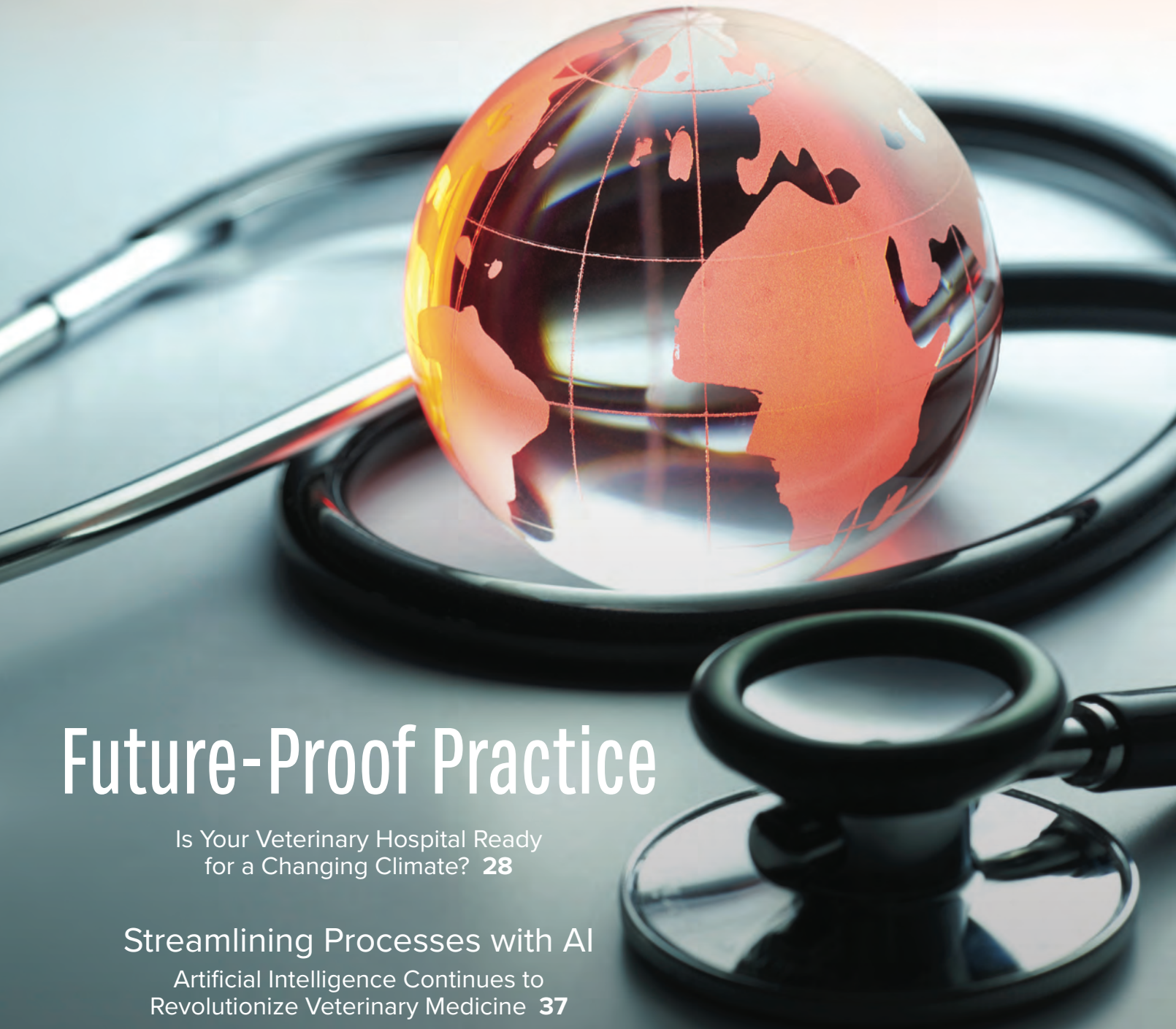


Trends magazine



Future-Proof Practice

Is Your Veterinary Hospital Ready
for a Changing Climate? **28**

Streamlining Processes with AI

Artificial Intelligence Continues to
Revolutionize Veterinary Medicine **37**

Overwhelmed by the thought of managing a preventive care program?

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features



28 Future-Proof Practice

Is your veterinary hospital ready for a changing climate?
by Maureen Blaney Flietner

37 Streamlining Processes with AI

Artificial intelligence continues to revolutionize veterinary medicine
by Jen Reeder



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departments



43 Culture in Practice

Burnout: An “Occupational Phenomenon”

How to recognize it and how to avoid it

48 Money Matters

Peak Performance

Find your sweet spot with benchmarking

55 Client Centric

Personalized Medicine

Applying genetic and other testing to redefine standards of care

the usual

- 8** From the Editor’s Desk
- 10** Inside AAHA
- 15** Notebook
- 22** JAAHA Abstracts
- 62** Advertiser Index
- 64** Employee of the Month



Practice of the Year



WE KNOW YOU HAVE
WHAT IT TAKES TO BE
THE AAHA-ACCREDITED
PRACTICE OF THE YEAR.

Show us! Finalists are featured in *Trends magazine*, honored at Connexity, and more! Submit your practice's application at aaha.org/awards by May 20.

THE BEST Practices



from the editor's desk

IN 20 YEARS, WILL YOUR PRACTICE STILL BE STANDING? I don't mean "still in business," but will the physical building still be there? Hard to say, of course, but with an increase in severe weather events, the inevitable sea-level rise, and other climate-related factors, poorly constructed or outdated structures may not survive too long.

Luckily, you have *Trends magazine* in your hand (or on your screen), so you can learn about how to "future-proof" your practice! Whether you are constructing a new building or updating an existing one, there are steps you can take to help your practice literally weather the storm.

Also in this issue, how artificial intelligence (AI) and machine learning are revolutionizing veterinary medicine. From tissue analysis, to platelet counting, to fecal analysis, there are many tools out there that can save a practice time and money.

And if you have not considered using benchmarking yet, you should. Benchmarking and data analysis are great ways to dig into your practice's financial health and bring it up to its full potential. This month we give you an overview of what benchmarking is, how to use it, and some of the tools available to help get started.

THE AAHA COMMUNITY

If you have not checked out the AAHA Community yet, you may be missing out. Come and be a part of the new platform designed to connect AAHA members online. Chat, share, learn! Try it out today at community.aaha.org.

EMPLOYEE OF THE MONTH, NOW \$500!

Do you know an outstanding veterinary professional who deserves recognition—and 500 bucks? Well, look no further, because the new *Trends* Employee of the Month winner will now receive \$500, thanks to generous sponsorship from CareCredit. Nominations must be submitted by a staff member at an AAHA-accredited practice, or an AAHA affiliate member. Download the template from aaha.org/globalassets/06-publications/trends/d-eotm-template-2021.docx and submit your nominations today, to trends@aaha.org!

COMING NEXT MONTH

Coming up in June: Our June issue will focus on various areas of training, from client communication for customer service representatives, to marketing and finance, to wound care for technicians. We will also have an article on how to make your practice more accessible for senior citizens.

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

—Ben Williams, Editor



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View from the Board

Change Your Narrative

Hello amazing AAHA peeps! I was lucky enough to be asked to write two “View from the Board” articles back-to-back, which means you, dear AAHA peeps, get to hear more from me before I leave this beloved board. I am in my ninth year of volunteering time to improve the association and the profession.

Serving on the AAHA Board has been the most valuable time spent in my professional career. Certainly, the patients that I cared for and the clients that I have loved were important to me, but YOU PEOPLE—whether from a Tetons Pack-Trip CE, Connexity, a VMG meeting, or an AAHA Board meeting—you people have changed my life forever. I have a renewed faith in the power of positivity. I have unending faith that we are all more alike than we are different. I have confidence that our profession is heading in the right direction because we have a new group of young leaders stepping up to volunteer their time.

The culture within veterinary practices and around veterinary medicine in general needs to change. We have heard that negative culture is pervasive and that the problems are systemic and inherent in or unique to vet medicine. Well, I disagree. Changing the culture in each of our practices simply means changing behavior, right? How about we start by changing the narrative. It will take effort and it will be as simple or as complex for each of us as we decide it will be.

When my daughter was five or six, she learned that the only things she could control were her attitude and her behavior. (It is a funny story, but much too long for this article, so ask me if you are interested in hearing it!) I am not kidding about her age when she learned that lesson, and even though, like all kids, she has had moments of griping about this or that or grumbling about something that was out of her control, she is living proof that changing the narrative works. I realized that if a five- or six-year-old can learn to control her words and behavior, so can a veterinary team.

Have you ever heard something along these lines: “Mrs. Jones is in room three, and she is so cranky today! Be careful, and good luck!” How trepidatious do you feel walking into that room? Do you feel annoyed? Defensive? How does that narrative change the way you might interact with Mrs. Jones? Most importantly, how might you feel if that narrative were changed? “Mrs. Jones is in room three, and she is super worried about her pup; this is the third time she has been in for this problem,” or perhaps “Mrs. Jones is in room three, and she might need a little extra grace, caring, or empathy today.” Does simply changing the narrative change the way you behave or feel when you walk into room three? YES. The answer is yes.

Changing the narrative may seem too simple to be real. It may seem too obvious to have influence. I can promise you—it works. It works with children, puppies, challenging clients, and complicated team members. It absolutely can help change veterinary medicine.

All my best to all of you and your amazing teams,

Dr. Pam

Pamela Nichols, DVM, CCRP, is AAHA's immediate past president. She received her DVM from the College of Veterinary Medicine and Biomedical Sciences at Colorado State University in 1996 and her bachelor's degree in Spanish from the University of Utah in 1987. Her background is varied and includes work as a financial consultant, veterinary technician, veterinary receptionist, and associate veterinarian. Nichols opened Animal Care Center in West Bountiful, Utah, in 1999 and the Animal Care Center Airport in 2014. They are both AAHA-accredited facilities. The K-9 Rehabilitation Center, which opened in 2002, was one of the first in the country of its kind.



AAHA MEETINGS AND EVENTS

MAY							JUNE							JULY						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
1	2	3	4	5	6	7				1	2	3	4						1	2
8	9	10	11	12	13	14	5	6	7	8	9	10	11	3	4	5	6	7	8	9
15	16	17	18	19	20	21	12	13	14	15	16	17	18	10	11	12	13	14	15	16
22	23	24	25	26	27	28	19	20	21	22	23	24	25	17	18	19	20	21	22	23
29	30	31					26	27	28	29	30			24	25	26	27	28	29	30
														31						



Veterinary Management Institute



Final day to renew your AAHA membership

To register for a learning program and learn more about AAHA's upcoming events, visit aaha.org.

DEAR AAHA

Dear AAHA,
I've assigned the radiology training on AAHA Learning to my staff and they need login information. Do they have to create their own accounts?

Hello!
Thanks for the great question. We recommend that staff have their own unique logins to the AAHA website (aaha.org). Keep your staff list current with emails for your team so they can take advantage of AAHA benefits, including all the CE on AAHA Learning and the brand-new AAHA Community.

—AAHA's Member Experience Team

Have a question you'd like AAHA to answer?
Email us at dearaaha@aaha.org.

This month in AAHA's Publicity Toolbox . . .

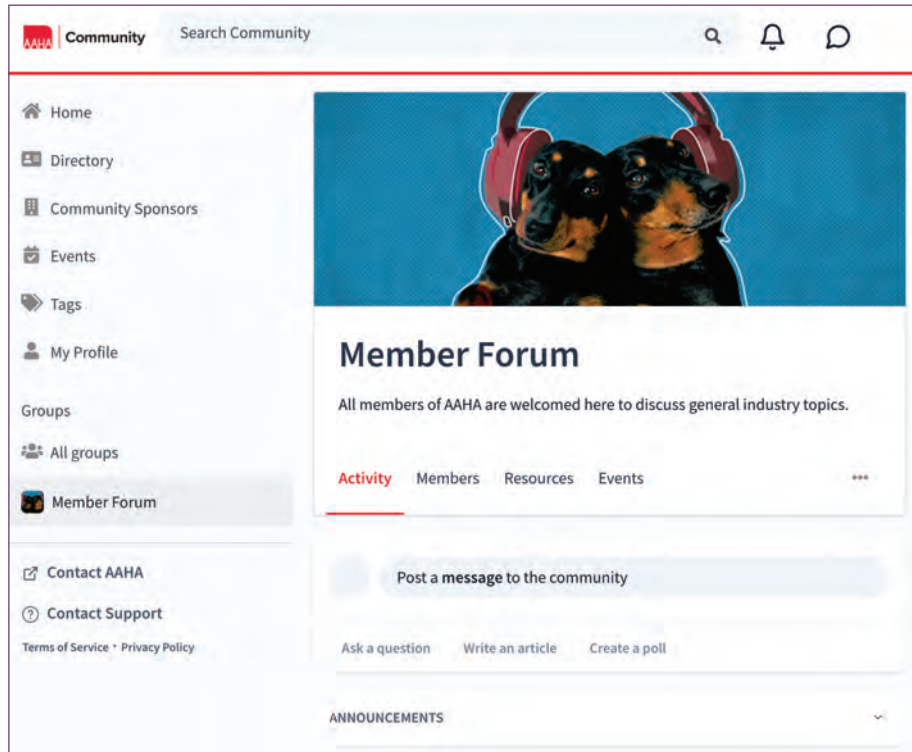
Here are the downloadable social media images available for AAHA-accredited members at aaha.org/publicity this month:

- Arthritis Awareness Month**
- Specially Abled Pets Day May 3**
- Mother's Day May 8**
- Memorial Day May 30**





MEMBER BENEFITS SPOTLIGHT



Introducing AAHA Community

At AAHA, we see firsthand that teamwork is at the core of accreditation. We also recognize that the veterinary profession faces problems so complex that no one person is going to be able to fix them, so we feel a duty to provide opportunities for you to collaboratively brainstorm solutions.

In the past, AAHA has done this through educational programs and our yearly conference, Connexity, but our newest member benefit aims to extend that year-round. AAHA Community is not another social media site—it's a place for crowdsourcing ideas, advice, and inspiration within a safe virtual space just for members.

Purpose of AAHA Community

As a private online platform, AAHA Community makes it easier for you to get answers to your pressing questions—both from the association and from other members.

Support and maintain your accreditation

- Browse the newsfeed and follow topic tags to clarify AAHA Standards of Accreditation
- Get faster responses from your AAHA team and share your questions for the benefit of others
- Crowdfund answers and resources
- Post messages and polls about specific challenges
- Get files and templates added by other members in the Resource Library
- Attend webinar events and join private groups
- Build relationships with AAHA members
- Locate AAHA members in the Directory
- Read member profiles and network through direct messaging

You're Invited!

New AAHA members will be invited to join AAHA Community shortly after activating membership. If you are an existing AAHA member and you haven't received an email invitation, please log in at aaha.org to update your contact information or reach out to community@aaha.org.

Heartgard® Plus
(ivermectin/pyrantel)

NexGard®
(afoxolaner) Chewables

your trusted pair for protection

HEARTGARD® Plus (ivermectin/pyrantel) and NexGard® (afoxolaner) are designed with compliance in mind to keep your patients protected every month, year-round.



HEARTGARD® Plus and NexGard® are both formulated with the #1 tastes dogs prefer.^{1,2}



Dog owners pairing HEARTGARD Plus with NexGard were the most likely to purchase 12 months of protection versus other common brand pairings in a 2020 assessment of parasiticide purchases in veterinary clinics.*³



Over 2 billion doses of HEARTGARD Plus, and over 270 million doses of NexGard have been prescribed.^{4,5}



Contact your Boehringer Ingelheim Representative to learn more.

IMPORTANT SAFETY INFORMATION: HEARTGARD Plus is well tolerated. All dogs should be tested for heartworm infection before starting a preventive program. Following the use of HEARTGARD Plus, digestive and neurological side effects have rarely been reported. For more information, please see full prescribing information or visit www.HEARTGARDClinic.com.

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

*Assessment was conducted by IDEXX® and leveraged veterinary clinic PIMS transaction level data for 2020. This analysis included veterinary practices with consistent data from 2018 to 2020. To be included, patients needed to have at least one parasiticide transaction in 2019 and 2020. The analysis was limited to loyal patients, where loyalty was defined as having one flea/tick control brand during the full three-year period.

1. Data on file at Boehringer Ingelheim. 2. Data on file at Boehringer Ingelheim. 3. Data on file at IDEXX Laboratories, Inc. Westbrook, Maine USA.

4. Data on file at Boehringer Ingelheim. 5. Data on file at Boehringer Ingelheim.

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 **Boehringer
Ingelheim**

CAUTION: Federal (U.S.A.) law restricts this drug to use by or on the order of a licensed veterinarian. **INDICATIONS:** For use in dogs to prevent canine heartworm disease by eliminating the tissue stage of heartworm larvae (*Dirofilaria immitis*) for a month (30 days) after infection and for the treatment and control of ascarids (*Toxocara canis*, *Toxascaris leonina*) and hookworms (*Ancylostoma caninum*, *Uncinaria stenocephala*, *Ancylostoma braziliense*).

DOSAGE: HEARTGARD[®] Plus (ivermectin/pyrantel) should be administered orally at monthly intervals at the recommended minimum dose level of 6 mcg of ivermectin per kilogram (2.72 mcg/lb) and 5 mg of pyrantel (as pamoate salt) per kg (2.27 mg/lb) of body weight. The recommended dosing schedule for prevention of canine heartworm disease and for the treatment and control of ascarids and hookworms is as follows:

Dog Weight	Chewables Per Month	Ivermectin Content	Pyrantel Content	Color Coding On Foil Backing and Carton
Up to 25 lb	1	68 mcg	57 mg	Blue
26 to 50 lb	1	136 mcg	114 mg	Green
51 to 100 lb	1	272 mcg	227 mg	Brown

HEARTGARD Plus is recommended for dogs 6 weeks of age and older. For dogs over 100 lb use the appropriate combination of these chewables.

ADMINISTRATION: Remove only one chewable at a time from the foil-backed blister card. Return the card with the remaining chewables to its box to protect the product from light. Because most dogs find HEARTGARD Plus palatable, the product can be offered to the dog by hand. Alternatively, it may be added intact to a small amount of dog food. The chewable should be administered in a manner that encourages the dog to chew, rather than to swallow without chewing. Chewables may be broken into pieces and fed to dogs that normally swallow treats whole.

Care should be taken that the dog consumes the complete dose, and treated animals should be observed for a few minutes after administration to ensure that part of the dose is not lost or rejected. If it is suspected that any of the dose has been lost, redosing is recommended.

HEARTGARD Plus should be given at monthly intervals during the period of the year when mosquitoes (vectors), potentially carrying infective heartworm larvae, are active. The initial dose must be given within a month (30 days) after the dog's first exposure to mosquitoes. The final dose must be given within a month (30 days) after the dog's last exposure to mosquitoes.

When replacing another heartworm preventive product in a heartworm disease preventive program, the first dose of HEARTGARD Plus must be given within a month (30 days) of the last dose of the former medication.

If the interval between doses exceeds a month (30 days), the efficacy of ivermectin can be reduced. Therefore, for optimal performance, the chewable must be given once a month on or about the same day of the month. If treatment is delayed, whether by a few days or many, immediate treatment with HEARTGARD Plus and resumption of the recommended dosing regimen will minimize the opportunity for the development of adult heartworms.

Monthly treatment with HEARTGARD Plus also provides effective treatment and control of ascarids (*T. canis*, *T. leonina*) and hookworms (*A. caninum*, *U. stenocephala*, *A. braziliense*). Clients should be advised of measures to be taken to prevent reinfection with intestinal parasites.

EFFICACY: HEARTGARD Plus Chewables, given orally using the recommended dose and regimen, are effective against the tissue larval stage of *D. immitis* for a month (30 days) after infection and, as a result, prevent the development of the adult stage. HEARTGARD Plus Chewables are also effective against canine ascarids (*T. canis*, *T. leonina*) and hookworms (*A. caninum*, *U. stenocephala*, *A. braziliense*).

ACCEPTABILITY: In acceptability and field trials, HEARTGARD Plus was shown to be an acceptable oral dosage form that was consumed at first offering by the majority of dogs.

PRECAUTIONS: All dogs should be tested for existing heartworm infection before starting treatment with HEARTGARD Plus which is not effective against adult *D. immitis*. Infected dogs must be treated to remove adult heartworms and microfilariae before initiating a program with HEARTGARD Plus.

While some microfilariae may be killed by the ivermectin in HEARTGARD Plus at the recommended dose level, HEARTGARD Plus is not effective for microfilariae clearance. A mild hypersensitivity-type reaction, presumably due to dead or dying microfilariae and particularly involving a transient diarrhea, has been observed in clinical trials with ivermectin alone after treatment of some dogs that have circulating microfilariae.

Keep this and all drugs out of the reach of children.

In case of ingestion by humans, clients should be advised to contact a physician immediately. Physicians may contact a Poison Control Center for advice concerning cases of ingestion by humans.

Store between 68°F - 77°F (20°C - 25°C). Excursions between 59°F - 86°F (15°C - 30°C) are permitted. Protect product from light.

ADVERSE REACTIONS: In clinical field trials with HEARTGARD Plus, vomiting or diarrhea within 24 hours of dosing was rarely observed (1.1% of administered doses). The following adverse reactions have been reported following the use of HEARTGARD: Depression/lethargy, vomiting, anorexia, diarrhea, mydriasis, ataxia, staggering, convulsions and hypersalivation.

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

SAFETY: HEARTGARD Plus has been shown to be bioequivalent to HEARTGARD, with respect to the bioavailability of ivermectin. The dose regimens of HEARTGARD Plus and HEARTGARD are the same with regard to ivermectin (6 mcg/kg). Studies with ivermectin indicate that certain dogs of the Collie breed are more sensitive to the effects of ivermectin administered at elevated dose levels (more than 16 times the target use level) than dogs of other breeds. At elevated doses, sensitive dogs showed adverse reactions which included mydriasis, depression, ataxia, tremors, drooling, paresis, recumbency, excitability, stupor, coma and death. HEARTGARD demonstrated no signs of toxicity at 10 times the recommended dose (60 mcg/kg) in sensitive Collies. Results of these trials and bioequivalency studies, support the safety of HEARTGARD products in dogs, including Collies, when used as recommended.

HEARTGARD Plus has shown a wide margin of safety at the recommended dose level in dogs, including pregnant or breeding bitches, stud dogs and puppies aged 6 or more weeks. In clinical trials, many commonly used flea collars, dips, shampoos, anthelmintics, antibiotics, vaccines and steroid preparations have been administered with HEARTGARD Plus in a heartworm disease prevention program.

In one trial, where some pups had parvovirus, there was a marginal reduction in efficacy against intestinal nematodes, possibly due to a change in intestinal transit time.

HOW SUPPLIED: HEARTGARD Plus is available in three dosage strengths (see DOSAGE section) for dogs of different weights. Each strength comes in convenient cartons of 6 and 12 chewables.

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

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Rev. 08-2018
1050-1999-04.

US-PET-0199-2020.

Brief Summary: Before using NexGard[®] (afoxolaner) Chewables, please consult the product insert, a summary of which follows.

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

Description: NexGard is a soft chewable for oral administration to dogs and puppies according to their weight. Each chewable is formulated to provide a minimum afoxolaner dosage of 1.14 mg/lb (2.5 mg/kg).

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

Dosage and Administration: NexGard is given orally once a month, at the minimum dosage of 1.14 mg/lb (2.5 mg/kg). See full product insert for dosing table and details.

Warnings: Not for use in humans. Keep this and all drugs out of the reach of children. In case of accidental ingestion, contact a physician immediately. Keep NexGard in a secure location out of reach of dogs, cats, and other animals to prevent accidental ingestion or overdose.

Precautions: Afoxolaner is a member of the isoxazoline class. This class has been associated with neurologic adverse reactions including tremors, ataxia, and seizures. Seizures have been reported in dogs receiving isoxazoline class drugs, even in dogs without a history of seizures. Use with caution in dogs with a history of seizures or neurologic disorders.

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

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

Over the 90-day study period, all observations of potential adverse reactions were recorded. The most frequent reactions reported at an incidence of > 1% within any of the three months of observations are presented in the following table.

Table 1: Dogs with Adverse Reactions.

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

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

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

In the US field study, one dog with a history of seizures experienced a seizure on the same day after receiving the first dose and on the same day after receiving the second dose of NexGard. This dog experienced a third seizure one week after receiving the third dose. The dog remained enrolled and completed the study. Another dog with a history of seizures had a seizure 19 days after the third dose of NexGard. The dog remained enrolled and completed the study. A third dog with a history of seizures received NexGard and experienced no seizures throughout the study.

Post-Approval Experience (July 2018): The following adverse events are based on post-approval adverse drug experience reporting. Not all adverse events are reported to FDA/CVM. It is not always possible to reliably estimate the adverse event frequency or establish a causal relationship to product exposure using these data.

The following adverse events reported for dogs are listed in decreasing order of reporting frequency for NexGard: Vomiting, pruritus, lethargy, diarrhea (with and without blood), anorexia, seizure, hyperactivity/restlessness, panting, erythema, ataxia, dermatitis (including rash, papules), allergic reactions (including hives, swelling), and tremors.

Effectiveness: See full product insert for details regarding Effectiveness.

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

In a well-controlled field study, no adverse reactions were observed from the concomitant use of NexGard with other medications.

Contact Information: For a copy of the Safety Data Sheet (SDS) or to report suspected adverse drug events, contact Boehringer Ingelheim Animal Health USA Inc. at 1-888-637-4251. For additional information about adverse drug experience reporting for animal drugs, contact FDA at 1-888-FDA-VETS or www.fda.gov/reportanimalae.

The information provided here is not comprehensive. The full FDA-approved product insert is available at www.nexgardfordogs.com. Consult your veterinarian for further information.

Product approved by FDA under NADA # 141-406

Marketed by: Frontline Vet Labs™, a Division of Boehringer Ingelheim Animal Health USA Inc. Duluth, GA 30096

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Brief summary preparation date: 08/2020

US-PET-0735-2020

notebook

AVMA Provides Workplace Wellbeing Certificate Program

The American Veterinary Medical Association (AVMA) reports that wellbeing within the workplace is key to individual and organizational productivity, engagement, satisfaction, and overall health. They state that the AVMA Workplace Wellbeing Certificate Program assists these efforts by empowering veterinarians and team members with the knowledge and skills to create a culture of wellbeing in their veterinary workplace.

The AVMA Workplace Wellbeing Certificate Program, available through AVMA's digital education platform, provides multiple online modules that can be taken individually or completed as a unit, culminating in an AVMA Workplace Wellbeing Certificate of Completion. To begin, participants must complete the first module—"Creating a Culture of Wellbeing: Organizational Strategies for Promoting Wellbeing in the Workplace." The remaining modules can be completed in any order.

Modules include "How to Request, Receive, and Give Feedback Effectively"; "Transforming Conflict"; "QPR Assessment"; and "Diversity and Inclusion." The AVMA Workplace Wellbeing Certificate Program is made possible by an educational grant from Merck Animal Health.

Visit AVMA Axon at axon.avma.org to learn more about the program.

Maddie's Million Pet Challenge Awarded \$7.4M Grant

The Maddie's Million Pet Challenge has been awarded a five-year, \$7.4 million grant from Maddie's Fund, a foundation established to improve the status and wellbeing of companion animals.

The challenge is a collaboration among the University of California-Davis Koret Shelter Medicine Program, Maddie's Shelter Medicine Program at the University of Florida, Open Door Veterinary Collective, and Team Shelter USA. Veterinary and animal welfare experts from these groups will deploy to communities across the country to offer free consultations to shelters and veterinary clinics on how to keep pets with their families and out of shelters, as well as teaching veterinary clinics a financially sustainable model that removes cost as a barrier to providing pets with needed veterinary care.

"Our goal is for every animal in every community to be assured what we call the Four Rights," said Kate Hurley, director of the Koret Shelter Medicine Program, in a statement. "That means providing every animal with the Right Care in the Right Place, at the Right Time, and with the Right Outcome. This is the new normal communities deserve, and we want to help them get and stay there."





Pet Ownership Can Boost Brain Power

A new study has found that having a long-term pet companion may delay memory loss and other kinds of cognitive decline. Pet ownership was especially beneficial for working verbal memory, such as memorization of word lists, according to the preliminary research. The study was presented at the American Academy of Neurology's annual meeting in April.

"To our knowledge, our study is the first to consider the effect of duration of pet ownership on cognitive health," first author Jennifer Applebaum, a sociology doctoral candidate and National Institute of Health predoctoral fellow at University of Florida, told CNN in an email. "And it's not just cats and dogs that can boost the brain. People in the study also cared for rabbits, hamsters, birds, fish, and reptiles," Applebaum said, although "dogs were most prevalent, followed by cats."

Researchers stated that owning household pets for five years or more produced the most benefit, delaying cognitive decline by 1.2 points over the six-year period of the study compared with the rate of decline in people without pets. "These findings provide early evidence to suggest that long-term pet ownership could be protective against cognitive decline," said clinical neuroimmunologist Tiffany Braley, an associate professor of neurology at the University of Michigan and senior author of the study.

The study—which researchers report could only show an association, not a direct cause and effect between

pet ownership and cognition—was unable to answer the question of why having pets for more than five years had the most positive impact. However, previous studies have pointed to the negative effects of stress on brain health, especially chronic stress, Braley said.

"Prior research has also identified associations between interactions with companion animals and physiological measures of stress reduction, including reductions in cortisol levels and blood pressure, which in the long-term could have an impact on cognitive health," she said.

"We do not recommend pet ownership as a therapeutic intervention," Applebaum said. "However, we do recommend that people who own pets be supported in keeping them via public policy and community partnerships."

Abolishing pet fees on rental housing and providing free or low-cost vet services would go a long way toward helping pet owners keep their pets, "particularly in low-income communities and communities of color," Applebaum said. She said other ideas include providing foster or boarding support for people who are unexpectedly unavailable to care for their pets because of a health crisis. "An unwanted separation from a pet can be devastating for a bonded owner, and marginalized populations are most at-risk of these unwanted outcomes," she said.

Five Trends to Watch in Pet Care and Products

The overarching trend in pet care anticipated this year is the accelerated humanization of the family pet, according to online pet product marketplace Rover.com, which recently published 2022 pet industry predictions.

“There are certainly more chapters that have yet to be written before this pandemic comes to an end, but one subplot has already emerged: love and appreciation for our pets has reached an all-time high,” said Kate Jaffe, trend expert at Rover. “More and more, we’re relying on our pets to be our friends and to provide emotional support. It’s a fair assumption that pet parents will repay the favor in 2022, accelerating the pet industry to new heights.”

Prediction #1: Anxiety Solutions Soar

More time at home during the COVID-19 pandemic has contributed to rising attachment anxiety and behavioral interests among dogs and cats. In fact, demand for training and anxiety solutions is “10 times higher” than pre-pandemic levels according to Rover dog people panelist and certified professional dog trainer (CPDT-KA) Nicole Ellis. As we enter the third year of the pandemic, Rover expects to see a sizable increase in calming products and solutions such as calming treats, lick mats, and more.

Prediction #2: More Pet Parents Thinking Green

With a growing emphasis on climate change, 2022 will see more sustainably made and eco-friendly pet products come to market as pet parents learn more about the carbon “pawprint” of their companion animals. Expect more mindfulness, a how-can-I-reduce mentality, and eco-friendly products—including sustainable pet food protein sources, packaging, and cat litter—to become a priority among pet parents.

Prediction #3: Nutrition Goes Next-Level

Two main factors will drive improvement in pet food nutrition in 2022: The aforementioned increasingly climate-conscious culture and the growing sentiment that furry family members deserve a healthy, well-balanced diet that fits their needs. Expect consumers to seek out alternative protein sources with more nutritional benefits and less environmental impact. Wellness trends will trickle down to pet care, with more options for digestive and immunity support and rising human-grade fresh pet food options.

Prediction #4: Pets Go Digital

A growing pet industry market capitalization means more money and innovation will provide pet parents with more technology-based solutions than ever before.

Dog-activated video calls, virtual vet visits, smart feeders and collars, microchip-enabled devices, and even online services—like a virtual weight loss clinic for pets—are already a reality. Expect these new technologies to double down as pet parents seek out tech that delivers convenience, safety, and health monitoring solutions in the years to come.

Prediction #5: The Humanization of Pets Continues

There will be a growing recognition that pets are people too. If that sounds hyperbolic, consider recent trends in human culture—from organic bedding to meal delivery services and telehealth, insurance, and even custody lawyers—and realize that they continue to crossover to our pets.

“If you ask most parents, they’ll say that their top priority is providing their children with happy, healthy, and fulfilling lives—and they’ll do just about everything in their power to make that happen. I really think we’re approaching the point where the same can be said for pet parents,” said Jaffe.

QUOTE OF THE MONTH

“If they don’t give you a seat at the table, bring a folding chair.”

—Shirley Chisholm—politician, educator, first Black woman elected to the US Congress



Core Strength Could Help Dogs Avoid Knee Injuries

Agility dogs lacking core strength from routine physical exercise and those participating in activities like flyball may be more susceptible to one of the most common canine knee injuries.

That knee injury is a cranial cruciate ligament rupture, which is equivalent to an anterior cruciate ligament (ACL) tear in humans.

A research survey conducted by staff at the Washington State University's College of Veterinary Medicine documented activity and injury odds of more than 1,200 agility dogs. They found that just about any physical exercise seems to lower the risk of rupturing the ligament, but some exercises seem to increase the risk. In addition, researchers say, the size and shape of the dog play a role, with certain breeds found to be at higher risk.

"Balance exercises, wobble boards, anything that improves the core strength of the dog seemed to lower the odds of a ligament tear," said Deb Sellon, a Washington State University veterinarian and lead author on the study, published in *BMC Veterinary Research*. "We found fitness matters for dogs just like it does for people, and we haven't shown that before."

Sellon is also the founder of the university's Agility Dog Health Network, which was accessed in the study. By using odds ratios, essentially a statistical risk assessment, Sellon and Denis Marcellin-Little, a veterinary orthopedic specialist

with University of California-Davis, looked for trends in 1,262 agility dogs—260 that tore the ligament and 1,002 dogs that did not.

The survey confirmed some longstanding and well-accepted risk factors as well. In particular, female dogs spayed before the age of one were almost twice as likely to rupture the ligament compared with dogs that were spayed after their first birthday. Sellon said this is believed to reflect the importance of hormones in developing strong ligaments in young animals.

Trends were also identified among certain breeds. Survey results indicated Australian shepherds and Labrador retrievers were more than twice as likely to rupture the ligament. Rottweilers and Australian cattle dogs were more than four times as likely to tear the ligament.

Marcellin-Little speculates that could have something to do with the shape of the dog, and maybe its tail. "Larger dogs doing agility tend to be less balanced, so it is not surprising a Rottweiler or Australian shepherd may be at a higher risk of a rupture compared to smaller breeds," he said. "The tail could also be a factor; the tail has been proven very important for cheetahs, and you can imagine it has a role to play in the overall balance of the dog."

Marcellin-Little said there is still a great deal of research that needs to be completed, but the survey gives veterinarians a place to start.

Study Suggests Dog Waste Could Be Harming the Soil in Nature Reserves

A new study published in the British journal *Ecological Solutions and Evidence* found that dogs relieving themselves in nature may be overfertilizing ecosystems and causing a damaging loss of biodiversity.

Researchers at Ghent University estimate that each year, dog feces and urine add an average of 24 lbs (11 kg) of nitrogen and 11 lbs (5 kg) of phosphorous per 2.47 acres (1 hectare) to nature reserves near the Belgian city of Ghent. The researchers say that the nutrients added through this neglected form of fertilization are substantial and could be detrimental to biodiversity and ecosystem functioning.

Professor Pieter De Frenne of Ghent University and lead author of the research said, “We were surprised by how high nutrient inputs from dogs could be. Atmospheric nitrogen inputs from agriculture, industry, and traffic rightfully receive a lot of policy attention, but dogs are entirely neglected in this respect.” Though the findings were made in Belgium, De Frenne reports that the situation is likely similar in other reserves close to cities in Europe and in the US.

To reduce the load on environments, park managers could introduce more off-leash dog parks in areas with less sensitive ecosystems, and dog owners could also try to encourage their dogs to go before entering the park or keep them on a leash to avoid spreading the contamination, he said. “At least pick up the feces, because then you remove 97% of the phosphorus and half of the nitrogen,” De Frenne said.



AVMA Animal Health Studies Database Offers a Resource for Veterinarians, Pet Owners

The AVMA Animal Health Studies Database has listings for more than 500 veterinary clinical trials and studies. The studies range over 17 different fields of veterinary medicine, from anesthesia to soft tissue surgery. Additionally, the database has information about what to expect from participation in a clinical study and what questions to ask. The AVMA says that veterinarians can participate in the creation of new knowledge by discussing with clients the suitability of their animals for enrollment in a relevant veterinary clinical study. View the AVMA Animal Health Studies Database at ebusiness.avma.org.

4 ways to help clients be financially prepared from the start

Out-of-pocket veterinary costs can be overwhelming to clients. Empower pet owners to plan ahead for these expenses so they can provide their pets with quality care for life.

When a prospective pet owner sets eyes on their future fur baby, they're not likely to be thinking about how much money they'll spend on that companion over the next 15 years or so. If costs do enter their mind, they're liable to vastly underestimate them.

That's according to the recently released Synchrony Lifetime of Care Study,¹ which reports that pet owners can spend more than \$55,000 on a dog and \$45,000 on a cat over the course of the pet's life. This and other insights from the study can help you prepare clients for the cost of care. Let's take a look at how.

1 Prepare new pet owners for costs they may not anticipate.

The Lifetime of Care Study asked pet owners if they thought they were financially prepared for pet ownership at the beginning—and if, after a few years, the reality matched their expectation. Nearly half of dog owners (45%) and over a third of cat owners (38%) believed they were financially ready for pet expenses—but were not.

What does this mean for you? When a client comes in with a new puppy or kitten, help them prepare for a lifetime of quality pet care by discussing with them what those potential costs may be throughout their pet's life (see the chart at right).

Initial pet care costs, including spay/neuter



Costs in average year



Lifetime cost of care (15 years)





2 Recognize that an invoice of just \$250 or less may cause anxiety.

The study also asked pet owners about their level of stress related to unexpected pet care expenses, along with the amount of the veterinary bill that caused that anxiety. One in four respondents said they were stressed out by a bill of \$250 or less,¹ which many veterinarians may find surprising.

Regardless of the price point, present a treatment plan with options for care along with associated costs. Whatever you do, make sure they're not hearing the total for the first time at the checkout desk—even if it's just \$100 or so.

3 Be upfront and open about the financial options you provide to help manage cost.

The best time to talk about financial preparedness is before a pet owner is in crisis. Things like pet insurance and flexible financing for pet health expenses can provide peace of mind and help pet owners budget for care. In fact, 53% of pet owners said they would use a credit card dedicated to pet care, even though the vast majority—86%—did not have a health-related credit card.¹

4 Offer financial choices to all clients.

Out-of-pocket costs totaling in the tens of thousands. Worry over a \$250 invoice. Openness to financial tools. All of these set the stage for you to present your clients

with budget-friendly solutions to pay for veterinary care throughout their pet's life.

The CareCredit credit card offers a simple way for your clients to pay for everything from annual exams to diagnostics, dental care to parasite control, special diets to emergency care—and the list goes on.* They can use it again and again with no need to reapply.

Pets Best Pet Health Insurance, another Synchrony solution, is a top-rated insurance brand that allows your clients to choose the level of coverage that best fits their life and budget. The claims process is simple and straightforward, and veterinary advice is available 24 hours if your clients ever need some extra help.

With CareCredit and Pets Best, your clients can have peace of mind about managing pet care costs from day one—and every day after that. In fact, these tools may help them avoid financial stress altogether. The result? Relaxed clients, healthy patients, and a veterinary team that feels great about the care they provide.

Call 844-812-8111 to enroll with CareCredit. The one-time fee is only \$59 if you apply to enroll by June 30, 2022.

Already enrolled? Visit carecredit.com/mycustomlink to download your practice's custom link experience.

Visit www.petsbest.com/vets to discover how Pets Best Pet Health Insurance benefits your clients.

Check out petlifetimeofcare.com for more on the Synchrony Lifetime of Care Study.



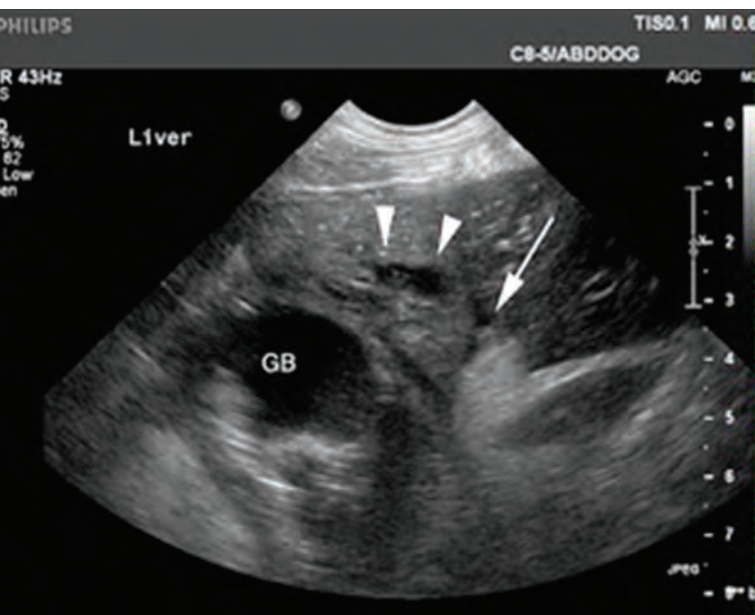
¹Synchrony Lifetime of Care Study, January 2022, petlifetimeofcare.com.

*Subject to credit approval. See carecredit.com for details.

JAAHA

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ABSTRACTS



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ORIGINAL STUDIES

Evaluation of Intrathecal Injection of Modified Live Newcastle Disease Virus Vaccine in Dogs with Canine Distemper Encephalitis

Kenneth R. Harkin, Anushka George Karote

The neurological form of canine distemper virus (CDV) infection can occur concurrently with systemic signs or develop following apparent recovery. There are no specific antiviral or immunomodulatory therapies recognized for treatment of CDV infections, and the neurological form typically carries with it a high mortality rate. The intrathecal injection of a modified live Newcastle disease virus vaccine (NDV-MLV) has been proposed for the treatment of the neurological forms of CDV infections. Thirteen dogs confirmed to have canine distemper infections by polymerase chain reaction testing and with neurological signs consistent with CDV infection were treated with an intrathecal injection of NDV-MLV and were scheduled for re-evaluation 3–4 mo later. Six dogs survived to follow-up and four dogs survived long term (>3 yr). Cerebrospinal fluid cytokines were measured and reported. Changes in cerebrospinal fluid cytokines and long-term survival could not be attributed to the intrathecal injection of NDV-MLV, and this therapy cannot be recommended for treatment of dogs with neurological forms of CDV infection.

CASE REPORTS

Anicteric Gallbladder Rupture with Elevated Bile Acids in Abdominal Effusion in a Dog with Cholecystitis

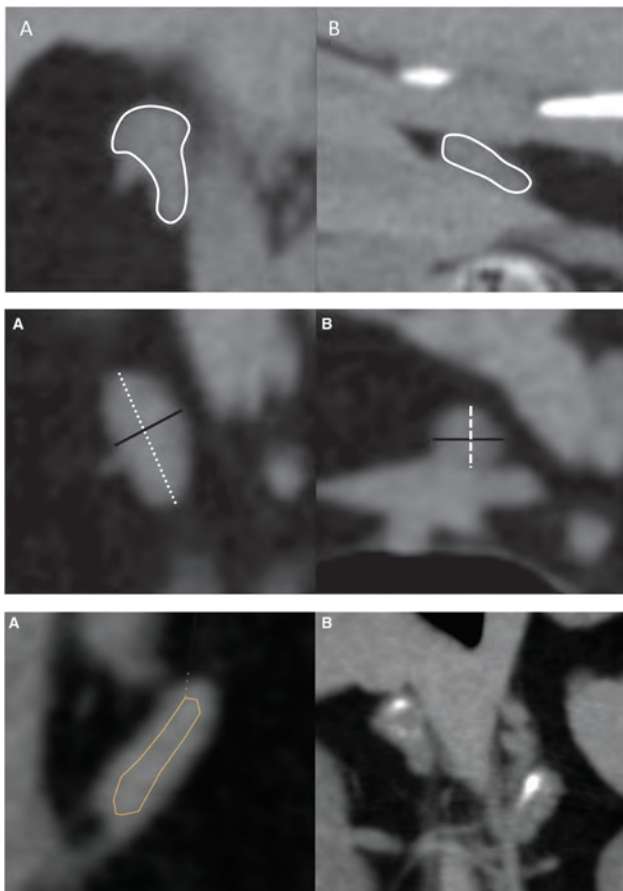
Mireia Pascual, Emilie Fauchon, Paola Monti, Ferran Valls

Anicteric gallbladder rupture has been rarely described in veterinary medicine, and, generally, it has been related to gallbladder wall necrosis secondary to gallbladder mucocele. A 5 yr old, male, neutered Labrador retriever presented for acute onset anorexia, lethargy, and vomiting. Cholecystitis was diagnosed based on the ultrasonographic findings and bacteriemia, and, consequently, medical treatment was established. Despite improvement of the patient, a focal ultrasound of the hepatobiliary tract was performed 72 hr after admission for reassessment, revealing gallbladder wall thickening and abdominal effusion. Intracellular bacteria were present in nondegenerated neutrophils, and the effusion was categorized as septic exudate, compatible with septic peritonitis. Exploratory laparotomy confirmed an anicteric gallbladder rupture potentially secondary to cholecystitis and/or previous cholecystocentesis. The patient was not icteric the day of the surgery, serum bilirubin was within normal limits, abdominal fluid bilirubin concentration was below that of serum, and no bile pigment was detected; however, bile acids were significantly higher in the abdominal effusion compared with the serum concentration. This case describes an anicteric gallbladder rupture in a dog with concomitant cholecystitis and raises the question about the sensitivity of bile acid evaluation as a tool for diagnosis of gallbladder rupture and bile peritonitis in dogs.

ORIGINAL STUDIES**Assessment of Adrenal Computed Tomography Characteristics in Cats with Nonadrenal Disease**

Stefanie Gaisbauer, Florian Karl Zeugswetter, Alexander Tichy, Conor Rowan, Eberhard Ludewig

Adrenal computed tomography characteristics (aCTc) in healthy cats are known, but reference intervals for diseased cats are lacking. aCTc of cats without evidence of adrenal disease (NAD group) were compared to parameters of cats with possible concurrent adrenal disease (PAD group). The PAD group was assessed for adrenal masses or other morphological deviations using the NAD group as reference. Associations of aCTc with patient variables were explored, and all results were compared with published aCTc of healthy cats. No incidental adrenal masses were identified in the PAD group (n = 92), and only few aCTc differed compared to the NAD group (n = 30). The NAD group showed similar associations of patient variables and aCTc as length (right: 11.5 ± 2.2 mm, left: 11.8 ± 1.7 mm), width (right: 6.4 ± 1.2 mm, left: 5.4 ± 0.8 mm), height (right: 4.5 ± 0.9 mm, left: 4.5 ± 0.8 mm), attenuation (right: 33.1 ± 5.0 Hounsfield units, left: 32.5 ± 5.3 Hounsfield units) and position, but markedly more mineralization (right: 10 %, left: 13.3 %) than reported in healthy cats. This study provides references of aCTc for diseased cats without evidence of adrenal disease. The result suggests that adrenal incidentalomas seem to be rare in cats.

**CASE REPORTS****Congenital Lobar Emphysema in a Kitten with Concomitant Hiatal Hernia and Nutritional Secondary Hyperparathyroidism**

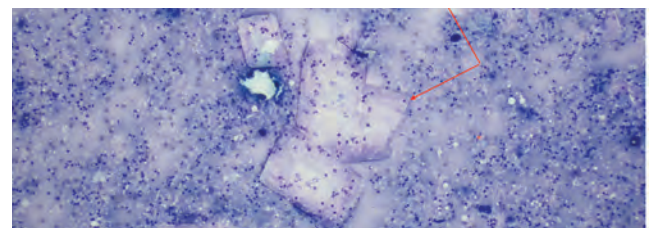
Sara Del Magno, Stefano Zanardi, Armando Foglia, Veronica Cola, Roberta Troia, Massimo Giunti, Maria Morini, Alessia Diana, Carlotta Lambertini, Luciano Pisoni

A 2 mo old domestic shorthair kitten was presented for acute respiratory distress and severe ambulatory difficulties. Thoracic radiography revealed hyperinflation of the left cranial lung lobe and a mass with soft-tissue/gas opacity in the caudal mediastinum, leading to the suspicion of congenital lung lobe emphysema and hiatal hernia. Decreased bone radiopacity and suspected pathological fractures were also present. Complete clinicopathological analyses showed significant ionized hypocalcemia and suspicion of secondary hyperparathyroidism related to an inadequate diet. Lung lobectomy and reduction of the hiatal hernia following a median sternotomy and a cranial laparotomy were performed. IV and oral supplementation of calcium led to a full recovery and improvement in the kitten's walking. A histopathological analysis revealed pulmonary emphysema associated with hypoplastic and irregular bronchial cartilage. Congenital lobar emphysema is a rare disease in both humans and animals. This is the first veterinary report describing a kitten affected by congenital lobar emphysema combined with a hiatal hernia and additionally complicated by secondary nutritional hyperparathyroidism with a good long-term outcome.

CASE REPORTS**Cholesterol Granuloma of the Cranial Mediastinum in a Dog**

Anastacia Marie Davis, Kevin Lahmers, Brie Trusiano, Kurt Zimmerman, Jake Romeiser, Joanne Tuohy

A 10 yr old female spayed Pomeranian presented with a history of dyspnea and coughing and was diagnosed with a cranial mediastinal mass presumed to be a thymoma. Surgical removal was elected and occurred without intraoperative complications. Histopathology revealed the lesion to be a cholesterol granuloma. The patient developed a brief period of increased respiratory difficulty 3 days postoperatively. Thoracic radiographs showed mild pleural effusion and the patient improved with supportive care. Five months postoperatively, repeat thoracic radiographs revealed no evidence of recurrence or respiratory pathology. This case report describes a cholesterol granuloma in a unique location and reviews the pathogenesis/pathophysiology of this type of mass.



CASE REPORTS

Suspected Obstructive Sleep Apnea Successfully Treated with Ondansetron in a Pug

Erika Villedieu, William Robinson, Chris Shales

Obstructive sleep apnea (OSA) has been uncommonly reported in dogs and is often associated with brachycephalic obstructive airway syndrome (BOAS). OSA independent from BOAS has been rarely reported. Treatment of OSA with ondansetron has only been reported in one dog and has not been reported in a breed commonly affected by BOAS. Here, we report the case of a pug with episodes of OSA despite appropriate treatment of BOAS. Administration of ondansetron led to a rapid and near-complete resolution of the clinical signs, with a follow-up of 3 mo. OSA independent of BOAS should be considered as a differential diagnosis in dogs that present for sleep-disordered breathing without exercise intolerance after appropriate treatment for BOAS. Use of certain serotonin antagonists may be useful as a treatment option for these cases.

CASE REPORTS

Malignant Nerve Sheath Tumor of the Hypoglossal Nerve in a Maltese Dog

Roberta Biserni, Leonardo Bibbiani, Maria Teresa Mandara, Federica Balducci, Jack Amey, Marco Bernardini

A 4 yr old male Maltese dog presented with a 1 wk history of intermittent neck pain and progressive difficulty walking. Neurologic evaluation was consistent with a left-sided brainstem lesion. On oral examination, left lingual hemiatrophy was evident suggesting hypoglossal nerve involvement. A dumbbell-shaped extra-axial mass in the left side of the caudal fossa extending extracranially through the hypoglossal canal was detected by MRI. At postmortem histologic examination, the hypoglossal nerve was diffusely infiltrated by fusiform neoplastic cells arranged in Antoni A and Antoni B patterns. This is the first description of a malignant nerve sheath tumor selectively involving the hypoglossal nerve in a dog.

RETROSPECTIVE STUDIES

Retrospective Study of Long-Term Outcome of Phacoemulsification in 22 Feline Eyes with Presumed Congenital/Juvenile Cataracts (2007–2020)

Kelsey Bailey, Terah Webb

The objective of this study was to determine the complication risk and prevalence after phacoemulsification in cats with presumed congenital/inherited cataracts. Twelve client-owned cats were included in the study. This retrospective study spanned 13 yr and involved 22 eyes. The median age at the time of surgery was 15 mo (range: 4.5–168 mo of age). Recorded complications were 3 eyes developed postoperative ocular hypertension, 1 eye developed glaucoma, 7 eyes developed feline herpes virus-1 signs, and 7 eyes developed

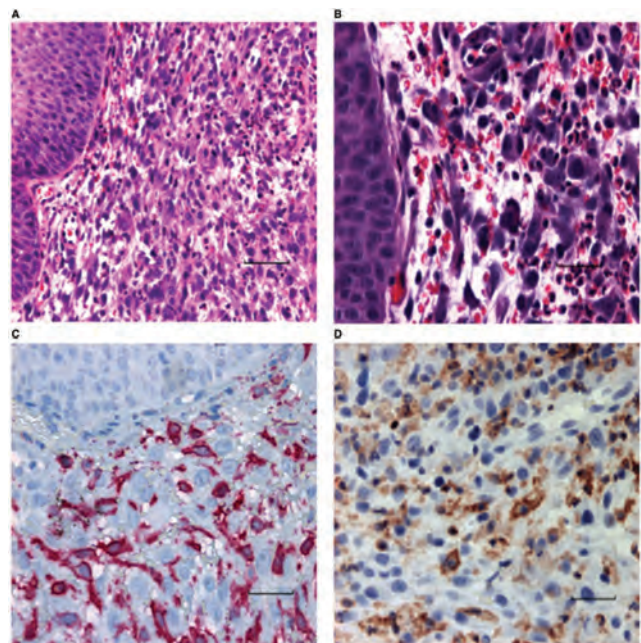
postoperative uveitis >2 wk after surgery. No eyes had developed intraocular sarcomas at the time of their last exam. All eyes remained visual at last follow-up (range: 0.5–121 mo). Success was defined as a comfortable and visual eye without intraocular neoplasia, glaucoma, a partial or complete retinal detachment, or uveitis that occurred >2 wk after surgery or persisted longer than 2 wk. Twenty-one out of 22 eyes had a successful outcome. In this study, cats with presumed congenital/juvenile cataracts who underwent phacoemulsification had an excellent outcome.

CASE REPORTS

Prolonged Survival Following Treatment of Histiocytic Sarcoma of the Canine Urinary Bladder

Steve Patten, DVM, MSc, DACVIM (Oncology), Shawn MacKenzie, DVM, DVSc, DACVR

A 9 yr old castrated male miniature schnauzer was diagnosed histopathologically with a mucosal histiocytic sarcoma of the urinary bladder apex, biopsied at the time of surgical cystotomy. Sequential adjuvant chemotherapy, including both lomustine (discontinued because of adverse effects) and then doxorubicin, were employed. A response to both agents was documented. Ultimately, a complete response was achieved following completion of the doxorubicin protocol. A complete response persisted 768 days following diagnosis at last follow-up. Histiocytic sarcoma of the urinary bladder remains a rare diagnosis in veterinary medicine. Only one previous case report is currently published. This case contrasts with the previous case report, which reported a survival of only 2 mo.





The grass isn't always "greener"

"Foxtails" and other grass seed awns are designed to burrow into the dirt, but they'll just as easily burrow into your pet's skin, eyes, ears, nose, lungs, and even their "swimsuit areas." If your pup is sneezing, shaking their head, squinting, or limping after a run through a field of tall grass or even a walk around the neighborhood, bring them to your vet to see if it might be a foxtail. Left untreated, foxtails can cause painful and expensive problems. If foxtails are unavoidable, consider getting your pup a mesh head guard and a good pair of dog booties. And always, always, always check them thoroughly for foxtails afterward.



How much water should your cat drink?

Just like people, different cats have different hydration needs. Your cat's water intake depends on their size, diet, activity level, and overall health—along with the weather, humidity, and several other factors. In general, cats should consume about 3.5–4.5 ounces of water per 5 pounds of body weight per day. Of course, it is possible to have too much of a good thing . . . even water. If your cat is drinking more than 7.5 ounces of water per 5 pounds of body weight per day, they could be showing signs of a health condition such as diabetes, kidney disease, hyperthyroidism, or other problems. If you think your cat is drinking too much water, it's time for a visit to your vet.

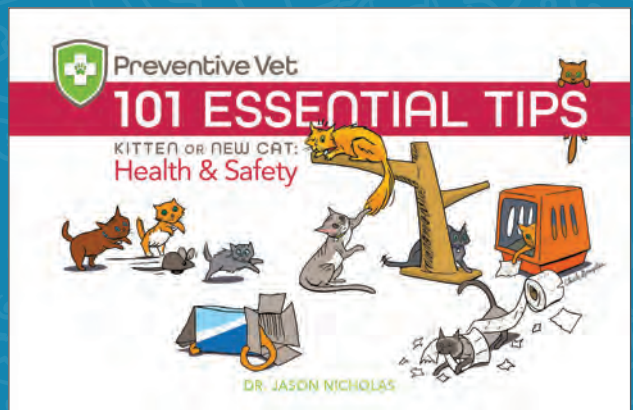
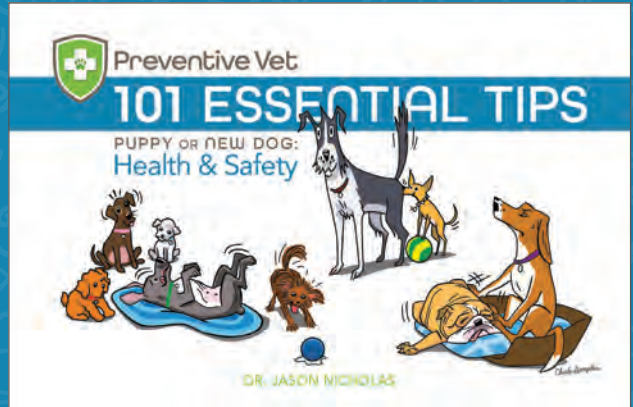
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Future-Proofing

Is Your Veterinary Hospital
Ready for a Changing Climate?



by Maureen Blaney Flietner

WITH A CHANGING CLIMATE BRINGING MORE EXTENSIVE and severe weather disruptions, veterinary hospitals may want to consider that familiar investing advice: “Past performance is no guarantee of future results.”

A quick glance at US data from the National Oceanic and Atmospheric Administration (NOAA) shows why. Between 1980 and 2021, there was an annual average of 7.4 weather and climate disaster events that had losses exceeding \$1 billion each. The annual average for the most recent five years, 2017–2021, is 17.2 events (Consumer Price Index–adjusted). In 2021, there were 20 such disasters.

So how can veterinary hospitals future-proof?

“It can seem overwhelming to figure out,” said Nicholas Rajkovich, PhD, AIA, assistant professor, Department of Architecture, University at Buffalo. For those who want to do their due diligence on their property, he said, they could start with their county’s all-hazards plan.

“Each county in the country has to produce an all-hazards plan every few years. Those plans will show how the hazards will change over time from such things as climate change and where damage has occurred.”

He suggested that hospital owners talk with an engineer or an architect or consider training themselves. The Federal Emergency Management Agency (FEMA), for example, offers classes and an online resource library about the hazards of concern in specific areas.

In addition, the Climate Resilience Toolkit, developed by NOAA in partnership with the US Global Change Research Program, has information about building healthcare resilience for a changing climate and, he noted, provides real-life examples of change.

Lesson Learned

One example is the Texas Medical Center, 80 miles inland from the Gulf of Mexico, in downtown Houston. In 2001, Tropical Storm Allison dropped more than 40 inches of rain in 15 days. Everything failed. The 700-acre complex, which includes 13 hospitals, was shut down.

About 30,000 research animals housed in the basement of Baylor College of Medicine drowned.

Lessons learned meant all critical infrastructure and program areas had to be relocated above projected flood elevations, a long-term hazard mitigation plan had to be created and implemented, and a new heat and power plant managed by an independent campus company had to be placed above the anticipated flood elevation on campus.

A solar-powered system now monitors subsidence (the sinking of land when more water is withdrawn from the ground than replaced because of impermeable surfaces), new buildings have to be set at safer elevations, submarine doors (steel barriers sealed with rubber bladders) have been installed, and green space and water absorption have been improved.

In 2017, Hurricane Harvey tested those changes—51 inches of rain over 5 days. The campus suffered minimal flooding.

“The rightful focus on climate has highlighted the increasing need for all businesses, especially those like animal hospitals that provide critical care, to adapt to be more resilient,” said Chuck Miccolis, managing director of Commercial Lines, Insurance Institute for Business and Home Safety (IBHS). The nonprofit 501(c) organization supported solely by property insurers and reinsurers conducts building safety research.

“What we build today must withstand not only today’s weather, but the weather we will face decades from now,” noted Miccolis. “By investing in our buildings, we can reduce the disruption of storms on our businesses.”

He advised veterinary hospitals to first have a business continuity and severe weather plan so all employees are prepared to take key actions before and immediately after severe weather. IBHS offers free online tools to help develop those plans.

Next, he suggested, focus on the property. IBHS has strategies to combat the four research perils on which it focuses: wind, hail, wildfire, and rain. (*See Perils sidebar*). For owners planning a new hospital, capitalize on the opportunity to adapt for future climate resistance

since the added cost is typically modest during new construction.

Insurance Policies Tightening, Changing

Insurance also could be a driver to future-proof as that industry wrestles with determining its business model under the threat of a changing climate. Veterinary hospital owners may face rising premiums or, with continuous disasters, find that insurers are unwilling to cover their properties.

“We are seeing a shift in underwriters’ perceptions of what ‘target zones’ are for severe weather,” said Scott Fouts, senior vice president of Risk Services, US for HUB International, the largest provider of insurance solutions for veterinarians and animal hospitals and a preferred provider for AAHA members.

“Traditionally, the biggest concern has been related to coastal geographic areas and potential exposure to hurricanes, storm surges, and straight-line winds. We are seeing an increase in catastrophic losses in other areas due to wildfires, flooding, and tornadoes. Some of the losses are uncontrollable and are due to excessive drought and possible climate change,” he noted.

“To compound the problem is the effect of human intervention: increased construction in interface zones, a lack of preventive maintenance of power lines and vegetation, and lack of water management,” said Fouts. “As an example, the impact of the 2021 ice storm that paralyzed Texas was compounded due to the lagging powerline infrastructure and planning.”

Many factors are driving the insurance market right now, he noted. A higher frequency of natural disasters, human-related losses from fires and explosions, higher cost of reinsurance, increased claims costs because of labor and materials costs, and very low investment income all create the need for more careful underwriting. Carriers, he said, will be protecting their books, and additional loss control and underwriting scrutiny will continue.

“Climate-driven events are prompting changes in commercial property insurance policy wordings and tighter terms and conditions as insurers try to manage an increase in the frequency and severity of natural



Research-Driven Suggestions

Chuck Miccolis of Insurance Institute for Business and Home Safety suggested that those planning a new hospital build it to the FORTIFIED Commercial standard, which incorporates years of IBHS research and engineering insights into an above-code building standard. He also offered these suggestions:

Wind

When replacing a roof, consider a roof cover that has been wind tested and is an approved system showing it can withstand winds likely for the area. Ensure the roof system is strengthened with more fasteners and locked-down edge detailing. Include stronger gutters and downspouts to protect valuable equipment inside the veterinary practice.

Pay special attention to roof-mounted equipment like air conditioners to be sure they are mechanically secured with bolts. Use impact-rated windows and exterior doors to help keep out the wind and resulting pressure buildup that can cause structural damage.

Rain

Seal cracks and gaps around windows. Keep drains, downspouts, and gutters clear of debris so rain can be properly diverted.

Hail

Use an impact-rated roof covering to reduce the impact of hail damage. Consider protecting HVAC equipment with hail guards, shields, or wire mesh.

Wildfire

No one action alone can protect a building from fire damage, but the right series of actions can reduce a building's risk. Have a Class A fire-rated roof, clear debris from gutters, create a zero- to five-foot zone around the building that is clear of all combustible materials, add 1/8th-inch metal mesh screens over vents to keep embers from blowing into the building, and shut off air conditioning systems to prevent embers from entering the building.

Extreme Cold/Snow

While not one of IBHS's four research perils, weather extremes now call for attention to cold and snow in areas not usually known for them:

- Protect pipes either with proper insulation or by shutting off and draining them.
- Install a furnace monitoring system so an alert is provided if it shuts down.
- Install an automatic excess flow valve to detect broken pipes or valves and water leak detectors to shut off the main valves.
- Use wireless sensors to monitor for water tank or appliance leaks.
- Know your building's snow load or hire a structural engineer to verify.
- Regularly inspect and maintain automatic sprinkler systems.

catastrophe losses,” explained Michelle Windhauser, HUB International senior vice president and central region property practice leader.

“Some of the policy language includes ‘change in temperature.’ Some insurers are moving to refine or restrict coverage after a freeze event like the one in February 2021 in Texas. We have also seen deductibles increase for earthquake, flood, named storms, and wind/hail.”

Insurance carrier underwriters and risk control are looking for prevention, mitigation, and better disaster response as a standard qualification to insure clients in disaster-prone areas, she noted.

Products/Techniques to Prevent/Mitigate

“We are seeing much more attention to building engineering and more robust building codes to enable structures to better withstand catastrophic weather and natural events,” noted Dave Barthel, vice president, HUB Risk Services, Canada.

“For example, for earthquakes, we are seeing new products and engineering techniques that allow buildings to perform to a higher standard. Often after an earthquake, the risk of fire is increased. Automatic seismic gas shutoffs reduce post-event fire risk. Seismic protection for sprinkler systems allows for similar flexibility in the piping for building movement,” he said.

“In coastal areas with hurricane-force winds, products such as hurricane-force laminated windows minimize

the damage from airborne debris. Roof straps help reduce the chance for uplift and the likelihood of damage during these events,” added Barthel.

New building codes and construction practices have included raising buildings above flood levels and expected storm surge areas and installing flood barriers around doors and windows, he noted. With more people moving to rural areas, carriers are recommending barriers like walls and ponds, removal of brush, and vegetation management to eliminate combustible sources.

Due Diligence Needed

Owners considering moving or setting up new locations should talk to their insurance broker before deciding on a location, suggested Windhauser. Finding the perfect location to serve customers is important. However, costs can be saved by looking at whether the location is in a designated flood zone or is potentially exposed to other catastrophic weather events.

“Try to comply with any critical or important recommendations from your carrier risk control as soon as possible,” she noted. “If budgeting for large expenses is an issue, commit to a timeline and communicate your plan to the carrier underwriting. Don’t ignore it. This will help the underwriter better qualify your account as a good risk.”

Carriers are expecting that the practice management has assessed the risk to its operations, people, patients,

Guidance Available Online

- HUB International resources to address preparedness for perils: hubinternational.com/products/risk-services/hub-crisis-resources/hurricane-resource-center/
- IBHS’s OFB-EZ, a free business continuity planning toolkit: disastersafety.org/business-protection/ofb-ez/ and EZ-Prep, a free emergency preparedness planning toolkit: disastersafety.org/business-protection/ez-prep/
- Readiness resources in the Ready.gov toolkit for business: ready.gov/business
- An independent FEMA study course for protecting a business from disasters: training.fema.gov/emiweb/is/is394a/is%20394a_complete.pdf
- Explore how climate is projected to change in any county in the US at The Climate Explorer: crt-climate-explorer.nemac.org/



“The building (addition to the University of Wisconsin-Madison School of Veterinary Medicine) has been designed to be climate-responsive in both architecture and the engineering systems that support it.”

—MARC WALKER, FLAD ARCHITECTS

data, and property, explained Matt Gilmore, senior vice president, HUB Risk Services, US.

“Clients in natural hazard-prone areas need to have developed business continuity plans, emergency response plans, and disaster recovery plans,” Gilmore said. “The plans should be in writing and reviewed often to assure that vendors and other resources are current.”

“Plans should include ways to relocate assets and patients to alternative locations outside of the storm area or to temporarily suspend some services/care until the hazard subsides. Your business or property may not be directly impacted, but you may suffer from contingent business interruption, such as difficulty in getting staff members in to care for boarded patients or in obtaining critical supplies due to supply chain issues,” noted Gilmore.

“Businesses that develop risk-management plans, which may include business continuity plans or disaster recovery plans, are perceived by insurers as being better prepared,” said Gilmore. “Being knowledgeable and prepared may allow business owners to get the insurance

coverage they need as well as give them the confidence that their business will be able to weather potential events in the future.”

Preparing for the Future

Recognizing that climate change is already affecting its region, the University of Wisconsin-Madison has planned for potential weather hazards in the new 140,000-square-foot, 3-story addition to its AAHA-accredited School of Veterinary Medicine and its small and large animal hospitals, according to Mark Corey, principal-in-charge at Flad Architects, which is leading planning and design in association with Foil Wyatt Architects & Planners.

Climate projections include increased frequency and intensity of poor-air-quality days, extreme high-temperature events, and heavy rainfalls. Those changes will extend pollen seasons and modify the distribution of disease-carrying pests and insects, according to Kim Reddin, Flad director of sustainability.

“The building has been designed to be climate-responsive in both architecture and the engineering systems that support it,” explained Marc Walker, Flad design principal. “Its geometry and fenestration were selected to maximize daylight and views yet limit specific exposures to reduce the impact to the heating and cooling loads.”

“The engineering systems use variable-volume mechanical systems and demand-controlled ventilation to reduce air change rates for unoccupied spaces and leverage multiple types of energy recovery for pre-conditioning of ventilation air. Open public spaces such as waiting areas use in-floor radiant slabs,” explained Jason Atkisson, principal at Affiliated Engineers, Inc. the MEP engineering consultant.

The addition has a modeled energy-cost savings of \$34,000 annually, which will be a 5.8% energy cost savings when compared to a state code-compliant building.

The building elevation was selected to offer protection from frequent flooding in that portion of the campus, said Ross Pinski, Flad landscape architect. Pervious paving, bio-infiltration planters, and overflow drainage strategies are parts of the exterior development solutions. A second-level green roof terrace with native plants will act to absorb and slow stormwater flow.

Help Control Premium Increases

While each business account is underwritten on its own merits, there are several areas to consider to help control insurance premium increases, according to Matt Gilmore, senior vice president of HUB Risk Services, US. They include:

- **Use data analytics:** Have your underwriter check catastrophe modeling results to see if you are either purchasing too much or underinsuring your exposure. Using modeling results to make data-driven decisions can provide improved balance sheet protection.
- **Increase deductibles:** An increase in the “all other perils” deductible or in certain catastrophe peril deductibles can help mitigate increases in rates.
- **Self-insure part of the risk:** Retaining a portion of the risk is a consideration for some insureds based on their organization’s risk tolerance.
- **Split insurance programs:** Create a separate catastrophe peril policy to create competition between the “Property” and “Difference in Conditions” marketplace to improve program costs.
- **Drive competition:** If you have more property insurance program options available to you, you can influence the negotiations. To do that, a hospital owner needs to understand if the business is located in an area prone to catastrophic weather and to develop plans likely to reduce the impact.

“Climate-driven events are prompting changes in commercial property insurance policy wordings and tighter terms and conditions as insurers try to manage an increase in the frequency and severity of natural catastrophe losses.”

—MICHELLE WINDHAUSER, HUB INTERNATIONAL

To mitigate flooding hazards and reduce impacts to the stormwater system, a water reuse system will collect rainwater from the roof as well as clearwater condensate from air handling cooling coils, according to Atkisson. The system’s water will be used to irrigate the building’s green roof and site as well as for trench flushing and washdown hose connections in animal holding areas.

A campus distribution system will supply primary power and thermal utilities for the addition, providing an increased level of resilience and redundancy. The utilities will be located underground to protect from weather-related events. In addition, a diesel-powered emergency/standby generator will support critical program needs if there is a loss of primary power.

With the addition not expected to be completed until 2023, the continuity of operations plan does not yet address the space, according to Kristi Thorson, associate dean for advancement and administration, UW SVM. No significant changes to the school’s overall plan are anticipated, she said, but the additional square footage will create new flexibility for where various functions can be performed and improved capabilities related to backup power. ✖



Maureen Blaney Flietner is an award-winning freelance writer living in Wisconsin.

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Date: _____
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 Sex: M F Spayed Neutered Intact
 Weight: _____ lbs This Normal Overweight
 Ideal weight: _____

Behavior/Attitude

Alert
 Lethargic
 Shy
 Agitated
 Other: _____

Coat and Skin

Appear normal
 Dull, scaly, dry
 Oily
 Thinning
 Masses
 Itchy
 Inflamed/Irritated
 Fleas
 Other: _____

Eyes Left Right Both

Appear normal
 Discharge
 Low tear production
 Ulcer
 Inflamed/conjunctivitis
 Aging change:
 Lens
 Iris
 Other: _____

Ears Left Right Both

Appear normal
 Inflamed
 Itchy
 Discharge
 Infection:
 Neut
 Bacteria
 Mites
 Excessive hair
 Other: _____

Mouth and Teeth

Appear normal
 Gingivitis/Inflamed gums
 Tartar buildup
 Broken teeth
 Loose teeth
 Masses
 Ulcers
 Overbite
 Underbite
 Baby teeth still present
 Other: _____

Respiratory System

Appear normal
 Coughing
 Congestion
 Breathing difficulty
 Nasal discharge
 Sneezing
 Other: _____

Circulatory System

Appear normal
 Murmur
 Abnormal pulses
 Abnormal
 Rhythm
 Rate
 Other: _____

Lymph Nodes

Appear normal
 Enlarged (cervical location)
 Submandibular
 Axillary
 Popliteal
 Inguinal
 Other: _____

Gastrointestinal System

Appear normal
 Enlarged organs
 Vomiting
 Diarrhea
 Tense/painful abdomen
 Intestinal parasites
 Other: _____

Urinary/Genital Systems

Appear normal
 Abnormal urination
 Abnormal genitalia
 Other: _____

Central Nervous System

Appear normal
 Seizures
 Loss of sensation
 Disorientation
 Ataxic/off balance
 Other: _____

Musculoskeletal

Appear normal
 Signs of arthritis
 Painful
 Weakness
 Limping
 Abnormal gait/posture
 Loss of muscle mass
 Other: _____

Today We Did:

Exam
 Anal gland expression
 Vaccinations
 Heartworm test
 Fecal parasite test
 Bloodwork
 Urinalysis
 Tickborne disease test
 Other: _____

Recommendations

Schedule next exam: _____

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Streamlining Processes with AI

Artificial Intelligence Continues to Revolutionize Veterinary Medicine

by Jen Reeder

RECENTLY ERIC FEINSTEIN GREW FRUSTRATED HAVING TO WAIT SEVERAL WEEKS for biopsy results for his family's golden retriever, Brooks, not just because he was eager to start any necessary treatments for the beloved dog, but because he knew there was a much faster way to get results.

Feinstein is the CEO of Clarapath, a New York-based medical robotics company. Clarapath is in the final stages of developing SectionStar, a device that automates tissue sectioning and uses artificial intelligence (AI) and machine learning (a type of AI that uses data to help computer systems learn from themselves) to provide diagnostic results within hours. It launches later this year.

"When I told my family, I said, 'I could just take it to my lab here, process it, give us the results, digitize it, and do all of this within a couple of hours.' But we waited weeks. We had to wait those weeks and go on to surgery," he said. "It's just heartbreaking and you never want to see an animal suffer."

Sadly, cancer took the dog's life. The personal loss made Feinstein even more convinced that veterinary medicine needs to continue to evolve with the help of technology.

"It's anything that we can do to help expedite and treat things more effectively," he said. "How do we diagnose faster, more cost effectively, with a higher degree of quality?"

It's a question that many companies are seeking to answer with AI.

Veterinary medicine—and human medicine—has come a long way since the days of film radiographs. The digital age has ushered in a wave of AI developments that can streamline processes, deliver diagnostic results at point of care, increase revenue streams, and ultimately help veterinary teams provide the best medicine for pets.

There's no time like the present. As the pandemic drags into a third year, the veterinary profession faces daunting staffing shortages, higher caseloads due to pets acquired during lockdowns, and widespread burnout, so there's never been a better time to employ AI tools in your practice.



The digital age has ushered in a wave of artificial intelligence (AI) and machine learning developments that can streamline processes, deliver diagnostic results at point of care, and ultimately help veterinary teams provide the best medicine for pets.

For instance, Clarapath's SectionStar essentially does the work of a histotechnician and consolidates nine microtomy steps. The device processes tissue specimens to then output cut slides and images of the tissue at each step of the way. With a uniform width—down to the micron—to avoid fuzziness on slides, AI can provide quality diagnostics.

“You have a box that goes into the laboratory bench, and you load 72 different specimens into this device, and you walk away,” Feinstein said. “It provides three hours of time to do other work. It's literally a factory in a box.”

AI-powered diagnostics also offer a way to increase revenue streams. For example, while many practices don't charge for a veterinary technician manually estimating platelets prior to surgery, it can be a line-item charge on invoices when practices use the automated platelet count estimate from ScpioVet. This tool launched in 2021 as part of a digital cytology platform, said Asher Fink, president of the veterinary division of Scpio Labs.

The tool—which offers 100x magnification—uses AI to identify and count platelets on a blood smear in less than five minutes. This frees up veterinary technicians to complete other pressing tasks instead of doing a time-consuming manual count.

“When you productize an existing diagnostic technique, you bring it online. You make it super accurate—diagnostically and clinically impactful. You make it great for workflow and easy to use. And then you also create a win-win where the veterinarian is able to give better service to the client and the pet,” Fink noted. “But you're also creating new ways to capture revenue for services rendered, which helps with the sustainability of the practice.”

Another tool that saves teams time and helps enable quick decisions is Vetscan Imagyst, a Zoetis product—an 8 by 8 inches scanner—that offers digital cytology and AI-based fecal analysis.

Digital cytology readings come from pathologists in under two hours, while the fecal results take 10 to 15 minutes “at the same level of a board-certified parasitologist,” according to Richard Goldstein, DVM, DACVIM, vice president and chief medical officer of global diagnostics at Zoetis.

“The point is to enable better decisionmaking—give the veterinarian all the information they could possibly need in real time at the point of care,” he said. “Additional applications as they launch will also be AI-based, but always backed up by a human. If there are questions about it or if you want to submit it for further review, there’ll always be an expert there, all within 2 hours—24 hours a day, 7 days a week, holidays included.”

The next application—a blood smear evaluation free to Vetscan Imagyst users—launches in May.

“Every time we draw blood, we should be doing a CBC,” Goldstein said. “So you make a blood smear, you stain it, you put it on Imagyst, and it gives you the result that a technician will give you in your practice within 10 minutes. If there are things that are worrisome, then you hit a button and it goes to a clinical pathologist. I do think it will really elevate the level of care in practice because it’s something that’s not done often right now because it’s just too much of a hassle to do.”

IDEXX is also harnessing AI to offer workflow solutions and improve veterinary care while teams are busier than ever.

“Pets are family now. And what do pet parents want for family? They want the highest standard of care that they



Incredibly, AI can be used not just to diagnose disease but to predict it.

can possibly get,” said Jason Johnson, DVM, MS, DACT, vice president and global chief medical officer at IDEXX.

To that end, IDEXX offers an automated hematology analyzer called ProCyte One, which uses laser flow cytometry and sensors to simultaneously detect a vast amount of sample information from multiple cellular dimensions. AI software creates a clearer picture by

Pet Owners Using AI to Help Veterinarians

AI developments will help pet owners monitor health at home, too. Joseph Hahn, DVM, MA, BBA, executive director of U.S. companion animal and equine professional services at Merck Animal Health, said the company’s Sure Petcare unit already offers activity trackers like the Animo collar for dogs and the Felaqua Connect watering dish for cats.

Merck Animal Health Intelligence is gathering data from the products to use AI and machine learning to get actionable items for care; for instance, if a cat starts drinking more water, he or she might need treatment for diabetes.

Future technological advances in home monitoring will radically change telemedicine and help strengthen bonds between veterinarians, clients, and pets, Hahn believes.

“I think we’re getting to the point where telemedicine is going to be where these devices are in people’s homes and that data, one day, will get to the veterinarian in the clinic almost automatically,” he said. “It’s going to be interesting and exciting to see where we go.”

removing platelet clumps from the rest of the cellular populations, he noted.

Another product, SediVue Dx, analyzes urine sediment in five minutes or less with assistance from a database of around 800 million images called Neural Network 6.0.

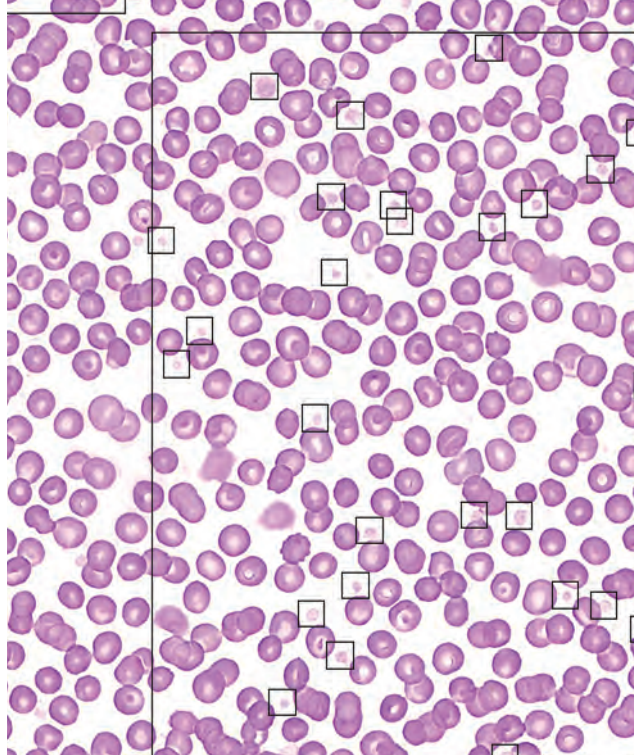
“You put the sample onto the slide and in the instrument, and then through advanced cameras and an inverted microscope, scores and scores of images are taken, and this is where it really gets amazing: All those images are then fed into Neural Network 6.0, where the artificial intelligence analyzes every single cell and bacteria in there and narrows it down to the top 10 most clinically relevant things for the clinician and feeds that to the clinician in high quality,” he said. “It’s quicker, it’s easier, it’s intuitive. It solves a real clinical problem and can also help drive compliance when you show those images to pet parents.”

Incredibly, AI can be used not just to diagnose disease but to predict it. At the end of 2019, Antech Diagnostics released RenalTech, which predicts—with at least 95% accuracy—whether a cat will develop chronic kidney disease (CKD) in the next two years.

The tool uses an algorithm based on deep analysis of large amounts of data—including 20 years of medical records of around 150,000 qualifying cats treated by Banfield Pet Hospital—to generate results based on urine and blood tests and the cat’s age.

Jennifer Ogeer, DVM, MSc, MBA, MA, and vice president of medical science and innovation at Antech Diagnostics, said that as a veterinarian with around 30 years of experience in critical care, she’s excited to have an option for practicing medicine beyond reacting to an existing condition.

“We now have the ability to do something in a proactive manner that potentially could either delay or even slow the progression of this disease,” she said. “One of the most important aspects about knowing that a cat is going to develop chronic kidney disease is it affords us the opportunity to start to not only monitor that cat more closely, but we’re also able to look to see, ‘Are there comorbidities or concurrent conditions (like high blood pressure) that could predispose that cat to developing chronic kidney disease?’”



Platelets Image from ScopioVet automated platelet count estimate tool

Ogeer is currently managing CKD in her 17-year-old cat, Karamel, since she tested “RenalTech Positive.” Her cat Abigail lived to be 23 despite having CKD through customized care, and many other pet owners want to get ahead of disease progression, too.

She said a one-year retrospective study of 730,000 veterinary visits found that, regardless of a cat’s RenalTech status, just knowing the status compelled owners of both positive and negative cats to act more proactively, from purchasing therapeutic renal diets and medications to bringing pets in more often. Veterinary visits increased 31% for positive cats and 14% for negative cats.

Antech (part of Mars Veterinary Health) has a forthcoming tool to predict CKD in dogs that’s been submitted to a journal for review, and Ogeer said there are predictive models for other diseases in veterinary patients in the innovation pipeline as well.

She’s been asked by veterinarians, “Is AI going to replace us?” But she feels strongly that the answer is no—it’s all about *helping* veterinarians.

“I’m actually now having something that’s augmenting my ability to deliver not just good medicine, but to really strengthen the human-animal bond in a meaningful way,” she said. “And there’s nothing more rewarding than that in life.”

Truly, the scope of AI developments can be mind-boggling. ImpriMed developed an AI-based algorithm that uses aspirated tumor cells from dogs with cancer to predict which chemotherapy treatment will be most effective for the patient. Vet Rocket is innovating in teleradiology, and Vetspire created an AI-driven practice management system. FreeStyle Libre offers a glucose monitoring device that pet owners can use for diabetic pets and then submit readings via an app directly to their veterinarian.

“We’re living in an age that, when I first experienced veterinary medicine in the ’90s, we couldn’t even think of,” said Jonathan Lustgarten, MS, PhD, VMD, senior biomedical informatics specialist at VCA and former president of the Association for Veterinary Informatics. “Especially with such high demand, in order to thrive and help us not burn out, we need things that could be done by a computer to be done by the computer.”

Lustgarten believes collaboration will be key to continue elevating the profession through machine learning. He applauds AAHA for funding critical term standardization work at the Veterinary Services Terminology Laboratory and hopes practice management systems adopt it in an easy-to-use form. Interoperability will continue to further AI progress.

An important role of the nonprofit Association for Veterinary Informatics is to be a neutral party for collaboration between companies, according to Lustgarten.

“I make the comparison that every organization is a different train, and we want to be the Grand Central Station everyone pulls into,” he said. “We will never be able to really leverage the technology until we all work on things together. All of us have very similar beliefs that there’s so much opportunity and so much we can do for the veterinary world. It’s a really exciting time, and it’s a really busy time.” ✨



Freelance journalist Jen Reeder is former president of the Dog Writers Association of America.

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Burnout: An “Occupational Phenomenon”

How to Recognize It and How to Avoid It

by Tony McReynolds

Nobody has to tell veterinary professionals that on-the-job burnout is real. But what does it look like, and how can you avoid it?

Burnout isn't a medically recognized condition—you won't find it in the *Diagnostic and Statistical Manual of Mental Disorders*, for example. But according to veterinary consultant Josh Vaisman, CCFP, MAPPCCP, it's a very real condition: “The World Health Organization recently redefined burnout as an occupational phenomenon.”

Vaisman, cofounder and lead consultant at Flourish Veterinary Consulting in Boulder, Colorado, knows firsthand just how real occupational burnout is—he experienced it himself a few years ago, and it changed his life. Now he shares his personal experience with burnout to help *Trends* readers recognize the signs. He also shares tips and strategies to help your staff avoid burnout and, more importantly, help them thrive.

Although not a veterinarian, Vaisman has been in the veterinary world for two decades. At one point he was part-owner of a seven-doctor small animal practice, where he also served as the onsite hospital director—all while consulting on the side. The norm was a 150-mile round-trip commute and a 55- to 70-hour workweek.

“From the outside, it looked like I had reached the pinnacle of the



“You can't underestimate the importance of feeling that who we are and what we do matters. It doesn't take long and it doesn't cost a penny.”

—JOSH VAISMAN, CCFP, MAPPCCP

entrepreneurial journey,” Vaisman said. “But internally, I was growing more and more depleted and disengaged every day.”

Workload was only part of it. The bigger problem was the way he was doing it, which had become all about numbers. “I started to put our financial performance ahead of the performance and experience of the people I was supposed to be leading,” Vaisman said. “That was a really depleting way to be. It just mismatched my core values.”

But he also just felt like that’s what he was supposed to be doing. “And so I kept doing it, until one day I just couldn’t do it anymore. I completely and totally burned myself out.”

Vaisman had a breakdown in his kitchen one morning while scrambling eggs: “I really hit rock bottom.”

He said it was just an ordinary day like any other. “There wasn’t anything in particular that was happening. I wasn’t looking forward to a particularly difficult day. Nobody had said or done anything. I was just making breakfast for my wife and myself, and all of a sudden, this physical sensation hit me, and I couldn’t hold onto the ladle. I had to set it down, and I sat down on the ground as I just completely broke down crying in the middle of my kitchen.”

He vividly remembers thinking, “I don’t actually know what’s happening to me. I don’t know why this is happening

right now in this way,” but said it felt as if suddenly all of that buildup had to be released in a very physical way.

Vaisman acknowledged that “burnout” is a term that gets thrown around a lot. But he said the word “occupational” is key. “Burnout is not something that happens in your weekend hobbies; burnout is not something that happens in your personal life. Burnout is an occupational phenomenon that happens in and due to your work environment and conditions.”

What does burnout look like? Vaisman says occupational burnout manifests itself in three primary ways:

- **Extreme emotional exhaustion in and around work.** “It’s a very tangible feeling that you literally have nothing left in the tank.”
- **Extreme cynicism or negativity.** “Sometimes it’ll show up as somebody who we think of as that rockstar, positive contributing member of the team,” Vaisman said. “And it seems like overnight they’ve become the toxic team member. They’re just cranky about everything and unpleasant to be around.”
- **A sense of loss of self-efficacy or a loss of all belief in yourself.** “Oftentimes it shows up as this sort of internal dialogue that ‘it doesn’t matter what I do, because nothing I do matters; I can’t make a difference. I’m incapable of changing anything or fixing anything or accomplishing anything here. I may as well just give up.’”



Burnout is an occupational phenomenon that happens in and due to your work environment and conditions.”

—JOSH VAISMAN, CCFP, MAPPCP

Looking back at his own experience of burnout, Vaisman said he realized



How do we create a workplace in the veterinary space that allows people to be and feel their best at work so that, at the end of the day, they feel fulfilled?”

—JOSH VAISMAN, CCFP, MAPPCP

he was exhibiting the first two symptoms for months leading up to his breakdown: “I started to become the toxic team member.”

Worse yet, he was in a leadership position. “You can imagine the negative impact I was having on the team around me, but I didn’t realize it.” Other people realized, of course, but nobody on his team said anything. “I was the person at the top, and they were intimidated.”

The third symptom showed up that day in his kitchen.

Vaisman said that was the most painful part. He describes himself as naturally optimistic: “I’ve had this belief that even when things are hard, we’ll find a way to get through.” When that disappeared, “I had this sense that maybe I just don’t belong here, maybe I don’t belong in any of this, maybe I’m just not capable, maybe I just suck as a human being.” He says he had reached the point where he’d completely lost any sense of belief in

himself. “That’s the part that hurts my heart the most.”

Yet he felt he had to soldier on: “I kept telling myself, ‘You’re the entrepreneur. You’re the business owner. Put on your big boy pants and just keep going!’”

Then, inevitably, he couldn’t.

Vaisman said it took him a few months, but he got past the breakdown “with the supportive and loving cajoling of my wife and partner” as well as support from a professional coach. With their help, and a lot of soul-searching, “I finally gave myself permission to step away from the environment that was contributing to this experience, and I did.”

He sold his equity in the hospital, resigned his position as hospital director, and left the consulting firm. “I just took some time to myself.”

In that time, he had an epiphany: “It really struck me that the way we

do things in this profession doesn’t always serve us in the best possible ways.”

Vaisman said that as a profession, we’ve gotten really, really good at taking care of others, but we’re not that good at taking care of ourselves and our colleagues. And that’s a tragedy. “This work is such worthy, meaningful work that’s imbued with such a deep sense of mattering and impact in the world, it should contribute to our fulfillment. It shouldn’t deplete us. So I decided that I was going to try and find a better way that actually allows us to thrive, not just professionally but personally, and so that’s what I did.”

He went back to school to pursue a master’s degree in applied positive psychology and coaching psychology. In 2019, he cofounded Flourish Veterinary Consulting and made it his mission to share with other veterinary professionals the lessons he’d learned—both in school and in his personal life.

What Is Keeping Veterinary Staff from Thriving?

According to Vaisman, there are “myriad” issues that can lead to burnout and keep staff from thriving: “As a profession, on average, we’re vastly underpaid. We overwork ourselves. We say ‘yes’ to too many things.”

But even if all these issues were to magically resolve themselves overnight, it doesn’t mean we’re suddenly going to be fine. For Vaisman, it comes down to one important thought: “The absence of suffering is not necessarily thriving,” Vaisman said. “You can eliminate

all of the problems that exist in the veterinary profession and that doesn't automatically mean you'll thrive."

Vaisman believes that a lot of the challenges we face are due to a lack of knowledge and tools because nobody teaches us how to create environments that contribute to human thriving. "How do we create a workplace in the veterinary space that allows people to be and feel their best at work so that, at the end of the day, they feel fulfilled?"

How Can Leaders Create an Environment Conducive to Thriving?

Vaisman noted that people in the veterinary space, especially those in leadership positions, need to recognize that there are things they can do—most of which cost nothing except a little bit of time and intention—that can contribute to people "actually feeling energized by the challenging, exhausting work that we do [and thriving] despite the challenges and difficulties that we face."

A tremendously effective and incredibly simple method Vaisman recommends is to notice the good things that people are doing and affirm them on a regular basis. "You can't underestimate the importance of feeling that who we are and what we do matters. It doesn't take long, and it doesn't cost a penny."

He said research shows that a positive mindset directly contributes to job performance, job satisfaction, engagement, and the overall sense of fulfillment at work, and leaders can promote positivity by making it a point to intentionally notice the important things staff do, the things that matter, and then celebrate them.



A tremendously effective and incredibly simple method Vaisman recommends is to notice the good things that people are doing and affirm them on a regular basis.

What Doesn't Work

A lot of practices think tangible perks will help forestall burnout or help people feel better and thrive, whether it's money or a parking space near the door. But that doesn't actually do the job in the long term.

"A lot of those tangible things tend to be quick fixes, and some of them are necessary," said Vaisman. Like a good wage. "We have to pay people for the value of their work. But I also think that's a basic necessity. That's not necessarily something that contributes to wellbeing in the long term."

Financial stress is a detractor from wellbeing, but there's a point in time where you make enough and it's not going to make a big difference. "Those kinds of things are what we call extrinsic or externalized motivators," he said. "They're blips that give us a spike of wellbeing."

But at some point in time, because of what's known as hedonic adaptation, those spikes cease to have an effect. Vaisman gives an example of this: "If

you give somebody a raise or a bonus to help them feel happier at work, they eventually become accustomed to that raise or bonus, and then they need an even bigger one next time to have the same kind of boost, and then another—bigger—one, and before you know it, you're chasing a goalpost that you can never reach."

Vaisman loves the fact that a lot of practices do team-bonding events like pizza parties and says they're important, but it's a mistake to rely on them. "If that's the only tool we're pulling from the toolbox to create wellbeing in the veterinary space, we're consistently setting ourselves up for failure," Vaisman said. "We're leaving out what seems to make the most difference: We're leaving out the personal."

What Are Practices with Thriving Teams Doing Differently?

Vaisman said his leadership workshops boil down to two important principles:

1. Other people matter.
2. Leadership is relationships.

“Period,” he said. “That’s it.”

Research shows that when people feel like they matter to their leader, both on a personal and a professional level, “that’s a team that’s high-performing and that’s an organization that’s likely to have long-term productivity and profitability above and beyond their competitors.”

That’s the big difference between practices that thrived during COVID and practices that didn’t, Vaisman noted. The ones that thrived were the ones where leaders “really, genuinely, authentically, and intentionally” leaned into the relationships with their staff and found ways to care about them as people—and care about their success.

How One Hospital Turned Things Around

Vaisman mentioned a large hospital he worked with in 2020 during the height of the pandemic that was able to turn the tide of discontent among their staff and help them thrive. “It was a big practice with a staff of 160 and a leadership team of 34, and they mounted a tremendously successful intervention.”

Vaisman helped them create a very simple check-in program where every person in the hospital was guaranteed to have somebody who’d gone through the leadership training sit down with them off the floor and, undistracted, once a month for roughly 10 minutes, just check in on them. They asked simple questions

like, “Hey, how are things going? How are you doing? What are you proud of from this last month? Where are you struggling? Where could you use some extra support?”

“That’s it,” Vaisman said. “Once a month, and it made a huge difference in that practice. That’s what positive leadership is about.”

Other people matter. Leadership is relationships. ※



Tony McReynolds is editor of AAHA's award-winning newsletter, NEWStat.



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Peak Performance

Find Your Sweet Spot with Benchmarking

by Constance Hardesty

What if you could sneak a peek inside other veterinary practices' financials to see how you stack up? Drill down to discover whether you really have lost income to online pharmacies, or if it just feels that way? Or see into the future with "If I do this, then that happens" scenarios?

Financial benchmarking can do that for you.

This article covers what benchmarking is good for—or not good for. We'll cover five veterinary financial benchmarking tools. And we'll answer questions like: How do they compare? Which one is right for you? How can you use benchmarking to improve your practice?

Let's start with what it is: *Benchmarking* means comparing your business with others. You can look at the big picture of your practice's overall performance or you can focus on specific metrics, like client retention. The key is to compare your practice with others like it; there is no sense comparing a companion animal practice with an equine practice, or even a rural practice with a metropolitan one.

Benchmarking is a planning tool; it helps you see where you stand and decide where to go next. Use it to

- identify your practice's strengths and weaknesses,
- prioritize areas that need improvement,
- set goals and performance expectations,

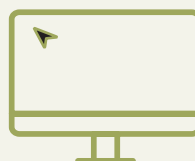


“It is not a cause for alarm if things look different; it is a cause for investigation.”

—BRIDGETTE BAIN, PHD, AVM

More Bonus Content Online

Go online to download a chart comparing these benchmarking tools. Go to trends.aaha.org and navigate to this article to access the bonus content.



- monitor your performance and manage the changes, and
- gain deeper understanding of your practice and its competitors.

“If your numbers are quite different from other practices, ask why,” said Karen E. Felsted, CPA, MS, DVM, CVPM, CVA, of PantheraT Veterinary Management Consulting and author of the Veterinary Hospital Managers Association’s (VHMA) *Insiders’ Insight* Monthly Report. “Are our numbers justified, or do we need to change things?”

If both your support staff costs and your profitability are higher than most other practices, she suggested, consider that your support staff costs drive your higher-than-average profitability. On the other hand, if your support costs are higher than average and your profits are lagging, then ask why that is so.

To start, think about how the benchmarking tools are made: all of them rely on data provided by real practices. The benchmarks publisher decides how all that data will be organized in expense and revenue categories. If you organize expense and revenue categories differently, then your numbers won’t compare to the published benchmarks.

“If you see a huge deviation in your numbers against the averages, investigate whether you are including things differently,” advised Bridgette Bain, PhD, an economist and associate director of analytics of the American Veterinary Medical Association’s (AVMA) Veterinary Economics Division. “It is not a cause for alarm if things look different; it is a cause for investigation.”

The key to smart benchmarking, Bain and Felsted agreed, is to ask good questions.

The benchmarking tools described here are alike in important ways; for example, they survey a variety of practices across the United States, they use experts to verify the raw survey data, and most offer some advice for improving performance. But they also differ in important ways.

Each benchmarking tool offers its own scope, features, and benefits to answer different questions or satisfy different purposes. Your success depends on picking the right tool for your practice and using it well.

Here are some brief descriptions of four major veterinary benchmarking tools. For more detailed, head-to-head descriptions, see the table accompanying this article.

AAHA Vital Statistics Series

What it is: This ongoing series includes three separate publications focused on fees, compensation, and productivity. Each study is recreated from surveys conducted every other year. The series set the standard for other veterinary benchmarking tools by supplementing the data with expert advice, management tips, and interactive tools.

How it works: Benchmarking data is presented in tables, organized by practice demographics and specifying averages, medians, and quartiles, so you can accurately compare your performance with others. A short introduction to each table explains the data, why it matters, and how to identify and fix problems or gaps.

Judy Rose Lanier, CVA, CVPM, used the tools as a practice manager before becoming regional field manager of AAHA’s Member Experience team. She suggests practices use benchmarks as active management tools. By comparing a new doctor’s performance with their experienced colleagues, for example, you will discover whether additional coaching is needed to avoid missed charges, she told *Trends*.

Why it’s unique: This is the most comprehensive and well-established benchmarking tool, first published more than 20 years ago, with a new publication each year. It’s also the most comprehensive, with hundreds of benchmarking data points based on a randomized national survey of 650–900 companion animal practices of all sizes, including multigroup practices. A companion website offers a host of interactive tools for simulations, including one that helps staff right-size inventory orders.

AVMA P&L Calculator

What it is: AVMA’s P&L (profit and loss) Calculator is an online tool that lets you compare your expenses and revenue with other hospitals with the same number of full-time equivalent (FTE) DVMs. You can use the calculator to identify opportunities, change spending patterns, develop new revenue, optimize your team, or make other improvements.

The calculator is based on a subset of the data in AAHA’s Vital Statistics series.

How it works: Start by inputting the number of FTE doctors in your practice. Then “play with the numbers” to run scenarios. Input a



“Anyone can read published data. The key is understanding how to apply it in your own practice.”

—DENISE TUMBLIN, CPA, WTA VETERINARY CONSULTANTS

higher total revenue to find out, “If I grow my revenue this much, this is what I can expect in expenses,” Bain explained.

To prepare for using the AVMA P&L Calculator, users aggregate their expenses and revenue, preferably from a profit and loss statement created by an accountant, Bain pointed out. This statement should include all expenses, from pharmacy income to depreciation and amortization. With those figures in hand, the user inputs their practice’s data into the AVMA P&L Calculator.

Why it’s unique: It is interactive. Though similar in purpose to one of the *Financial and Productivity Pulsepoints* interactive tools, the AVMA P&L Calculator is designed to function like an app. The data tables that dominate most benchmarking tools operate mostly in the background as users input their own data to compare their performance and simulate the financial impact of management changes.

VetSuccess: Performance and Compliance

What it is: VetSuccess is a data company offering a suite of products that allow practices to track and benchmark their performance. Products include Practice Overview Report, Compliance Tracker, and Daily Dashboard. The reports provide an immediate, visual picture of individual practice performance. Through direct data connections, the system generates analytics and benchmarks for practices based on their transactional data.

How it works: VetSuccess software extracts relevant data directly from the customer’s practice information management system (PIMS). Working behind the scenes, proprietary software maps revenue and expense categories to the AAHA/VMG Chart of Accounts. That means practices may organize their accounts as they like, and the software will automatically match them to the standard Chart of Accounts for apples-to-apples comparison. Customers log into

a secure VetSuccess portal to view monthly reports and daily dashboards.

Why it’s unique: The company’s proprietary data normalization process ensures the accuracy of reported data and metrics and generates one of the largest pools of veterinary data for benchmarking. Reports are highly visual, with trendlines, bar charts, pie charts, and enhanced graphics to point out key performance indicators.

“Veterinary practice data is complicated, but we’re able to make sense of it by assigning each revenue transaction to the appropriate category, regardless of what each individual practice uses for software system, item code, or description,” said VetSuccess vice president of sales and marketing Sheri Gilmartin.

VHMA KPI and Management Trends and Compensation and Benefits Survey

What it is: The Veterinary Hospital Managers Association offers two benchmarking tools, one focused on key performance indicators (KPI) and the other on compensation and benefits for associate DVMs, practice managers, and non-DVM staff. The monthly *Insiders’ Insight* reports focus on KPI and management trends. The compensation report is issued every two years. Both are free to VHMA members.

How it works: For the KPI tool, VetSuccess, a data company, extracts information directly from participating practices’ PIMS. Participants may view the VHMA dashboard on the website to see national data or receive an individual monthly report that includes

their practice data in comparison with national data. A monthly blog provides commentary on trends and tips for how practices can use the data to improve their practice performance. The Compensation and Benefits Survey is based on a survey of practices in North America.

Why it's unique: The KPI report is the most frequently published benchmarking tool, with monthly updates. The compensation and benefits tool includes information on qualitative aspects of veterinary employee management, including position and responsibilities, credentials, job longevity, and use of split shifts.

"Understanding the economic trends that impact our industry empowers practice owners and managers to make well-informed decisions to improve practice performance," said VHMA president Jessica Speas, CVPM, SPHR, PHRca, SHRM-SCP, CCFP.

VSG DATALINK

What it is: This is a private benchmarking tool by and for members of Veterinary Management Groups (VMG). Each member belongs to a study group of 15 to 20 noncompeting practices. Financial reports are reviewed and compared during VMG member meetings and can also mine data from all VMGs to allow comparisons with like-sized or similar hospitals.

How it works: VMG members organize their PIMS and accounting software to align with the AAHA/VMG chart of accounts. Each practice's quarterly financial data is entered into the Veterinary Study

Group (VSG) DATALINK portal (automatic data transfer from PIMS is available) and audited by certified public accountants specializing in the veterinary field. Members receive quarterly financial and key performance indicator reports showing their hospital's data (revenue and expenses) and how they compare with other hospitals in their group, the entire VMG membership base, and the top-performing VMG hospitals.

"VMG members find it valuable to collaborate with their peers, and it provides a great level of shared accountability and mutual encouragement to make changes in their practices," said Matt Salois, PhD, president of VSG.

Why it's unique: Because the practices organize their expense and revenue categories in the same way, it's an apples-to-apples comparison. In addition, VMG staff offer member support, and the data is audited by VSG's CPA firm, which attends VMG meetings to educate members on how to interpret the reports and pull actionable data to target specific areas for improvement.

Well-Managed Practice Benchmarks

What it is: This is a curated benchmarking tool that allows you to compare your practice with 100 handpicked practices that meet the four criteria of a Well-Managed Practice, listed below.

How it works: The benchmarks are published as a series of four books, each one focusing on a single area: revenue, fees, expenses, and a special topic. Each book is based on a separate survey, with one survey

conducted every six months, so that all four topics are covered in two years. Then the cycle repeats. The most recent special topic was telehealth (2021).

Why it's unique: Four things set this research apart, according to Denise Tumblin, CPA, owner of WTA Veterinary Consultants, which produces the tool along with Brenda Tassava, CVPM, CVJ, MVLCE, founder and owner of VetSupport. (1) It includes select, Well-Managed Practice participants; (2) experts review the data for accuracy; (3) the reports offer management recommendations for using the results to improve your practice; and (4) experts contribute their views on a variety of topics related to practice performance.

The recent report *Telehealth 2021: The Future Is Here* answered questions about remote prescribing, the client experience, access to specialty care, efficiency and productivity, trust and access, regulatory implications, and fee-setting.

"Anyone can read published data. The key is understanding how to apply it in your own practice," Tumblin said. The Well-Managed Practice benchmarking reports feature expert contributions that share broader perspectives on a variety of topics. ✨



Constance Hardesty, the former editor-in-chief of AAHA, managed creation of the AAHA/VMG Chart of Accounts, directed the Vital Statistics Series, and created some of its interactive tools.



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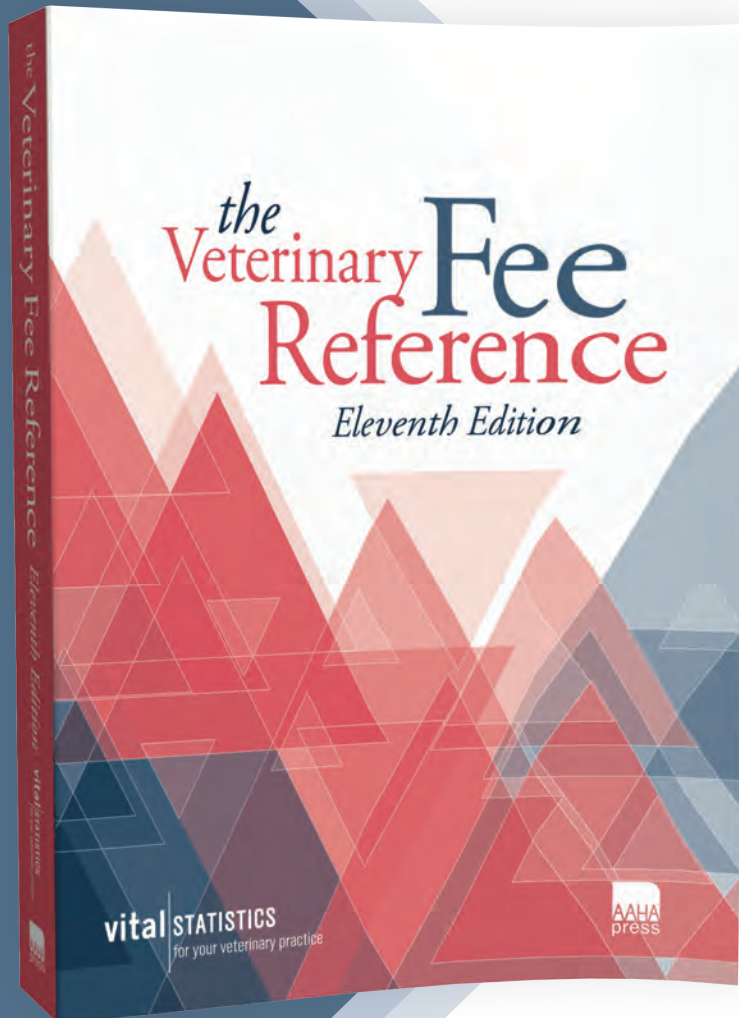
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Personalized Medicine



“Telehealth allows more time for personalized education and medical care through the use of genetic testing and home diagnostics kits.”

—JESSICA TRIMBLE, DVM, ANIPANION

Applying Genetic and Other Testing to Redefine Standards of Care

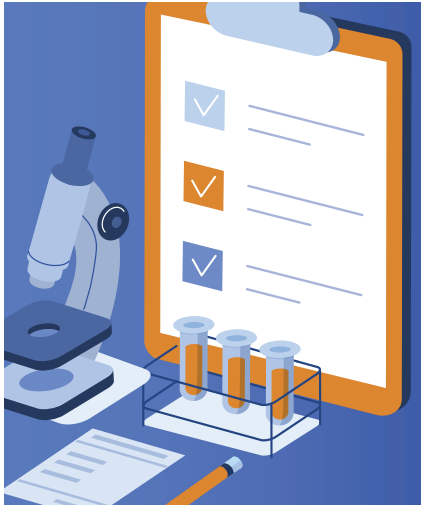
by Terrisha Buckley

Personalized medicine refers to a field in which practitioners use diagnostic and genetic tests to determine the best course of treatment for individual patients. Despite veterinary medicine seeing higher rates of burnout and more overwhelmed clinics, personalized medicine—also known as precision care—is still relevant. In fact, it is perhaps more relevant than ever.

As the profession seeks to move forward, it is imperative to analyze every element of care to determine the best and most effective options for clients and patients. This could mean implementing new technologies, devices, and even testing methods.

Benefits of Personalized Medicine

The benefits of personalized medicine are both quantitative and qualitative. From the quantitative perspective, personalized medicine places a larger emphasis on the data from certain testing methods to present better options for diagnostics, treatment, preventive care, and management of acute and chronic disease. For example, patients with uncontrolled diabetes may require prolonged frequent glucose monitoring. This allows clinicians to understand how blood glucose levels change throughout the day with activity levels, diet, and any other factors. From there, the clinician is



better able to prescribe methods to bring those levels under control.

On the qualitative side, personalized medicine allows for better client-veterinary relationships.

Veterinarians can take information from tests and have more in-depth conversations with their clients. From there, they can work together to develop plans for prevention, management, training, and other aspects of pet care. This could result in a drastic improvement in the pet's health, which in turn has a positive impact on the human-animal bond.

Whether it is preventive or diagnostic care, personalized medicine has a place in the conversation.

Preventive Medicine

An excellent example of combining preventive care with personalized medicine is genetic testing. Genetic testing can be used to analyze a patient's genome and look for specific genetic markers that could possibly lead to issues. A prime example of this is the identification of a mutation in the MRD1 (multidrug resistance 1) gene in dogs. Testing for this specific

marker is relevant for dogs who may be at risk of serious adverse drug reactions.

While the concept of “white feet, don't treat” may be a point of consideration when considering multidrug-resistant defects in certain breeds of dogs, an MDR1 test is more specific and more accurate. This test could remove the uncertainty and frustration for clinicians and clients when prescribing certain drugs.

According to Jessica Boudreaux-Milligan, DVM, of dog DNA testing company Embark Veterinary, the ideal time for a genetic test is at a young age. A clinician would prescribe a test and use the information to help “lessen the effect of a possible chronic condition, postpone the onset of disease, and improve the quality of life of the pet.” The beauty of these tests is that veterinarians already do this automatically. Veterinarians have a working knowledge of breed-specific illnesses, predispositions, and conditions. Genetic testing just offers a more accurate—and individualized—version of this.

Currently, genetic tests are marketed as a financial investment for a lifetime of care. This information could be used to make lifestyle changes that could postpone onset, lessen severity, and/or prevent disease altogether, which offers an overall reduction in medical cost. On top of that, preventive care is typically cheaper than emergent and urgent care.

In addition, Kari Cueva, DVM, senior manager, Veterinary Genetics, at Embark Veterinary, spoke about how clinicians underestimate the value of genetic testing for pets. “Owners are delighted by [genetic testing]. They believe that you value their pet on an individual level,” Cueva said.

For example, a veterinarian telling an owner that their dog is part retriever could suggest trying out new toys to see if their dog is super excited to play fetch.

“If you personalize your approach to patients, the rewards will speak for themselves,” Cueva said.

It is important to understand that most genetic testing is not diagnostic.



Some diagnose genetic disorders, but most of them only quantify genetic predisposition to certain illnesses and diseases. This is very important to communicate to clients because most other tests ordered are diagnostics, meaning there is a positive/negative or yes/no answer implied. Boudreaux-Milligan said that with the implementation of this tool, “conversations are changing from positive/negative to susceptible/not susceptible. This allows for more of a gray area.”

Regardless of the gray areas, genetic testing gives veterinarians a tool that was previously unavailable. Most veterinarians can guess one or two possible breeds in a multibreed animal; however, more hidden inherited traits are not going to be visible. Sure, the understanding that a boxer or boxer-mix should be monitored for dilated cardiomyopathy comes in handy. But other unseen factors could be even more helpful, and genetic testing pulls back the curtain on this.

Diagnostic Care

Diagnostics in personalized medicine are slightly less discussed but still

just as important as preventive care. As mentioned, some tests diagnose genetic disorders, allowing certain conditions to be discovered long before the onset of the disorder or illness. This gives the veterinarian and client a head start on adjustments to diet, exercise, medication, or anything else.

For Cueva, her breakthrough case was a mixed-breed puppy that she adopted. She decided to do genetic testing to determine the different breeds of her dog. The results came back with a positive for progressive retinal atrophy (PRA). Since she knew about it ahead of time, she was able to train her dog with voice commands instead of hand commands and consider better lighting around her home to aid her dog in the night as its vision degenerated.

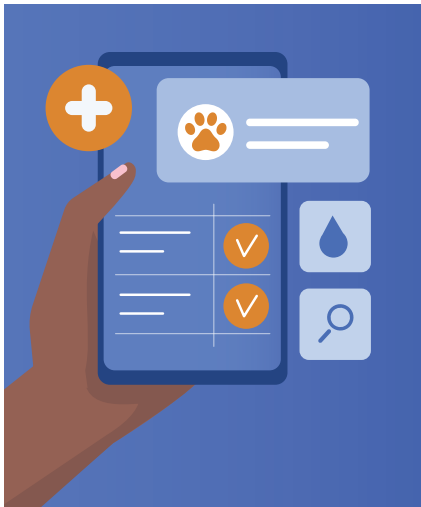
Early detection and diagnosis are always beneficial for treatment and improved quality of care and life. In addition, the increased pressure for antibiotic and antiparasitic stewardship is ever-present. Clinicians are becoming more adept at testing for specific resistance

strains in bacterial and parasitic infections, thereby reducing the prescribing of broad-spectrum antibiotics. As new infections arise and more resistant strains become common, this type of personalized medicine technique may become the only option for providing relief to patients.

What is the next step? Other genetic markers have been identified for specific cancers and tumors, and diagnosing these can help when considering treatment options. Submitting biopsies for specific genetic testing, outside of cytology studies, allows for the integration of more targeted pharmacology and even the implementation of immunotherapies and gene therapies as they are developed.

Integration of At-Home Testing

Clients know about options like genetic testing and want access to them. And, there are pet care companies willing to meet their demands, with or without the input of veterinary professionals.



“Telehealth allows more time for personalized education and medical care through the use of genetic testing and home diagnostics kits,” said Jessica Trimble, DVM, chief veterinary officer at telehealth provider Anippanion. “The client has more input because they can order some of these tests and have more conversations with their veterinarians.”

Some diagnostic companies offer at-home genetic testing and diagnostics such as urinalysis and fecal sampling. Most of these tests involve the client submitting saliva, urine, or a fecal sample and receiving the results. Then, the client typically discusses these results with their veterinarian. Though this disrupts the routine of the veterinarian ordering diagnostics, receiving results, making diagnoses, and recommending treatments, there are benefits to letting clients be a bigger part of the conversation.

For example, if clients are more involved, there is potentially more understanding and compliance with veterinarian recommendations

concerning nutrition, medication, exercise, and other factors. It also could save time for the practice since they don’t have to schedule an appointment to obtain the sample from the pet, or process or send out the sample to the lab. Of course, the practice would also lose the income from those services.

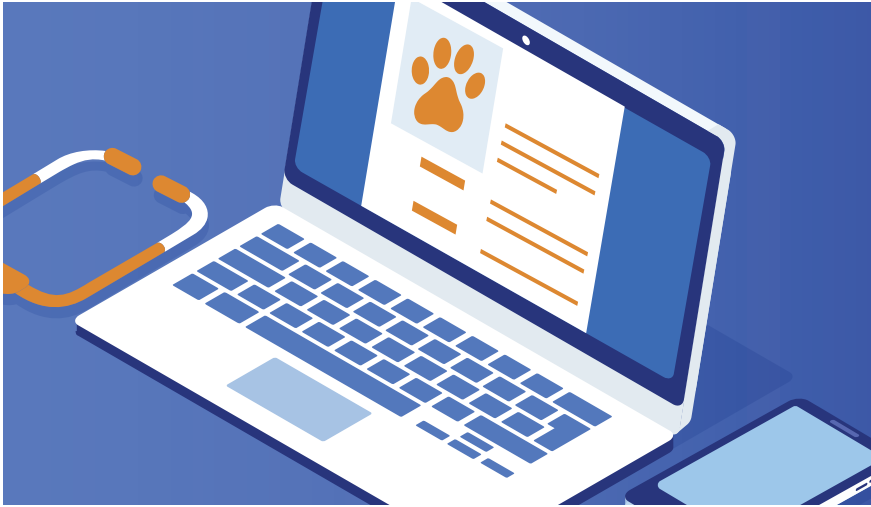
At the end of the day, at-home testing is still data that can be interpreted by a professional, including the prescribing veterinarian. Veterinarians can also recommend reputable companies to their clients and use the information to provide better and more personalized care, which can lead to better client retention.

Limiting Factors

Having clients lead the charge with some at-home testing can be a double-edged sword. Obviously, clients are not specialists who can reliably interpret data on their own. In addition, clinics have their own preferences when it comes to working with labs, and not all diagnostic companies are the same—meaning, results may vary. Nevertheless, clients are increasingly

involved in their pet’s care. In these uncertain times, people want more control over their lives, and that includes their pets. In addition, “Dr. Google” isn’t a fad that is going away, and pet owners are less likely to just take their veterinarian’s word for what their options are. They want to bring something to the table.

There is also a steep learning curve for clinicians as new technologies come out. Sequencing and microarrays are phasing out polymerase chain reaction (PCR) tests, which introduces new forms of data that veterinarians need to be able to understand and interpret for clients. This requires an understanding of statistics and genetics outside of the field of theriogenology. Some newer diagnostic companies are solving this problem by providing a robust support staff to assist veterinarians in interpreting results. Some also offer additional training opportunities. Though useful, this could present an issue for veterinarians who are already overwhelmed with their day-to-day duties. But, learning now could save time and expense in the long run.



Accessibility can also be a limitation. Currently, the costs are high for some genetic tests and newer diagnostics. While prices have dropped over the past decade, many are still out of range for clients. But, as offerings increase and the concepts are more widely accepted, the prices will ideally reduce.

One of the main points of contention, especially with at-home testing, is that these tests are pulling money away from the clinics. However, there is an argument that these at-home tests could instead drive up revenue for local clinics. Pet owners who order an at-home genetic, urinalysis, or fecal test are not equipped to interpret the results or prescribe the necessary treatments. Where do they go? Their local veterinarian. That initial “loss of revenue” to an at-home test could turn into a new client for the clinic. If they present results that don’t seem viable, new testing can be done.

Personalized and Precise Care

Overall, there are pros and cons to every new development, especially in the veterinary field. Veterinary

professionals are tasked with balancing costs, efficacy, accuracy, and necessity daily. Personalized medicine mandates looking at each animal on an individual level as opposed to as a subset of a breed, which takes more time—time that veterinarians don’t always have. Nevertheless, if the profession is to move forward and achieve any sort of stability considering the high demand for their expertise, new ideas, techniques, and technologies are going to have to become a part of the conversation. Personalized medicine could be another point to redefine standards of care. ✨



Terrisha Buckley is a freelance writer with a bachelor’s degree in biology and an extensive background in research as well as experience working in the veterinary profession.

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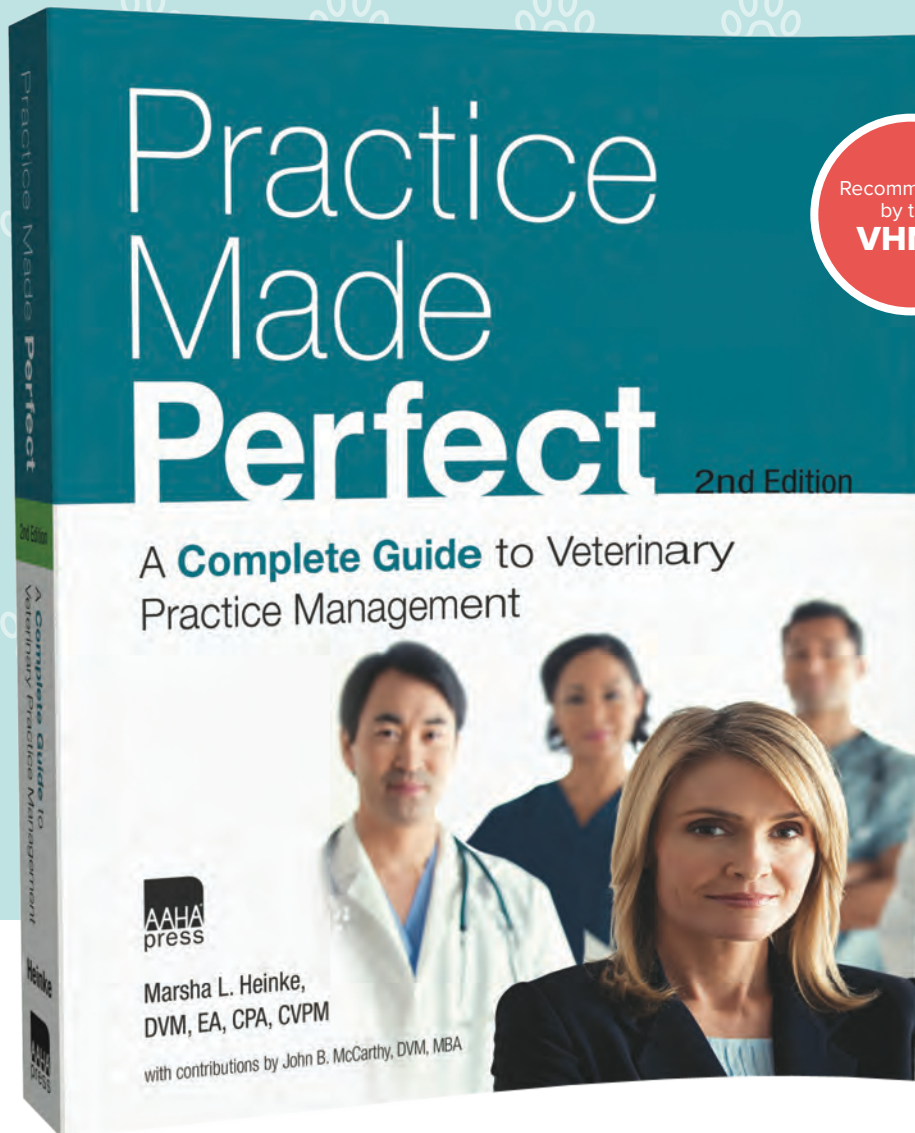


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AAHA's Central line Podcast 35
aaha.org/podcast

AAHA Community 42
aaha.org/joinnow

AAHA Membership 26, 61
aaha.org

AAHA Press 25, 36, 54, 60
aaha.org/press

AAHA Savings Program 63
aaha.org/savings

Bank of America Practice Solutions 1
bankofamerica.com/practicesolutions

Boehringer Ingelheim Animal Health False Cover, 13, 14
www.HEARTGARDClinic.com
www.NexGardClinic.com

Butterfly 3
vet.butterflynetwork.com

CareCredit 5
carecredit.com/mycustomlink

CareCredit 20-21
petlifetimeofcare.com

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ACVOeyeexam.org

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PrescriptionDiet.com/BetterThanEver

HUB International Midwest Inside Back Cover
aahainsurance.com

Merck Animal Health 48
www.merck-animal-health-usa.com/nobivac/nobivac-feline-3-hcp

MWI Animal Health Inside Front Cover
mwiah.com/easy-care-program/AAHA

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rxvitamins.com

Veterinary Hospital Managers Association 41
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Veterinary Management Institute 62
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Tracy Pinsky

Veterinary Assistant

Veterinary Medical Center, Easton, Maryland

Specialties/Certifications: OSHA coordinator and exam room trainer who specializes in surgery

Year started in vet medicine: 2013

Years with practice: 4

Nominated by: Casey Beck, DVM,
Managing Partner/Medical Director

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Employee of the Month



Why Is Tracy So Awesome?

Tracy is a ray of sunshine who truly lights up every room. She is always positive, calm, and willing to help in any situation—whether it is in her wheelhouse or not. She brings a level of maturity, respect, resilience, and strength to the table that is so refreshing and inspiring to be around. When she is present, others feel at ease, doctors feel cared for and listened to, clients feel that their pets are truly special, and each person, animal, or colleague is treated with dignity and a level of compassion that can be hard for others to muster on challenging days.

How Does She Go Above and Beyond?

Tracy stays above the line, always raises her hand to volunteer, always takes the high road, and is someone others love and admire. She is a single mom who has stayed local, and she supports her community and enjoys the world around her—cooking, plants, her daughter, and their pets. She advocates when it's necessary, knows when to respectfully be critical, and doesn't hesitate to always do the right thing, no matter who stands in front of her—whether at work or in life. Tracy is a model who shows people how to keep their chin up, look on the bright side, and always choose the best version of themselves.

In Her Own Words

Why do you love your job: I believe I can make a difference in an animal's life as well as in their owners'. I feel that with patience, compassion, and love, we can lessen pain and stress for all who cross our path.

Favorite celebrity: Stevie Nicks—she is a goodhearted person who is always giving love and light.

Pets at home: Three kitties: Jaspurr, Junipurr, and Norbert; two guinea pigs, Poppy and Heather; and one chicken, Tulip.

What brought you to the profession: After my daughter was born, I enrolled and completed a veterinary assistant course, and found my first job in the field.

Hobbies outside of work: I love to garden, cook, read, meditate, and hang out with family and friends.

Favorite book/TV show: Favorite book: *The Four Agreements* by Don Miguel Ruiz. Favorite show: *Supernatural*.

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