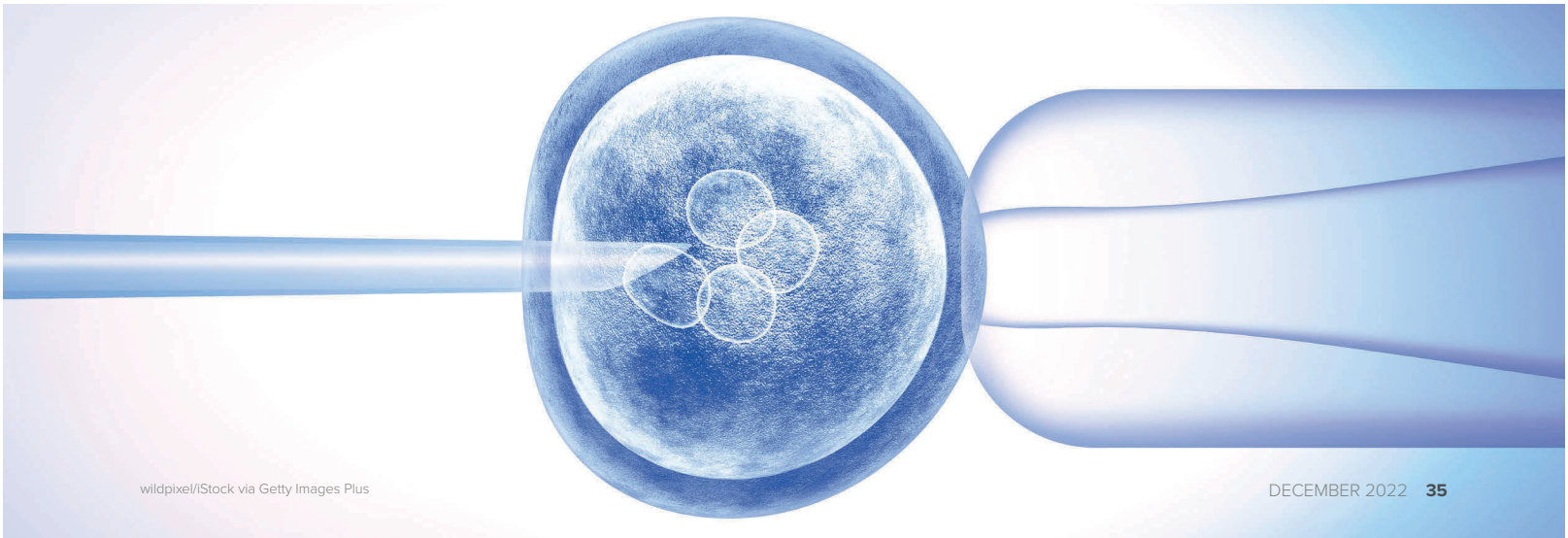
Joints

MSCs are effective in treating horses with bone spavin (a degenerative joint disease that causes pain and inflammation) and meniscal damage. The improvement in lameness often lasts at least 90 days after a single injection and sometimes as long as 180 days or more.

Dogs with osteoarthritis have also benefitted significantly from MSC treatment. Intra-articular injections of ADMSCs in dogs with osteoarthritis appeared to have positive effects in terms of reducing pain and lameness that lasted for at least four years in one study.

Progression of arthritic changes in the treated joints also appeared to be delayed when compared with placebo in dogs. In another study, dogs of differing ages with severe osteoarthritis showed improvement in 60% of older dogs and 90% of younger dogs. Very few adverse effects

It has been suggested that the name of the cell be changed to "medicinal signaling cell" because of the demonstrated ability of these cells to detect injury or tissue damage, travel to the site, and help to coordinate healing of the affected tissue.



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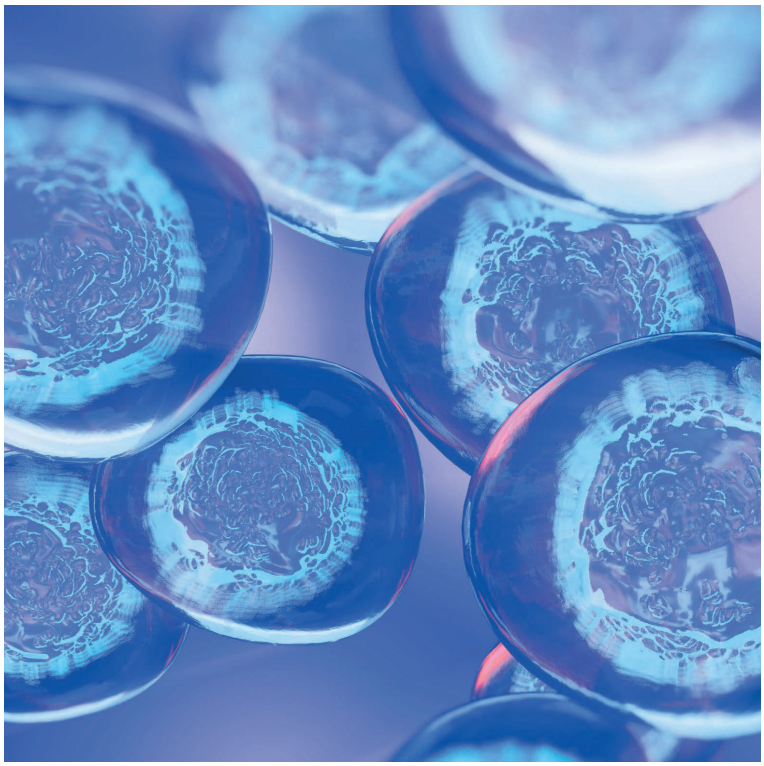
were reported, and those that were reported were mild and self-limiting.

Orodental Diseases
In addition to the bone marrow and adipose MSCs previously described, stem cells have been derived from the dental pulp and periodontal ligament and have been shown in some dog studies to help regenerate the dental pulp and periodontal ligament, respectively. Not all studies have shown a benefit, however, and more research is needed in this area.

In cats, IV injection of MSCs has shown positive results in the treatment of feline chronic gingivostomatitis. ADMSCs were able to cause either complete remission of signs or significant reduction in the severity of the disease in 70% of the treated cats who still had significant disease despite full-mouth extractions. When a smaller study looked at administering ADMSCs to affected cats without extracting any teeth, no benefit was noted.

Digestive Tract Diseases
In patients with inflammatory bowel disease, a single IV infusion of ADMSCs caused clinical remission in 9 out of 11 dogs. These dogs' albumin, cobalamin, and folate levels were also significantly increased. In cats treated similarly, five out of seven cats were reported to have clinical remission by their owners.



Liver Diseases
In studies, ADMSCs have been used to treat experimentally induced liver cell injury, and IV injections resulted in lowered serum liver enzymes and restored liver tissue structure. IV ADMSC infusions in dogs with liver cirrhosis showed decreased fibrosis in the liver and improved liver function. ADMSCs have also been shown to be beneficial in the treatment of degenerative hepatopathy and hepatocutaneous syndrome.

Renal Diseases
Although single IV injections of ADMSCs did not result in any improvement in cats with chronic kidney disease, repeated IV injections of MSCs sourced from feline amniotic membranes resulted in significantly improved renal function. This was measured by a reduction in serum creatinine levels and urine protein concentrations and an increase in urine specific gravity, along with improvement in clinical signs such as appetite and social interaction.

Cardiac Diseases
Although a study involving the use of MSCs in Doberman pinschers with dilated cardiomyopathy showed no benefits, another small study saw improvement in chronic valvular disease after IV infusion of stem cells derived from deciduous teeth.

Neuromuscular Lesions
For dogs with spinal cord injuries, BMMSCs combined with medication resulted in improved outcomes when compared to medication alone. Likewise, dogs with acute paraplegia because of disc herniation who were treated with ADMSCs through an epidural injection along with surgery had faster improvement than with surgery alone.

Skin Diseases and Wounds
Studies using MSCs in goats, sheep, horses, and dogs have shown improvement in healing of cutaneous wounds. Some of these wounds had been refractory to other forms of treatment. MSCs have also been used to treat atopic dermatitis, but with conflicting results. One study showed no benefit, whereas another showed significant improvement that lasted at least six months.

Eye Diseases
Stem cells have been used to treat refractory corneal ulcers, retinal detachment, and keratitis in horses. In cats, MSCs have shown some promise in treating feline eosinophilic keratitis, and in dogs, they have been effective in treating keratoconjunctivitis sicca (KCS, or dry eye).

Reproductive Diseases
The use of MSCs in horses did not yield any improvement in ovarian function or sperm quality. In dogs, however, the use of extracellular vesicles (ECVs) derived from ADMSCs help reduce the number of sperm damaged during cryopreservation. Additionally, MSCs may help prevent the proliferation of staphylococcus aureus in cows with mastitis, and they may help to repair tissue in goats with mastitis.

Stem Cells in Practice

Valerie Johnson, DVM, PhD, DACVECC, assistant professor of Small Animal Clinic Sciences at Michigan State University College of Veterinary Medicine, has been studying stem cells for more than 10 years. In her role, she harvests stem cells from adipose tissue, bone marrow, or blood and then uses them in clinical trials. She is currently studying the treatment of osteoarthritis in exotic animals and sepsis in sea turtles.

In the past, she has compared intra-articular injections of stem cells in dogs to intra-articular injections of hyaluronic acid. Both resulted in clinical improvement, but there was not much difference between the outcomes of the two treatments. In another study of hers involving IV injection of stem cells in dogs, she demonstrated "improved quality of life and activity" based on validated owner questionnaires. She has also seen great success using stem cells to treat multidrug resistant infections in dogs and to treat elephant endotheliotropic herpesvirus, an often-fatal disease of young elephants.

Take Home Points for Owners

When talking to clients about the benefits of stem cells, Johnson usually tells them that we don't always know why stem cells work so well in some cases and not in others. She feels comfortable saying that they are safe, although there is a small risk of allergic reaction. But she does always warn owners that she can't promise that they will help. The more we use them, she says, the more we may improve our understanding of this promising therapy.

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It is important for owners who are considering this treatment for their pets to have reasonable expectations.

It is important for owners who are considering this treatment for their pets to have reasonable expectations. Stem cells appear to help regulate the immune system and support the body to heal itself. This can result in reduced inflammation and pain, more functional tissue, and better quality of life. In some studies, however, stem cells were only found to be helpful in combination with other treatment such as surgery or dental extractions.

Because the stem cells currently used are autologous, meaning they must be harvested from the pet undergoing the treatment, owners must understand that their pet will need a surgical procedure to collect the stem cells. In some cases, this can be done proactively at the time of spay or neuter, and the cells can be saved for possible future use. Studies involving allogeneic stem cells (in which the donor and recipient are not the same animal but of the

same species) are ongoing, but for now stem cells must be harvested from the patient in need of treatment.

Fortunately, the future for stem cell treatment looks bright. As research continues, there will likely be many more opportunities to use stem cells to treat conditions beyond arthritis and soft tissue injuries in the clinical setting. What's more, research in the uses of stem cells in animals will likely lead the way for the use of stem cells in humans to treat a wide variety of conditions. Although stem cells are not a fountain of youth for animals or humans, they may greatly improve the quality of life in animals and help humans and animals live longer and happier lives together. ※

Emily Singler, VMD, is a 2001 graduate of Penn State University and a 2005 graduate of University of Pennsylvania School of Veterinary Medicine. She has worked in shelter medicine, private practice, and as a relief veterinarian. She currently works as a veterinary writer and consultant and has her own blog, www.vetmedbaby.com

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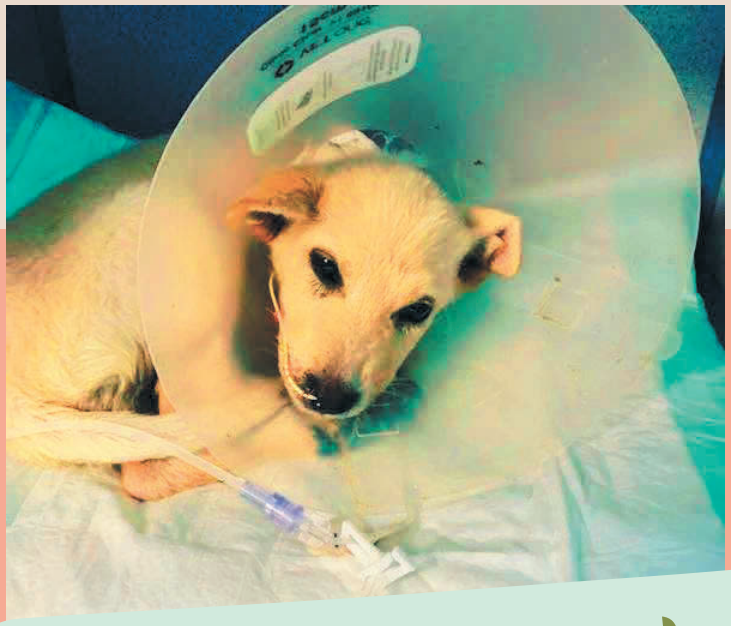

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Opportunities to Help

Photographer/collection via Getty Images

Technicians Travel Far and Wide Assisting Animals in Need

by Linda Childers

When Hurricane Harvey hit Texas and Louisiana in August 2017, it displaced more than a million people and thousands of pets. As veterinary professionals in the affected areas worked around the clock to care for injured and abandoned pets, volunteers from across the country rushed in to help.

Abbie DeLeers, LVT, UW-AAB, was among the veterinary professionals who traveled to Texas to volunteer in the aftermath of Hurricane Harvey. The year before, DeLeers had formed Vet Techs Without Borders (VTWB), a nonprofit that connects volunteer veterinary technicians and assistants with existing rescue organizations that need hands-on help.

DeLeers has served as a medical volunteer for the past 15 years and is passionate about international travel and helping rescue animals. After having several conversations with other vet techs who wanted to volunteer but didn't know where to start, she decided to launch VTWB.

"VTWB matches vet tech volunteers, based on their interests and skills, with nonprofits that need assistance with spay/neuter clinics, wildlife rescues, and disaster relief," DeLeers said. "Over the past six years, our volunteers have worked in Mexico, Costa Rica, Guatemala, and the Bahamas, as well as locations throughout the United States."

> "Over the past six years, our volunteers have worked in Mexico, Costa Rica, Guatemala, and the Bahamas, as well as locations throughout the United States."
>
> —ABBIE DELEERS, LVT, UW-AAB, VET TECHS WITHOUT BORDERS

Nicole Egan, LVT, volunteered with the group Vet Techs Without Borders after Hurricane Harvey devastated parts of Texas and Louisiana.

Kirsten DeFaccio, LVT, volunteered with Vet Techs Without Borders during Hurricane Harvey.

> "Volunteering exposes you to new places and people and gives you a different perspective of how many animals live."
>
> —KIRSTEN DEFACCIO, LVT

Providing Assistance After a Disaster

DeLeers knows that in the aftermath of a hurricane, veterinary volunteers are desperately needed to care for the influx of homeless and displaced animals. She traveled to Louisiana to help after Hurricane Katrina in 2005 and then to Houston after Hurricane Harvey, where she was accompanied by several VTWB volunteers.

DeLeers says that after a hurricane, veterinary volunteers are needed to help animals who may have suffered serious injuries or illnesses due to flooding, as well as pets who have been separated from their owners.

Nicole Egan, LVT, was matched with VTWB to work at the NRG Arena in Houston with Best Friends and other nonprofit organizations that provided medical care and help animals impacted by the storm. Egan also works part-time at Banfield Pet Hospital and has helped organize no-cost preventive care clinics funded by her employer.

"I've met and learned from so many talented techs and veterinary volunteers from all around the world," Egan said. "Volunteering has helped me improve my time management and multitasking skills as I helped to care for large volumes of pets."

Kirsten DeFaccio, senior/lead LVT at Emerald City Pet Rescue Clinic in Seattle, Washington, also traveled to Texas to volunteer in the wake of Hurricane Harvey.

"I helped with everything from dispensing medication to walking, cleaning, and socializing the animals," DeFaccio said. "I remember walking

Photo courtesy of Nicole Egan, Photo courtesy of Kirsten DeFaccio

through row after row of dogs and looking for any sign of illness, or symptoms that required medical attention. I even helped make toys for the dogs and cats out of old towels and cloths."

DeFaccio said that although disaster relief work is hard, it's also very rewarding. She has also volunteered with the ASPCA in Ohio at a temporary shelter where they housed hundreds of dogs rescued from a dogfighting operation.

"Volunteering exposes you to new places and people and gives you a different perspective of how many animals live," she said. "As a vet tech, volunteering and applying your skills

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Volunteering Begins Here

Check with your city or county's animal shelter to see if they need volunteers to assist with first aid, spay or neuter procedures, or caring for shelter pets.

Looking to broaden your horizons and work with exotic animals? Consider volunteering at a local zoo or wildlife center. Requirements vary per institution.

Rural Area Veterinary Services seeks vet techs to volunteer in rural areas across the country.

ruralareavet.org

Native American Veterinary Services (NAVS) is always on the lookout for vet techs and other veterinary staff to volunteer on one of their NAVS trips.

nativeamericanveterinaryservices.com

World Vets needs vet tech volunteers with at least one year of clinical experience to provide instruction to pre-veterinary and vet tech students in overseas locations.

worldvets.org

With Animal Experience International, vet techs can volunteer to help on trips such as wildlife rehab in Australia, sea turtle conservation in Costa Rica, and more.

animalexperienceinternational.com

and knowledge to animals in need is one of the most rewarding things you can do."

Traveling to Assist Animals in Need

Although many volunteer opportunities for vet techs involve international travel, there are also numerous organizations across the United States that welcome volunteers.

For the past two years, Lindsey Abrams, CVT, of McKeever Dermatology Clinics in Eden Prairie, Minnesota, has volunteered for one week each May with the Christian Veterinary Medicine (CVM), serving the Lakota community on the Pine Ridge Indian Reservation in South Dakota. She is also pursuing a specialty in animal dermatology.

"We provide low-cost vaccines and intestinal parasite deworming along with flea and tick prevention," Abrams said. "We care for over 500 pets in a week's time."

Volunteering on either a short- or long-term medical mission can also take technicians out of their comfort zone. Those who travel overseas can learn how veterinary medicine is practiced in other countries.

Many nonprofits, such as CVM, send veterinary volunteers to Native American reservations where medical services for animals are in short supply and residents are unable to afford vet care.

"Leaving the daily comforts that many Americans take for granted to serve in one of the most impoverished regions in America is very humbling," Abrams

Lindsey Abrams, CVT, volunteers with Christian Veterinary Mission.

said. "You never know what each day will bring, but at the end of the day, you know you've made another person's or pet's life better, and it's also made me a better vet tech."

Rhonda Norris, RVT, of the Oklahoma Alliance for Animals in Tulsa, has volunteered with Pets for Life, a program offered through the Humane Society Veterinary Medical Association that addresses inequity and lack of access to pet resources for those who live in underserved communities. All services are provided free to pet owners.

"I volunteered in 2017 with Pets for Life at the Blackfeet Indian Reservation in Montana," Norris said. "We set up a high volume spay/neuter clinic and over the course of two days, we cared for 250 to 300 pets."

Working in a mobile animal sterilization hospital (MASH) style veterinary clinic was a learning experience for Norris and the other vet tech volunteers.

"We set up our clinic in a diesel mechanic's shop where we had to sweep the floors and move equipment before preparing to see the animals," Norris said. "Pet owners often sit in their vehicles and wait for hours for their animals to receive care. They're very appreciative of the services we offer."

Norris has also volunteered at other Native American reservations and with the Oklahoma Humane Society, bringing free vaccine clinics to communities that couldn't otherwise afford them.

"Seeing the dedication and love these pet owners have for their animals and engaging with so many different people and pets is very rewarding work," she said.

Pairing Vet Techs with Volunteer Opportunities

DeLeers noted that volunteering helps vet techs to develop a new set of professional skills, while also traveling to new locations, meeting other veterinary professionals, and helping animals in need.

Research published in the *Journal of Happiness Studies* found that people who volunteer are happier and report better mental health than those who volunteered rarely or not at all.

DeLeers said it's easy to register as a volunteer with VTWB. She invites vet techs to fill out an online application on the nonprofit's website listing

Photo courtesy of Lindsey Abrams

their skills, areas of interest, and specialties. They are then matched with an organization that can use their expertise. She said many of the groups VTWB partners with don't have the resources to employ a full-time veterinary staff and they rely on volunteer support to rehabilitate and care for animals.

"Some rescue organizations specifically want vet techs with wildlife experience, but we do have an organization in Guatemala that's willing to work with vet techs who have an interest in learning more about the field," she said.

The application also asks if volunteers feel comfortable traveling alone or if they'd prefer to travel as part of a group. VTWB volunteers typically pick up their own travel costs, but DeLeers mentioned that they do offer a limited amount of financial aid to qualified applicants.

Volunteer opportunities with VTWB typically range from one to three weeks.

"Our volunteers were in Houston helping animals after Hurricane Harvey for approximately ten days, while those who work in the primate sanctuary in Costa Rica typically spend three weeks there," DeLeers said.

To qualify as a successful volunteer, DeLeers said vet techs should be comfortable improvising and learning on the fly because much of the work is done in remote areas.

Abbie DeLeers, LVT, founder of the volunteer group Vet Techs Without Borders.

"In addition to experience working with people and animals, it's important for vet tech volunteers to be resilient, flexible, and empathetic," she said.

Since the pandemic first hit in 2020, VTWB temporarily suspended their international travel, but DeLeers said that as soon as it's safe to travel, she has volunteers scheduled for wildlife rescue in Costa Rica and spay and neuter clinics in Mexico.

"We're being mindful of those who don't have access to vaccines or medical care in the areas that we serve," she said.

While VTWB is on a temporary hiatus, DeLeers encourages vet techs to explore volunteer opportunities closer to home.

"There are so many community shelters and rescue groups that desperately need vet tech volunteers and greatly appreciate the help," she said. ※

Linda Childers is a freelance writer whose work has been published in *The Washington Post*, AARP, *The Rheumatologist*, *Allure*, *Arthritis Today*, *AKC Family Dog*, and other national media outlets.

> "Seeing the dedication and love these pet owners have for their animals and engaging with so many different people and pets is very rewarding work."
> —RHONDA NORRIS, RVT

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Little Loans, Big Returns

Microloans Can Provide a Boost for Small Businesses

by Constance Hardesty

Microloans can be used to fund professional development and to launch or grow a business.

If you're an individual or a small business needing a little help, there's a microloan for you.

Microloans have come a long way. The idea was launched as an experiment in 1976 when economics professor Muhammad Yunus made a small personal loan to a group of women who made bamboo stools. They used the money to make changes that boosted their productivity and paid off the loan.

Yunus went on to found Grameen Bank to establish microcredit as a financial tool, for which he won the Nobel Peace Prize in 2006. Now, microlending is big business, with banks, nonprofits, and governments offering small, short-term, low-interest loans to individuals and small businesses.

But even though microlending has grown, its roots still show. This article highlights just two of the many approaches to microlending for veterinary professionals: traditional microloans to help individuals advance in their careers, and government-backed loans to help small businesses get started or grow.

Microloans for Professional Development

In the cold November of 2000, Eva Hadzima, DVM, MVDr, and her husband, Maros Pazej, DVM, MVDr, arrived in Calgary, Alberta, with a dream of starting their own veterinary clinic.

Both were graduates of the University of Veterinary Medicine in Kosice, Slovakia, and both had advanced degrees in addition to veterinary degrees. Hadzima had earned a master's degree in toxicology and started to study for a doctorate in nutrition, while Pazej pursued three years of postgraduate study in honeybee diseases and simultaneously worked at a veterinary practice in Slovakia.

Unfortunately, there were few veterinary positions available in Slovakia. Immediately the couple began an international job search.

Both doctors found work in Finland, but they were determined to settle permanently in a place where there was a solid demand for their skills and which had an easier language to speak.

"I was online on forums, asking everyone if they knew of a place where veterinarians were needed," Hadzima recalled. When someone suggested Canada, she did not hesitate to investigate.

The decision to resettle was an easy one. "Mountains, animals, Calgary. Done!" she said.

They arrived at Calgary International Airport with one backpack each and almost no money—a new experience for both of them. Despite having little, the doctors harbored high hopes of pursuing the careers for which they had studied.

Like many universities across the world, the University of Veterinary Medicine in Kosice is not accredited by the Council of Education of the American Veterinary Medical Association. Accreditation allows students to immediately practice their occupations without having to complete additional exams.

So instead of starting their own practice, Pazej began work as a technician in respiratory research at the University of Calgary. Meanwhile, Hadzima started out as a groomer and then worked as a laboratory technician at the University of Calgary while volunteering at several veterinary clinics. Over time, both doctors were able to practice surgery and emergency room medicine under the supervision of a licensed veterinarian.

To practice as licensed veterinarians, however, the doctors would have to take tests to prove their proficiency in English and complete both the North American Veterinary Licensing Examination (NAVLE) and the Clinical Proficiency Examination (CPE). At the time, exam fees and associated costs would be more than $10,000 for each doctor.

To raise the funds, the couple worked several jobs, including driving for a delivery truck company and as a groomer at $6 per hour. Six years passed, and Hadzima decided the process was taking far too long. By chance she learned about low-interest loans available from Windmill Microlending.

Windmill Microlending is a Canadian registered charity (nonprofit) that makes low-interest loans to skilled professionals who are immigrants or refugees in need of funding to complete Canada's licensing requirements.

Marcus, Eva Hadzima, DVM, MVDr, Anna-Maria, and Maros Pazej, DVM, MVDr, with the family pets in a field of canola on the sustainable farm they are building.

Photo courtesy of Eva Hadzima

Windmill posts that, on average, their underemployed clients can see their income double or even triple once they gain the necessary credentials to work in their field of expertise and repay their loans. The repayment rate for Windmill loans is 97.5%.

Confident that she would recoup the costs soon after she earned her credentials, Hadzima applied for a microloan to help pay for the fees and associated expenses. With the loan, she was able to take two months off to study for the exams and travel to Oklahoma State University to take the final CPE practical exam.

While working through the loan and licensing process, Hadzima was already looking ahead. “The next day after passing the practical exam, I opened my first veterinary locum company in Alberta. That’s how confident I was,” she remembers.

Today, the couple’s practice, DeWinton Pet Hospital, Inc., just south of Calgary, is thriving. In addition to the two veterinarians, the practice employs about twenty support staff, including several veterinary students and registered veterinary technicians. It has been AAHA-accredited since October 2010.

Hadzima grew up in an urban environment with no yard for a pet and, as a result, all of her childhood pets were small exotics, ranging from hamsters to rats to snakes. So it’s no surprise that the child who dreamed of becoming a veterinarian devotes most of her professional time to her first love, exotics and especially reptiles.

At present, Hadzima is a member

of many associations focused on treating exotics and unusual pets, including the Association of Reptilian and Amphibian Veterinarians (ARAV) and the Association of Exotic Mammal Veterinarians (AEMV).

Pazej treats companion animals, with a special focus on surgery and dentistry. He is a member of the American Veterinary Dental Society and is actively involved in dentistry seminars.

Both doctors are involved in professional veterinary associations, including the Alberta Veterinary Medical Association (ABVMA) and Canadian Veterinary Medical Association (CVMA). Together with Katherine Weston, one of their current veterinary interns, they co-authored the chapter "Laser Surgery Procedures in Small Exotic Animals (Small Mammals, Reptiles, and Avians)" in the book *Laser Surgery in Veterinary Medicine* (Wiley-Blackwell, 2019).

Hadzima is also the founder and principal of Slovak School-Slovenska Skola in Calgary and is the Honorary Consul of the Honorary Consulate for the Slovak Republic in Calgary.

Microlending has grown, but its roots still show.

Nuthawut Somsuk/iStock via Getty Images Plus

Although leaving their family and friends behind in Europe was difficult, both of the veterinarians have achieved success that they could never dream of in Slovakia. "Even though the journey was hard, we regret none of it," they agree.

Twenty years after immigrating, the doctors have a thriving family with two children, Anna-Maria and Marcus; three dogs (Max, Maruska, and Mochi); two tortoises (Speedo and Louis); a parrot (Buzz); an axolotl (Mat); and what Hadzima calls "a gang" of bees. Together, they are building a sustainable farm on acreage in view of the mountains near their veterinary hospital.

Microloans for Veterinary Practices

In the year before the COVID-19 pandemic hit, a recent veterinary graduate and practice owner set out to develop her practice in the midwestern United States. Her plan was simple: double the space devoted to grooming and purchase a tub to bathe large dogs. The cost was only about $3,000, and that was a challenge. Where could she apply for a very small loan?

She turned to a local economic development commission for a microloan. The infusion of cash set her plan in motion, and one thing led to another. In 2022, her practice joined locations with a nearby practice, and she now serves as director of mentorship for a national veterinary services organization.

As this story shows, small, short-term, low-interest loans can be a solid alternative to traditional loans. For veterinary practice owners who do

not qualify for conventional loans, practice in small towns or rural areas, have a limited or less than stellar credit record, or simply need to borrow less money than their banker is willing to lend, microloans can offer real advantages.

What You Need to Know About Microloans

Microloans come in many shapes and sizes. You will see them advertised by banks, nonprofits, and even quasi-government offices like community development commissions. Some of these products are conventional loans with a buzzy tag. Others meet all three criteria of true microloans: small principal, short-term repayment, low interest rate.

Many nonprofit organizations that offer microloans (like local economic development commissions) are actually administering funds allocated by the Small Business Administration (SBA). That means the loan is governed by protections established by the federal government. It also means that SBA microloans are available in every state. For these reasons, SBA microloans provide a reliable introduction and a useful benchmark for comparing offers as you shop for a very small loan.

Consult your financial planner, banker, or business advisors to help you consider options, compare and evaluate offers, and negotiate your best deal.

The SBA funds loans of less than $50,000 to fuel growth or launch new businesses. They are meant to serve borrowers who are likely to be denied credit because of the small size of the loan, the borrower's income or credit score, the business location (small towns or rural areas), and demographics (women, minority entrepreneurs, and veterans).

In 2021, borrowers were about evenly split between men and women, and about one-third of the loans went to businesses in rural areas.

The loans can be used to rebuild, re-open, repair, or improve your practice, with expenditures for working capital, inventory, supplies, furniture, fixtures, or equipment. They *cannot* be used to pay off existing debts or to purchase real estate.

You can even use an SBA microloan to launch a new business. Let's say you own a general practice; you could use a microloan to launch a wholly new company, spin off an existing service as an independent business, or boost a side hustle.

Anyone who wishes to launch or grow a company is eligible to apply for a microloan. So if a technician, let's say, repairs bicycles on the side, she is eligible to *apply* for a loan to develop that business. To *win* a loan, the

applicant must be a good risk with a solid business plan and credit score.

The SBA does not set minimum credit scores for borrowers. That's left up to each lender. Investopedia reports that the typical minimum is between 620 and 640.

Although SBA microloans are capped at $50,000, most come in at about $15,000. Loans of more than $20,000 are allowed only if the borrower can show that they cannot obtain credit elsewhere at comparable interest rates.

To protect borrowers, interest rates are regulated by the SBA. In 2021, interest rates for SBA microloans ranged from 6% to 9%, depending in part on the size of the loan and how the funds were used. That compares to other lenders who may charge between 24% and 35%. Also in 2021, the maximum payback term for SBA microloans was extended from six to seven years.

Lenders may also charge a small packaging fee (2% to 3%). And all of the actual closing costs can be rolled into the loan, as long as the total loan amount does not exceed the SBA maximum of $50,000.

It's crucial to know that SBA microloans are *not* offered through banks. Instead, they are administered by intermediary lenders called "community development companies" or CDCs. These are nonprofits that pair business training and coaching with loan administration.

Because half of new business ventures fail within five years, the training is crucial. In fact, CDCs typically require that borrowers participate in a training program as a condition of the loan.

What does it entail? The SBA requires all CDCs to offer training in marketing, management, and technical assistance, but each group's offerings may differ. Some groups offer classes in QuickBooks, website development, Facebook advertising, and online marketing strategies. Others, like the Iowa Foundation for Microenterprise and Community Vitality (IowaMicroLoan for short), offer grants of up to $250 per year so each borrower can choose the training they need.

Is an SBA microloan right for you? First of all, that depends on the size of the loan you need and your qualifications as a borrower. But it also depends on whether you consider the built-in protections, including the training requirements, a help or hindrance.

As you're searching for small loans, it's important to explore *all* of your options. You may find small, short-term, low-interest loans offered by your bank or other organizations. Or, you may discover that another source of funding, like a line of credit or vendor financing, is the best fit for your immediate need.

Whether you are considering a small loan to fund professional development or practice growth, it pays to get expert advice. This article describes just two of the many types of microloans available from various types of providers. Consult your financial planner, banker, or business advisors to help you consider your options, compare and evaluate offers, and negotiate your best deal. ※

This article does not provide financial or legal advice; for such advice seek the services of a licensed professional. The author has no affiliation with any microlending program.

Constance Hardesty, MSc, is an award-winning writer and editor serving clients in animal health, business management, technology, and education.

Resources

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PROFESSIONAL VETERINARY FORMULAS

Erin Frey, DVM, MPH, DACVPM

Jennifer Granick, DVM, MS, PhD, DACVIM

Every Patient, Every Time

Veterinary Teams and Antimicrobial Stewardship

An Interview with Erin Frey, DVM, MPH, DACVPM, and Jennifer Granick, DVM, MS, PhD, DACVIM, for *Central Line: The AAHA Podcast*

When we think of our most precious resources, we don't necessarily think about drugs. But antibiotics, or antimicrobials, are among the most important resources we have to protect both animal and human health, and antibiotic resistance has never been more ubiquitous. Two members of the task force behind the *2022 AAFP/AAHA Antimicrobial Stewardship Guidelines*—chair Erin Frey, DVM, MPH, DACVPM, and Jennifer Granick, DVM, MS, PhD, DACVIM—helped us simplify good stewardship for the entire veterinary team.

Erin Frey: We're doing better than we were, and I think we're making strides in the right direction, so that's what got me involved in this task force.

Jennifer Granick: The cool thing about antimicrobial stewardship is that it's an actionable thing that every single prescriber can do to help decrease this really scary onset of antimicrobial resistance that we're seeing in our patients. It's tangible for everybody. And the other cool thing about it is that probably whether you know it or not, all practitioners are already doing some aspect of stewardship, so just changing the focus and the intention in small ways can do a lot.

Katie Berlin: I like the idea that you don't have to change everything you do. It makes it a little bit less intimidating; less like a culture shift and more of just an expansion of something that is already second nature.

EF: I think there's a general feeling that doing antimicrobial stewardship, you're going to have to start something new, but we're not saying, "Start a stewardship program."

andresr/iStock via Getty Images

The guidelines that were out before this, it had been a few years since they'd been updated, and there have been a lot of new things done and a lot of new work done, and I think one of the big things that we wanted to address here was that the [title of the] previous ones [used the phrase] "judicious use." We wanted to expand the focus from not just thinking about that time when you have an animal in front of you and you're choosing if you are going to use an antibiotic or not, but to say it's part of this global thing that happens at your practice. The vaccines that you recommend, the nutrition that you advise clients to do, all of those things are part of stewardship. So [we are] really reframing it in terms of this bigger picture rather than just that moment.

JG: No one has time these days to read through pages and pages of recommendations—that's intimidating. But I think everyone can probably find one action item just to start with. And if you pick one thing and focus on that and then build upon that momentum, I think small steady change is really impactful.

KB: I love that these guidelines are accessible to the whole team. You could hand this document to anybody on your team, and they could probably read it, understand it, and be like, "Oh, that's something that I could keep in mind when I'm communicating with clients who ask me certain questions," or "This is why that doctor does things a slightly different way than I've seen before." I was thinking, "Okay, I already do most of these things, but do I do them enough? And do I have this conversation every time?" And the answer, of course, is no. I thought maybe we could just start addressing some of the common [objections we hear from colleagues and clients], and that will cover a lot of the reasons why people maybe don't do this every case, every time.

Clients often are expecting you to prescribe oral antibiotics, and even if they understand it's important to be good stewards, they'll say, "Well, can't you just do it this one time? I'm going on a trip," or "My son is sick," and we're worried that if we don't do what they're asking, they'll go someplace else, they'll leave a bad review, or they won't follow up with us, and they'll sue us if the pet doesn't get better or take us to the board. How do you feel like the best way is for people to address that concern?

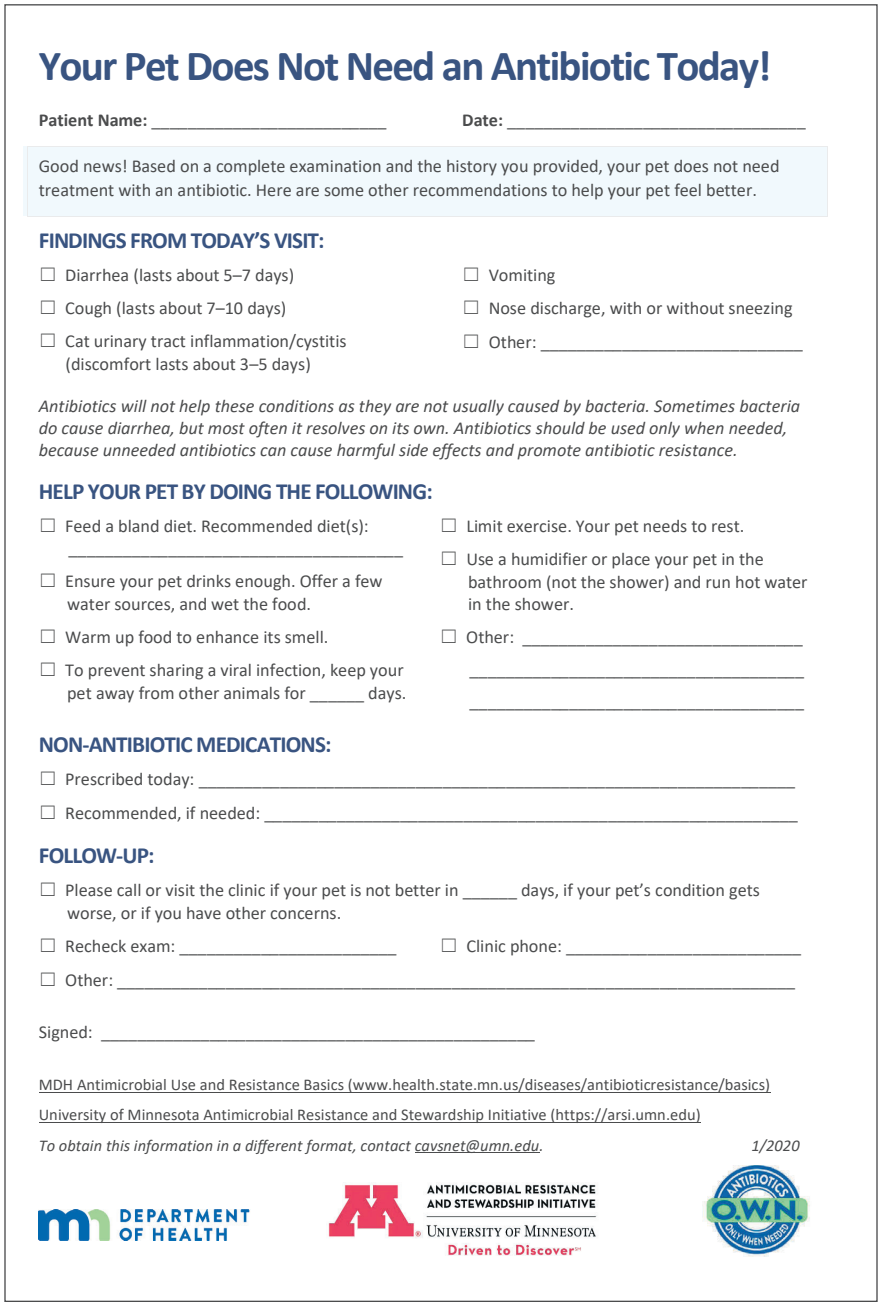
EF: Yeah, it's tricky and it's real. I think one of the things we talked about in another conversation was maybe not everybody at your practice does it the same way. Mrs. Jones [is used to calling] in whenever Fluffy has a rash, then Dr. So-and-So gives 30 cephalexin and two weeks of prednisone or something like that.

I think of it like any other difficult conversation, right? We have the tools. We use these tools when we talk about money; we use these tools when we talk about convenience euthanasia. Some of the same things that work in those conversations can work here. And one of those is being very clear. There's a great paper in human medicine that talks about what's called foreshadowing. We already know when we describe what we're doing in our physical exam that clients take value from that.

So, Fluffy comes in with a cough, and if I'm saying, "Yes, I can hear today that she has a cough, but I'm listening to her lungs and her lungs sound clear. Oh, good news. She doesn't have a fever today. Oh, she's not dehydrated. That's great. Oh, you're telling me that she's eating and drinking okay at home." Fluffy is running around the room. "Look how excited she is to be here today." You sort of set the situation for saying, at the end, "Hey, because of all of these things, Fluffy doesn't need an antibiotic today. Let me make some other recommendations for how you can help Fluffy at home." Jen's college, the University of Minnesota, has a really great—what is it called? Non-prescription pad?

JG: Non-antibiotic prescription pad! It's on our website, the Antimicrobial Resistance and Stewardship Initiative website: arsi.umn.edu. It's got a bunch of clinical resources including this. The idea is not just withholding antibiotics; that feels negative. It's providing positive actions. It explains that a lot of these conditions will improve on their own and that we just need to provide some supportive care, and it allows you to fill in the actions or supportive care things that you're either going

> "I feel like medicine is a team sport, and if you're doing it alone, you're probably not having the best experience and your patients may not be either."
>
> JENNIFER GRANICK, DVM, MS, PHD, DACVIM



Your Pet Does Not Need an Antibiotic Today!

Patient Name: _____ **Date:** _____

Good news! Based on a complete examination and the history you provided, your pet does not need treatment with an antibiotic. Here are some other recommendations to help your pet feel better.

FINDINGS FROM TODAY'S VISIT:

- ☐ Diarrhea (lasts about 5–7 days)
- ☐ Cough (lasts about 7–10 days)
- ☐ Cat urinary tract inflammation/cystitis (discomfort lasts about 3–5 days)
- ☐ Vomiting
- ☐ Nose discharge, with or without sneezing
- ☐ Other: _____

Antibiotics will not help these conditions as they are not usually caused by bacteria. Sometimes bacteria do cause diarrhea, but most often it resolves on its own. Antibiotics should be used only when needed, because unneeded antibiotics can cause harmful side effects and promote antibiotic resistance.

HELP YOUR PET BY DOING THE FOLLOWING:

- ☐ Feed a bland diet. Recommended diet(s): _____
- ☐ Ensure your pet drinks enough. Offer a few water sources, and wet the food.
- ☐ Warm up food to enhance its smell.
- ☐ To prevent sharing a viral infection, keep your pet away from other animals for _____ days.
- ☐ Limit exercise. Your pet needs to rest.
- ☐ Use a humidifier or place your pet in the bathroom (not the shower) and run hot water in the shower.
- ☐ Other: _____ _____ _____

NON-ANTIBIOTIC MEDICATIONS:

- ☐ Prescribed today: _____
- ☐ Recommended, if needed: _____

FOLLOW-UP:

- ☐ Please call or visit the clinic if your pet is not better in _____ days, if your pet's condition gets worse, or if you have other concerns.
- ☐ Recheck exam: _____
- ☐ Clinic phone: _____
- ☐ Other: _____

Signed: _____

MDH Antimicrobial Use and Resistance Basics (www.health.state.mn.us/diseases/antibioticresistance/basics)

University of Minnesota Antimicrobial Resistance and Stewardship Initiative (https://arsi.umn.edu)

To obtain this information in a different format, contact cavsnet@umn.edu. *1/2020*

DEPARTMENT OF HEALTH

ANTIMICROBIAL RESISTANCE AND STEWARDSHIP INITIATIVE
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ANTIBIOTICS O.W.N. ONLY WHEN NEEDED

The Antimicrobial Resistance and Stewardship Initiative website provides clinical resources including a non-antibiotic prescription pad: https://arsi.umn.edu/as-resources.

to prescribe or tell the owner to do at home. So for the upper respiratory infection example, put the cat in the bathroom when you're taking a shower or humidify the air and warm up their food so that they can smell it better because their nose is stuffy.

And then also [it discusses] when should you be concerned, when to notify us if things aren't improving, or what things you should look out for. It's providing positive things for the client to do so that they're helping their pet, because they came to you because they want to help their pet. It's communicating that you're both on the same page. Your goal is helping the pet too, which helps to bond the client to you and to your clinic. And it provides an "if/then" sort of scenario. If your cat stops eating well or is still snotty in a week or whatever your parameters are, then we have a plan, come back in, or at that point it would be appropriate to prescribe an antibiotic.

I think providing things that the owners can do rather than them just leaving without anything [may keep them from] the bad Yelp review. But it's a lot of client communication. Right?

EF: [In a] paper [that's] coming out sometime soon, one of the things that the people in our focus groups really homed in on was, "Answer all my questions. Tell me why they don't need an antibiotic. Tell me what I should be doing." And then it's really critical to say, "These are the things to watch for, this is how I will know if it's getting worse or if it might need antibiotics. I'm saying they don't need it today, but I'm not saying they might not need it in 24 hours or 48 hours. So at home, I'd like you to watch for. . . ."

You have a plan, so this is where the team comes back in. Whether it's you who are going to call them back, or my technician is going to call in 24 hours to check on Fluffy and see how things are going, or we'll email you, or you have an automatic system that just sends them a text message that they can respond to. I think it's really critical here: what are you going to go home and do today, what are you going to look for, and when are we going to talk again?

The tendency for them to call back and get angry is less if you say what they're looking for and say when you should talk again. Then when they call or they text in, they say, "Hey, you told me that this might happen, well, now it has. And you told me that if it did, we would use antibiotics or we would use this other medication. I think it's time for that." I find it less combative.

People really don't care so much about these big public health or grand ideas, but they really care about their pets. Clients really want to know, "What's the best thing for my dog or my cat? And what are the pros and cons of using it?" I think if you keep it to that animal and the impact on that animal and that client, you're going to get a lot more traction in terms of going away with everybody feeling okay about it.

KB: Basically, veterinary medicine is a communication science with some medicine thrown in. Without that communication, we're just not going to be successful at treating hardly anything.

JG: A hundred percent. Get the care team involved, because it may be a different doctor seeing a patient every time, but maybe it's the same technician who could speak up and say, "Oh, you know, this dog was just in two weeks ago for this problem and two weeks before that."

EF: So many times, it could be a kennel staff, it could be a tech, it could be your receptionist who has a relationship with this client or with that animal based on their own interactions [that] are separate from yours, and we should really celebrate their passion and the way that they advocate. I have had that situation many times where the technician will come to me because they really care about a certain patient and like, "Oh my gosh, they have this again," and then you're like, "Okay, tell me more about that."

I would welcome a team member to share that with me if they have this insight that maybe I don't have. Again, that's a little bit of culture too, and I think that's one great thing about AAHA in general—it's celebrating teams. That is in the nature of the culture of AAHA, to celebrate teams and to encourage involvement and empowerment of the team.

JG: Yeah, 100%. I feel like medicine is a team sport, and if you're doing it alone, you're probably not having the best experience and your patients may not be either.

KB: One of the best ways to find and keep really good people is to get them involved!

If we're trying to do diagnostic tests on more patients to really justify when we do need to use antimicrobials and decide what those antimicrobials should be, then maybe we can find a way to make them a little bit more

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"So many times, it could be a kennel staff, it could be a tech, it could be your receptionist who has a relationship with this client or with that animal based on their own interactions [that] are separate from yours, and we should really celebrate their passion and the way that they advocate."

ERIN FREY, DVM, MPH, DACVPM

affordable for the average client. Would you say that that's realistic to think about?

EF: I know a number of commercial labs do give sort of a quantity discount. I would also say there are a lot of diagnostics that are not that expensive, that can be done in the hospital and really can give you a better sense of whether this is something that needs to be treated. I am a huge fan of cytology for everything. A slide and a cotton tip swab or a piece of double stick tape can really tell you a whole lot and really help you.

The other test that's, I think, very much underutilized is doing a dry mount urine cytology. So once you spin down your urine, people are used to putting a little drop on the slide and doing a wet mount. Well, you can take one drop and spread it like a blood smear, dry it out and stain it, and you can actually see the neutrophils and you can see if you have rod-shaped or cocci-shaped bacteria.

JG: I couldn't agree more. I'm definitely a cytology cheerleader.

KB: It's scary when you're first starting because you don't know what you're looking at, but the more you do it, the more fun it is, I think, and the more fun for your technicians to do too, because they're perfectly capable of reading cytologies. And a lot of them really, really enjoy it.

EF: Here's a way that the team can get really involved. How many times have you walked in a room and the technician says, "Mrs. Jones is in room two, and I've already got the ear swab, and I can tell you on the cytology that I see this." And a well-oiled team, they already know that you want to get the cytology. They get in, take the history, get the cytology, and by the time you're walking in the room, you already have that information to put together then with your physical exam, so I think everybody wins in that situation.

JG: You have to weigh the balance, right? What are the consequences if the patient has an infection and I don't treat with an antibiotic? What are the consequences if they don't have an infection and I do treat with an antibiotic? And cytology is such an easy, quick, and powerful tool to help reduce some of that uncertainty.

EF: If we can back up a few steps to "What is the thing that's going on with this animal that puts them in a position of over and over again having that situation?" that's really what we want to address. And so, to your point about the cost of diagnostics, that's another thing to say. One way or the other, we're going to spend money, and I think the best way that you could spend your money is really getting to the bottom of what's going on here. Because my ultimate goal is that we try to fix the thing [so] you're not coming back over and over again.

KB: The front office staff, I know, is like, "Yes, please find out what's wrong so that we don't have to deal with Mrs. Smith calling six hundred times wanting antibiotics and then having to tell her no." It affects the whole team's mental health as well, to practice this way.

EF: And the thing we say sometimes is: We know more now. Since last time we saw you, the guidelines are out, or—in the case of a young dog where we're not sure if they have a seasonal allergy or a food sensitivity—a pattern is emerging, right? We couldn't really know that the last couple of times. She always is itchy in March. Well, let's do something with that information.

Now "there's more we can do," rather than "we were wrong." So [we're] really making it a positive. "Now that we know more, this is what I would recommend today for you." ※

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Katie Berlin, DVM, CVA, is AAHA's Director of Content Strategy.

AAHA Guidelines

Find the *2022 AAFP/AAHA Antimicrobial Stewardship Guidelines* and other resources, including an animated infographic to share with your team and clients, at aaha.org/antimicrobials.

Rabbit Hemorrhagic Disease Virus

What Clinicians Need to Know

by Ingrid Taylor, DVM

Rabbit hemorrhagic disease, the deadly virus that emerged in North America in the midst of the COVID-19 pandemic, is showing up again in 2022, this time with cases in Florida and a first-time appearance in Ontario, Canada. This virus affects both domestic and wild rabbits, leading to sudden death, liver failure, neurological signs, and bleeding from the nose and genitourinary tract.

A diagnosis of rabbit hemorrhagic disease is heartbreaking for families who have welcomed pet rabbits into their homes. And while dogs and cats still top the list of companion animals in the US, more and more people are choosing non-traditional pets, or exotic pets, as their animal companions.

According to a 2022 survey conducted by Forbes Advisor, 78% of the 2,000 US adults surveyed had acquired a pet during the pandemic. While older generations tended to stick with more traditional animal companions, the survey found that Gen Z adults, ages 18-25 years, were far more invested in nontraditional pets. Twenty-eight percent chose to live with rabbits, which means, if this trend continues among the younger generations, more and more rabbits may be showing up in veterinary practices. And with them, their diseases. Knowing how to prevent, recognize, and when to report cases of rabbit hemorrhagic disease virus can help clinicians be prepared if they come across this devastating disease.

Where did RHDV2 come from?

Rabbit hemorrhagic disease virus (RHDV) is considered a foreign animal disease in the US. It likely first emerged in Europe in the 1970s and 1980s, where it affected the European rabbit (*Oryctolagus cuniculus*). In 1984, the disease killed 14 million domestic rabbits in China in less than a year. By the 1990s, RHDV had spread to 40 countries, often leaving behind a massive death toll.

A particularly virulent strain of rabbit hemorrhagic disease virus, RHDV2, emerged in Europe in 2010. This strain affected both European rabbits and some species of hares *(Lepus spp.)* and sickened rabbits that already had immunity to previous

strains of RHDV. Like RHDV, RHDV2 has spread globally and is now the more common strain in some areas.

RHDV2 was diagnosed in a domestic rabbit in New York City in February 2020. After the disease was found in another rabbit in March 2020 in New Mexico, RHDV2 continued to spread across New Mexico and other southwestern states. In New Mexico, around 480 domestic rabbits died from the virus, with an additional 500 killed by depopulation strategies. Mortality rates for the virus range between 5 and 70%, and until about a year ago, the only readily accessible way to prevent it was through stringent biosecurity measures.

The virus is now considered to be endemic in eleven states, including Texas, Colorado, New Mexico, Arizona, Utah, California, Montana and Wyoming, according to the USDA. In 2022, new cases occurred in domestic rabbits in California, Arizona, and New Mexico, as well as appearing outside of the endemic area in Washington state and Florida. Prior to 2022, rabbit hemorrhagic disease has appeared sporadically in at least 21 states, so it is likely that it will eventually spread throughout the US.

Etiology

RHDV and RHDV2 are caused by rabbit caliciviruses in the genus *Lagovirus*.

Clinical signs include:

- Inappetence
- Depression
- Lethargy
- Fever
- Frothy, bloody nasal discharge
- Bloody urogenital discharge
- Conjunctival congestion
- Ocular hemorrhages
- Icterus
- Respiratory distress
- Diarrhea
- Weight loss
- Bloating
- Collapse and death

Death is generally due to liver failure or hemorrhage, and the virus causes lesions throughout the liver, heart, and lungs. It also interferes with clotting. Rabbits can die within 36 hours of developing symptoms. There is a peracute form where rabbits are found dead without seeming to exhibit any signs, and an acute form where rabbits hemorrhage and die within 24-72 hours.

The virus is spread when viral particles contact the mouth, eyes, and nose. It is likely that very few virus particles can lead to infection. Bodily fluids from infected rabbits can transmit the disease. It is highly stable in the environment and can be spread over long distances by biting insects. The virus can also survive on deceased bodies, food items, water bowls, and clothing. Rabbits who survive the virus need to be isolated from other rabbits for at least a month, due to prolonged viral shedding.

Diagnosis, Treatment, and Prevention

Viral antigen tests and RT-PCR tests can be used to diagnose rabbit hemorrhagic disease. There is no treatment available for the virus itself, and rabbits must be given supportive care.

When RHDV2 first emerged in the US, preventive strategies relied mainly on biosecurity measures. These included disinfection, avoiding contact between domestic and wild rabbits, and quarantining any new rabbits for at least 30 days. Vaccines developed in Europe for the disease were not readily available and required special permission to import. While biosecurity measures remain critical to disease prevention, there's now a vaccine for RHDV2 available in the US.

In 2021, Medgene Labs received emergency use authorization by the USDA for its RHDV2 vaccine. The vaccine is now available in 45 states and the District of Columbia. Medgene updates its website on a regular basis when the vaccine becomes available in other states. To acquire the Medgene vaccination, clinicians should contact their state veterinarian for instructions.

Is it Zoonotic?

RHDV and RHDV2 only affect rabbits and hares. Humans are not at risk from this disease, nor are other animals.

Do Veterinarians Have to Report it?

Rabbit hemorrhagic disease is reportable in the US at both the state and federal levels, as well as to the World Organization for Animal Health. If this disease is suspected, immediately contact your USDA APHIS Area Veterinarian and/or your state veterinarian. ※

Ingrid Taylor, DVM, is AAHA's Technical Content Specialist.

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Licensed Veterinary Technician

Clark Animal Care Center, Penfield, New York

Year started in vet medicine: **2010**
Years with practice: **4**
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AAHA MEMBER

Employee of the Month

Why Is Kristine So Awesome?

Kristine steps up when needed, takes on leadership roles when needed, and adds humor to every day. She tries to keep everything light and jovial because we all know how stressful it can be in some situations in this field.

How Does Kristine Go Above and Beyond?

Kristine fills in when short staffed and does so with humor and efficiency. She will cover so people can take appropriate breaks and even does twice the work when we are short-staffed.

In Her Own Words

Why do you love your job: It is always changing; animals are better than people. I enjoy the fact that we get to do a little bit of everything, unlike human medicine where it is all so compartmentalized.

Pets at home: Maddie: 14.5-year-old female golden retriever/cattle dog mix, prefers to be on a deserted island by herself; Vinny: 8-year-old domestic shorthair cat, male, FIV positive, came from the streets, has a deformed ear and runs the household; Tommy: 6-month-old pitbull mix, male, loves to eat leaves and grass—yay puppy things haha!

What brought you to the profession: I had early childhood dreams of wanting to be a veterinarian, and then I realized I liked the more hands-on aspect of the technician side, once I got into it.

Hobbies outside of work: Training the puppy, relaxing, running errands, watching documentaries, housework/projects (because it's truly never-ending). If I have real time off, I like to hang out with friends, have puppy play dates, and go hiking/camping.

Favorite book/TV show: Honestly, I'm not a big reader, but I do enjoy many TV shows and movies, anything funny, scary, true-crime related, rom-coms, and holiday movies. My favorite series is *Dexter* or *6 Feet Under*.

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*The Employee of the Month contest is administered by AAHA.

Photo courtesy of Kristine Peirce

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[1]2018 Pet Obesity Study. *Association for Pet Obesity Prevention.*