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✔ See why HEARTGARD has been trusted for over 35 years, with 2 billion doses sold.²

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IMPORTANT SAFETY INFORMATION: HEARTGARD® Plus (ivermectin/pyrantel) 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.

¹ Data on file at Boehringer Ingelheim. ² Data on file at Boehringer Ingelheim.

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PROTECTING ADOPTED PETS from HEARTWORM DISEASE

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New game show format launches at Fetch conference in Kansas City with host Adam Christman, DVM, MBA

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A veterinarian who brews beer
The PUREVAX® Vaccines You Love In Half-mL Doses.

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Note that many of this year’s industry events are now being held online or via a combination of in-person and virtual learning. Please visit individual event websites for details.

### CALENDAR

#### AUGUST

**North Carolina Veterinary Medical Association Summer Conference**
August 12-14
Kiawah Island, South Carolina
https://ncvma.org/summer-conference/

**Veterinary Hospital Managers Association 2022 Annual Meeting and Conference**
September 8-10
Orlando, Florida
www.vhma.org/education/conferences/annual-meeting-2022

#### SEPTEMBER

**ExoticsCon**
August 14-18
Denver, Colorado
www.exoticscon.org/

**Veterinary Forum USA 2022**
September 8-9
Nashville, Tennessee

**American Animal Hospital Association Connexity 2022**
September 14-17
Nashville, Tennessee
www.aaha.org/education/connexity-2022-new/about/

#### 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 (Dirofilaria immitis) for a month (30 days) after infection and for the treatment and control of ascars (Toxocara canis, Toxocara leonina) and hookworms (Ancylostoma caninum and Uncinaria stenocephala) (Ancylostomiasis licensed). 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 mg/kg) and 5 mg of pyrantel (as pamoate salt) per kg (0.27 mg/lb) of body weight. The recommended dosing schedule for prevention of canine heartworm disease and for the treatment and control of ascars and hookworms is as follows:

- **Dog Weight**
  - Up to 25 lb
  - 26 to 50 lb
  - 51 to 100 lb
- **Chewables Per Month**
  - 1
  - 2
  - 4
- **Ivermectin Content**
  - 68 mcg
  - 136 mcg
  - 272 mcg
- **Pyrantel Content**
  - 57 mg
  - 114 mg
  - 227 mg
- **Color Coding On Foil Backing and Carton**
  - Blue
  - Green
  - 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 the box to protect from light. Because most dogs find HEARTGARD Plus palatable, the chewable can be fed 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 an additional 30 minutes to ensure that the dog has eaten the complete chewable. If any of the dose has been lost, rescheduling 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) of the dog’s last exposure to mosquitoes.

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 or on about the same day of the month. If treatment is delayed, whether by a few days or by 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 ascars (T. canis, T. leonina) and hookworms (A. caninum, U. stenocephala). 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 ascars (T. canis, T. leonina) and hookworms (A. caninum, U. stenocephala). A. brachyurus.

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 microfilaria clearance. A mild hypersensitivity-type reaction, primarily due to administration of a dose that is not effective in the treatment of circulating adult heartworms, 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 and field trials with HEARTGARD Plus, vomiting or diarrhea within 24 hours of dosing was observed in 11% of administered dogs. The following adverse reactions have been reported following the use of HEARTGARD: Depression/trigitation, vomiting, anorexia, diarrhea, mydriasis, ataxia, tremors, salivation,嘈音, 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 1-888-607-4251. 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, 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 heartworm administration 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, paroxysmal, panting, recumbency, excitability, stupor, coma and death. HEARTGARD demonstrates signs of toxicity at 10 times the recommended dose (80 mcg/kg) in sensitive Collies. Results of these trials and bioequivalence studies support the safety of HEARTGARD Plus 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, that dog days and purposes aged more than 2 weeks. In clinical trials, commonly used Neocolin, dips, shampoos, antibiotics, antihelminths and steroids preparations have been administered with HEARTGARD Plus in a heartworm disease prevention program.

In one trial, where some pigs had parasitcs, there was a marginal reduction in efficacy against intestinal nematodes 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.

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

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NORTHERN Texas Veterinary Association

25th Annual Veterinary Medical Association Convention and Conference
September 26-28
Fort Worth, Texas

 Fetch dvm360® Kansas City
August 26-28
Kansas City, Missouri

**Veterinary Forum USA 2022**
September 8-9
Nashville, Tennessee

**American Animal Hospital Association Connexity 2022**
September 14-17
Nashville, Tennessee
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Join us in August for another engaging week of education, science, once again face to face. Our safety protocols mean that you can earn CE credits plus interact and network in person with peers, friends, and faculty—all in complete safety!
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**From the cover**

**40 Protecting adopted pets from heartworm disease**

Practioners and owners should keep these considerations in mind during transport and adoption of dogs infected with heartworm.

Kate Boatright, VMD
Shouldn’t nutrition conversations be a little easier?

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Pet protection doesn’t take a vacation

Summer has arrived and the dvm360® team is keeping our pets’ safety in mind. This is the season of extreme heat, high parasite activity, and other dangers that may put their health at risk.

July is National Pet Hydration Awareness Month, and this issue focuses on keeping our animals properly hydrated. According to Jupiter Pet Emergency & Specialty Center in Florida, we should monitor the water intake for animals in our care and ensure they do not experience dehydration or water intake toxicity. Among other things, the center suggests having multiple clean bowls of fresh water available and offering prepackaged wet food or food with water added to make sure animals stay hydrated. An article by Assistant Editor Julia Burke provides additional tips and expert advice on page 16.

Warm weather also increases parasite activity, including that of ticks and heartworm. Although veterinarians often recommend year-round prevention treatment, especially in warmer regions, summer and early autumn are known as heartworm season in cooler areas. According to Fairfield Animal Hospital in Kelowna, British Columbia, it’s especially important to administer heartworm prevention during the summer months. Kate Boatright, VMD, offers additional insight on managing heartworm, with a focus on adopted pets, in our cover story on page 40.

Summer at dvm360® also means providing valuable educational opportunities to conference attendees. In late June, we successfully launched the inaugural Directions in Veterinary Medicine (DIVM) conference in collaboration with the International Veterinary Academy of Pain Management. Taking place in Indianapolis, Indiana, this 2-day niche experience offered sessions in sports medicine, rehabilitation, pain management, anesthesiology, integrative medicine, and practice management as well as inspiring keynote speakers. You can expect more from the DIVM format in 2023.

And in August, Fetch, a dvm360® conference, returns to Kansas City, Missouri, with more than 40 educational tracks, 160 hours of continuing education, and 100 exhibitors. Our largest conference of the year will also feature special events in recognition of Hospital Design Competition winners and Veterinary Heroes™ program honorees as well as opportunities for networking and fun. On page 14, the Conference Insider column presents a first look at a new game show to engage Fetch attendees.

We hope your summer travel plans include Fetch. Regardless, be sure to take some time to relax, unwind, and enjoy a vacation with your pets and favorite humans.

Have a great summer!

—Mike Hennessy Jr
President & CEO,
MJH Life Sciences®

REFERENCES
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The Only Complete Line of Nonadjuvanted Half-mL Feline Vaccines.

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'Tis the season to inspire the future

Even with summer in full swing and practices facing their highest case volume of the year, it is never difficult to look to the future of veterinary medicine. How old were you when you decided you wanted to become a veterinarian? A survey conducted by Vet Set Go found that 65% of veterinarians were 13 years or younger when they decided to become a veterinarian.1

I remember being 6 years old, watching my dog receive his first physical exam. During the exam, the doctor let me auscultate my dog's heart and lungs with his stethoscope. I remember listening to the beats and breaths and falling into a state of wonder and intrigue. What was the science behind the process? It was from that moment I knew I wanted to become a veterinarian, and I never veered off that path!

Moments like this can inspire our future generation of veterinary professionals. Do you remember being turned down for a summer job, whether as a kennel assistant, animal shelter volunteer, or farm worker? Shutting out a child from the fascinating field of veterinary medicine not only deprives them of an opportunity; it deprives our profession of future leaders.

Giving back to the community by inspiring children may be my biggest platform as a veterinarian. I love hearing children’s questions, laughs, and wonder about our profession. I remember a student telling us that veterinarians are “superheroes without the capes because you have the ability to figure things out without them talking!” Consider that statement for a moment and digest it. You feel may feel disenchanted, defeated, or frustrated sometimes, but remember your “why” in veterinary medicine. These children look up to us and may one day become our colleagues.

I have the honor of shouldering this responsibility alongside my dear friend of more than 25 years, Robert Mankowski, VMD, owner of Mount Laurel Animal Hospital in New Jersey. Each year, we put on a Vet Day for children who aspire to become veterinary professionals (veterinarians, veterinary technicians, etc). At our most recent Vet Day, which hosted more than 40 children in person and over 50 children virtually, we had the privilege of sharing our experiences and everything our profession has to offer. The fun day included “Pizza Party With the Docs,” where kids could ask us anything about veterinary medicine as we ate pizza together. We played games, including the famous Kahoot!, and were proud to see how much these children knew about animals. Afterward, we gave the children a tour of the veterinary hospital, and they immersed themselves in the experience. As my dear friend and colleague and the founder of Vet Set Go, Christopher Carpenter, DVM, MBA, shared with me, it is important to make it an immersive experience. It is one thing for kids to observe, but it’s a next-level experience for kids to perform physical exams and touch the animals. Participants took pictures and made memories, and students received honorary certificates for being a “vet for the day.” To sum up the experience, one departing child yelled out his window, “This was the best day ever!”

I strongly encourage you to invite children and young adults into your veterinary world. You will make an enormous impact. And if you don’t know where to begin, please look into the book Vet Set Go: A Quick Start Guide to Becoming a Veterinarian by Christopher Carpenter and Alison Landis Stone. This is a great resource to help your team easily implement an event for kids.

Now is the time to make change. The future of our veterinary profession lies with these children. Inspire, motivate, and create a meaningful memory with them today.

REFERENCE

Adam Christman, DVM, MBA
Royal Canin® Hematuria detection technology by Blücare offers demonstrated effectiveness with sensitivity and specificity of over 90% to deliver results you can trust.¹

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₁ Khenifar E. et al, 2018

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“WAIT TO WORRY” and other ways to cope with anticipatory anxiety

Follow these strategies for coping with increased stress levels brought on by the pandemic

During the COVID-19 pandemic itself and now in the new normal environment, I have seen a significant number of veterinary professionals and students struggling with anxiety disorders and related symptoms pertaining to their health, social situations, returning to work, finances, school performance, and overall concerns related to current uncertainties in our world.

One of the most common and challenging anxiety symptoms is anticipatory anxiety. The purpose of this article is to discuss anticipatory anxiety within the context of veterinary medicine, describe the common symptoms, and offer strategies for coping.

UNDERSTANDING ANTICIPATORY ANXIETY

Anxiety is a normal human process and a reaction to stress. Anxiety only becomes a problem when it involves excessive fear or worry that affects an individual’s well-being and functioning.¹

Although not considered a diagnosable mental health disorder, anticipatory anxiety is challenging but manageable.² Anticipatory anxiety involves an excessive or debilitating level of worry about a future event or situation, and it tends to focus on negative outcomes.³

Of course, some level of worry, concern, or even stress about future occurrences is typical and understandable. For example, if you are performing anesthesia on a healthy pet for a routine procedure and you notice that its heart rate suddenly drops into the 30s, becoming worried or anxious is totally normal/healthy. However, anticipatory anxiety occurs when the worries become extreme and negatively affect our personal and professional lives because of the potential emotional and even physiological consequences that can result.

Anticipatory anxiety is the type of anxiety individuals experience when they anticipate exposure to triggers that are frightening to them. For example, someone who is claustrophobic may worry about feeling confined on an airplane. Or if someone is afraid of turbulence, they may worry that their flight next week will be rough.⁴

Anticipatory anxiety fuels one’s need to avoid contact with causes/sources of anxiety. It drives individuals to avoid their irrational fears (phobias) and uncertainties. Anticipatory anxiety can be exceptionally strong and challenging to eliminate. As seen in the above example, it can maintain and intensify a fear of flying.⁵

Ironically, as with all aspects of anxiety, anticipatory anxiety is completely paradoxical. One’s efforts to avoid it only result in it becoming more intensified. The anticipatory anxiety precipitates more anxiety.⁶

Here are some important aspects of anticipatory anxiety⁷:

- It is not an actual predictor of the level of anxiety an individual will feel during the situation itself; 95% of the time, anticipatory anxiety is much greater than the anxiety experienced when contact is made with what causes the fear.
- It is real anxiety but differs from the anxiety experienced during the situation that triggers a reaction. This is supported by research demonstrating that anticipatory anxiety and phobic avoidance (eg, avoiding flying) are produced in separate areas of our brains.
- Anticipatory anxiety can appear rapidly but is slow to disappear. Its persistent nature makes it challenging to overcome.
- A formula for maximizing anticipatory anxiety relates to an internal “Should I or shouldn’t I?” debate about experiencing short-term relief (eg, canceling a flight). This essentially reinforces an individual’s fear or phobia, rendering them less capable of managing their anxiety. The decision to conquer the phobia or fear will reduce anticipatory anxiety but not eliminate the fear.

ANTICIPATORY ANXIETY IN VETERINARY MEDICINE

Individuals with anticipatory anxiety may feel anxious for hours, days, weeks, or months before an event.¹ In their professional domain, individuals may experience anticipatory anxiety before work meetings or presentations, interviews, musical or athletic performances, or social events. Individuals also may have anticipatory anxiety about potential future occurrences such as natural disasters, the death of a loved one, or a relationship breakdown.²

Other examples include a well-trained newly graduated veterinarian who isn’t comfortable with emergencies and fears that a critical care case may come in on their next day at work. Or a veterinarian who doesn’t enjoy surgery and fears that there may be a large breed dog that needs a deep-chested gastropexy on their next surgery day.

Let’s examine how anticipatory anxiety might manifest in the routine gastropexy mentioned above. You might start worrying that something could go wrong the day before the procedure to the point that you don’t sleep well. The day of the procedure, you are short with your team members and aren’t fully present for your other duties of the day. Unnecessary worry and fear surrounding something that isn’t likely to happen is anticipatory anxiety.

These represent common anxiety-provoking situations for veterinary professionals. They can generate anxiety-related feelings and reactions regarding potential worst-case scenarios pertaining to potential outcomes, which may never happen. Two elements are clearly discernible: Each scenario encompasses future-based thinking about an event that has not yet occurred, and the feared negative outcome specific to each event may never occur at all.

Follow these strategies for coping with increased stress levels brought on by the pandemic.

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ANTICIPATORY ANXIETY SYMPTOMS

Anticipatory anxiety causes individuals to automatically assume the worst-case-scenario when faced with a perceived challenge or difficulty. They also may experience stress about situations that have yet to happen or find themselves anticipating disaster around every corner.4

Additionally, the prospect of making a decision typically leaves individuals feeling overwhelmed and paralyzed. From subtle avoidance behaviors to the most nightmarish terrors, anticipatory anxiety is the engine that drives it all.4

Notably, those who experience anticipatory anxiety will typically have other anxiety symptoms, which may differ from one individual to another. Each anxiety disorder has its own symptoms, which can vary in intensity and duration.5

Some common symptoms of anticipatory anxiety (and anxiety in general) include the following:5

- feeling apprehensive or having a feeling of dread
- feeling tense or jumpy
- being restless or irritable
- anticipating the worst
- watching for signs of danger
- feeling short of breath or having a pounding or racing heart
- experiencing headaches, fatigue, and insomnia
- sweating, trembling, or twitching
- having an upset stomach, frequent urination, or diarrhea

SUGGESTIONS AND STRATEGIES FOR COPING

Good self-care begins with taking care of your basic needs.5 Tips to help with anticipatory anxiety and reduce fear and uncertainty about the future include the following:5

- Reduce sources of stress where possible.
- Eat a balanced diet and limit caffeine and sugar, which can make anxiety worse.
- Exercise regularly, as research indicates it can reduce anxiety.
- Get enough sleep. Go to bed at the same time each night and get up at the same time each morning. Anticipatory anxiety may cause sleep disturbance and insomnia, and sleep deprivation worsens anxiety. Breathing exercises or meditation may help you fall asleep more easily. If you’re struggling with chronic sleep disturbance, see a doctor if mindfulness activities do not help.

PRACTICE RELAXATION AND GROUNDING

Techniques to help relaxation can reduce anxiety over time and enhance sleep quality. Therapists can share useful methods such as deep breathing, progressive muscle relaxation, guided imagery, and grounding techniques. Also, there are numerous online videos and apps that detail each process.5

These techniques are not a cure for anxiety. If used incorrectly, they can serve as avoidant coping.5 Ideally, these exercises should be practiced at scheduled times, rather than when you are feeling anxious. A health care professional can help you mindfully incorporate relaxation techniques into various types of therapy.5

ADDRESS NEGATIVE THOUGHTS

Changing your thinking can help change your mood. Do this by considering the source of the anxiety and the negative thoughts that are generated. Then explore how realistic these thoughts are. Instead of imagining a worst-case scenario, challenge negative thoughts when they arise, and these thoughts should become less frequent over time.

PRACTICE SELF-COMPASSION

Self-compassion—treating oneself with kindness and care in negative situations—may reduce anticipatory anxiety. For example, practice self-compassion by exploring how you might treat a friend who was having anticipatory anxiety. Often we are kinder to others than we are to ourselves.

WORKING THROUGH ANXIETY

- Take charge of the situation. For example, if you are anxious about a job interview, it may be helpful to practice answering interview questions with a friend or family member.
- Stop worrying about what might happen. Start facing your fears, rein in your self-defeating imagination, and live fully in the moment.
- Label your anticipatory anxiety for what it is—anticipatory anxiety.
- Know that anticipatory anxiety does not accurately indicate your actual level of anxiety when encountering your anxiety trigger. Remember that 95% of the time your anticipatory anxiety will be greater than the anxiety experienced when in that situation.

- Make a commitment to follow through with the triggering event. A “Should I or shouldn’t I” debate will only intensify anticipatory anxiety. The commitment to follow through and face your fear will prevent it from increasing.
- Remember that dealing with anticipatory anxiety can be a learning experience about how powerful an effect your brain can have on your feelings. Anticipatory anxiety is a real anxiety but it is 100% generated by your mind’s images—there are no physical or behavioral triggers for this anxiety.4

PROFESSIONAL THERAPY AND MEDICATION

Treatment options for anxiety may require the assistance of mental health or medical providers or other licensed professionals. There are prescription medications to help manage anticipatory anxiety and other anxiety symptoms. Although primary care physicians can diagnose and manage anxiety, they may recommend that you consult a psychiatrist for severe anxiety, concurrent disorders, or treatment-resistant anxiety disorders.5

WAIT TO WORRY

Many of us are worrying more and more about things that may never happen, and we waste a lot of mental energy and time doing so. I encourage patients to remember and incorporate a 3-word mantra to enable them to identify and then help them manage their anticipatory anxiety: “Wait to worry.” This approach helps many of them realize what is supported by anxiety research and gives them a simple strategy. More importantly, this phrase reinforces that what they fear, in all probability, will never happen. Incorporating this strategy has proven helpful for many.

CONCLUSION

Although some anxiety before events and situations is common, excessive levels of anticipatory anxiety can suggest an anxiety disorder.1 If you have overwhelming fears or worry about the future, contact your physician or a mental health professional. Overall, living with an anxiety disorder can be challenging, but such conditions are highly manageable with therapy, medications, or both.6

References available online at dvm360.com
Gamified continuing education launching at Fetch dvm360® Conference in 2022

This new approach to learning will engage attendees with a game show format

Written by Renea Lewis, Director, Veterinary Education; and Sydney Yankowicz, Assistant Editor

The Fetch dvm360® Conference in Kansas City, Missouri, will be held August 26 to August 28, 2022, and with it comes a new gamified continuing education (CE) program: dvm360® Unleashed! On Saturday, August 27, this learning opportunity, in a game show format, will replace the traditional keynote presentation. The new program will also be offered on Sunday, during lunch.

dvm360® Unleashed! is a gamified way to learn and potentially earn continuing education credit. Attendees can participate and compete for prizes by joining their table teammates for a high-energy session and rapid-fire Q&A. Each table will compete to be the first to answer correctly.

During the program, players will pick a category and the hosts will ask a representative for each team to answer by standing up. A host will bring a microphone to the table for the answer.

Participants will immerse themselves in a microlearning approach to dermatology, behavior, nutrition, pain management, feline medicine, practice management, and other topics.

This program will be presented by dvm360® with veterinary professionals from VetScoop: Natalie L. Marks, DVM, CVJ; Lisa Radosta, DVM, DACVB; Evan Antin, DVM; and Kwane Stewart, DVM. dvm360® Unleashed! is hosted by our very own chief veterinary officer, Adam Christman, DVM, MBA; and Matt Bubala, host of The Matt Bubala Show on WGN Radio, and brought to you by conference sponsors Hill’s Pet Nutrition, Trupanion, and Zoetis.

“Gamified learning actively engages participants to interact, which is known to increase memory recall and comprehension,” said Christman.

The 2-part dvm360® Unleashed! offers 2 hours of CE credit in jurisdictions that recognize Registry of Approved Continuing Education approval from the American Association of Veterinary State Boards.

AVMA announces its first chief diversity, equity, and inclusion officer

The American Veterinary Medical Association (AVMA) has selected Latonia Craig, EdD, Med, MA, as its first chief diversity, equity, and inclusion officer. Craig will help the AVMA advance its efforts to create diverse, equitable, and inclusive clinics and veterinary schools beginning in September 2022.

“The AVMA has a unique opportunity to increase DEI [diversity, equity, and inclusion] across our profession, and that is a role and responsibility our organization has embraced,” José Arce, DVM, president of the AVMA, said in the release.

“We need a chief DEI officer who can lead, inspire, and work collaboratively with key stakeholders, and Craig’s breadth of experience and extensive work with veterinary medical education make her the perfect choice,” Arce added.

According to the release, Craig will be responsible for leading the ongoing implantation and promotion of DEI-related initiatives, programs, training, and strategies supporting efforts to develop, attract, and retain diverse professionals. She will also serve as staff liaison for the Commission for a Diverse, Equitable, and Inclusive Veterinary Profession; enhance understanding and appreciation of DEI and cultural awareness; and lead collaboration with AVMA members, allied and state organizations, affinity groups, and other associations.

“Engagement and support will be essential for this work to be fully transformative, effective, and meaningful. I look forward to working with organizational members and incorporating their feedback into sustainable, long-term DEI initiatives reflective of the organization’s needs and the members it serves,” said Craig in the release.

Prior to accepting this role, Craig was assistant dean for inclusive excellence at the Purdue University College of Veterinary Medicine (CVM) in West Lafayette, Indiana. Purdue University CVM was the first veterinary college to be named a Diversity Champion by INSIGHT Into Diversity magazine.

FDA is accepting grant applications for new drugs to treat minor uses and minor species

The FDA has opened a call for grant applications to support the development and approval process of new drugs designed to manage uncommon diseases (minor uses) in major species (horses, dogs, cats, cattle, pigs, turkeys, and chickens) or to treat minor species.

The maximum individual award amount is $250,000 annually, up to 2 years for routine studies and 3 years for toxicity studies. Only animal drug sponsors with designated minor use/minor species (MUMS) drugs or their research partners are eligible to apply.

The grant program provides funds for studies on clinical effectiveness, target animal safety (TAS), human food safety, environmental safety, and certain manufacturing studies that are supportive of clinical effectiveness or TAS.

To meet eligibility requirements for the grant program, pharmaceutical sponsors developing MUMS drugs must have opened an investigational new animal drug (INAD) file with the FDA’s Center for Veterinary Medicine (CVM). They must also hold a MIMS designation for a specific drug and its intended use. Additionally, the CVM’s Office of New Animal Drug Evaluation must have reviewed and accepted the study protocol for the pharmaceutical sponsor. For their own eligibility, research partners are required to submit a letter to the INAD file identifying their partnership with pharmaceutical sponsors. Applications must be submitted by July 29, 2022.

To date, the MUMS grant program has provided more than $5.86 million in support of 64 studies. In January 2022, the FDA awarded a grant to AQUI-S New Zealand Ltd for $250,000, supporting an oral 2-generational reproductive toxicity study of eugenol in rats. This study is intended to support the human food safety technical section needed for approval of eugenol to sedate freshwater finfish for handleable condition.

The MUMS Act of 2004 provides innovative ways to bring products to small populations and helps veterinary pharmaceutical companies and research partners overcome the financial roadblocks they face developing drugs for a limited market.

Grants awarded through the MUMS program support the FDA’s continuing mission to ensure safe and effective drugs are available for a wide range of species and conditions. MUMS grants have been awarded for a variety of indications, including the treatment and control of parasitic and bacterial diseases in various fish species, the treatment of certain cancers in dogs, and some uses for horses, pheasants, and goats.

REFERENCES

The MUMS Act of 2004 provides innov-ative ways to bring products to small popu-lations and helps veterinary pharmaceutical companies and research partners overcome the financial roadblocks they face developing drugs for a limited market. Before this legis-lation, veterinary pharmaceutical companies and research partners would rarely attempt to bring such drugs to market.

Grants awarded through the MUMS program support the FDA’s continuing mission to ensure safe and effective drugs are available for a wide range of species and conditions. MUMS grants have been awarded for a variety of indications, including the treat-ment and control of parasitic and bacterial diseases in various fish species, the treatment of certain cancers in dogs, and some uses for horses, pheasants, and goats.

REFERENCES
Dog hydration 101

July marks National Pet Hydration Awareness Month. It’s an appropriate time to brush up on ways to help clients ensure that their pets stay hydrated and healthy while enjoying the sun.

In a dvm360® interview, Mariana Pardo, BVSc, MV, DACVECC, veterinary criticalist at Veterinary Emergency Group, said she sees dehydrated patients frequently in emergency medicine. “I think that celebrating something like [National Pet Hydration Awareness Month]...is wonderful because a lot of people don’t pick up on the fact that their pet is dehydrated until it’s really severe.”

**SIGNS OF CANINE DEHYDRATION**

Pardo explained that when a dog is dehydrated, the first signs are subtle and then continue to progress, so it’s important to recognize them early. Common symptoms include:

- loss of skin elasticity
- loss of appetite
- vomiting with or without diarrhea
- reduced energy levels and lethargy
- panting
- sunken, dry-looking eyes
- dry, sticky gums; and
- thick saliva.

A test that comes in handy to determine if a dog is dehydrated is examining the skin tent. “You’re just going to grab that loose skin, lift it completely up, and then see how many seconds it’s going to take for it to snap back. It should snap back within a second; anything more prolonged than that means that the patient potentially is dehydrated,” Pardo explained.

**TIPS TO KEEP PETS HYDRATED**

Understand the pet’s body language and dehydration signs

Pardo advises owners to get accustomed to examining their pet at home and learning their body language so they know what is “normal” for the dog and it’s clear when something is wrong. She also suggested they become informed about dehydration risk factors and symptoms to recognize.

**How much water should a dog drink in a day?**

Generally, each day canines should drink approximately 1 oz of water (1/8 c) per pound of body weight. But certain factors can affect this estimate. “[How much water a dog should be given each day] really is highly variable depending on what demand is placed upon [the pet]. If they’re exercising a lot in hot environments, if they have a disease where they don’t conserve water as well, all those things can play a role.” Laura Gaylord, DVM, DACVM (Nutrition), board-certified veterinary nutritionist and owner and founder at Whole Pet Provisions, PLLC, said in an interview with dvm360®.

“Is a pet excessively thirsty, or do they look more tired than usual? These are things that when you’re going out for a run or, let’s say, you’re taking your dog to the beach, that you should be looking out for to know, OK, maybe a patient’s going to become dehydrated,” Pardo said. “The more that you educate yourself on it, the more that you can try to prevent it.”

** Carry and provide enough water**

Collapsible bowls and dog-specific water bottles are available to take whenever leaving the house with a pet. At home, owners should provide a large water bowl or a fountain so an ample amount of water is available.

Gaylord offered a helpful tip. “If you’re worried about [your dog] not drinking enough, you can even flavor the water a little bit. I have pet owners putting in a little bit of chicken broth or a little flavoring that [the dog likes] in their water....That can go a long way in promoting drinking.”

Gaylord also suggested giving small amounts of ice cubes or adding water on top of wet or dry food.

**Don’t exercise dogs excessively in hot environments**

When dogs are active in the heat, their time outside should be limited. They should have enough water and access to areas of shade to cool down appropriately before they continue to play, Pardo said.

**Industry**

New York passes Puppy Mill Pipeline Bill

Several animal welfare groups have praised the New York State Assembly for passing the Puppy Mill Pipeline Bill (Senate Bill S1130) in June.¹ This groundbreaking legislation will end the retail sale of dogs, cats, and rabbits in pet stores across New York, according to an organizational release from the American Society for the Prevention of Cruelty to Animals (ASPCA).

Currently, out-of-state puppy mills ship their puppies to New York pet stores, and then they are marketed as healthy puppies from responsible breeders.² Unfortunately, most of these animals have several health conditions and behavioral issues, according to the ASPCA.³ The breeding dogs are often kept in crowded cages without adequate shelter, veterinary care, food, or socialization, according to the ASPCA.²

Multiple animal welfare groups support the bill, including ASPCA, Humane Society of the United States, New York State Animal Protection Federation, Voters for Animal Rights, Companion Animal Protection Society, Animal Legal Defense Fund, and the NYC Bar Association’s Animal Law Committee.¹

“Puppy mills breed cruelty. Banning the sale of dogs, cats, and rabbits in New York pet stores will deal the puppy mill...pipeline a near-mortal blow,” Assemblymember Linda B. Rosenthal (D, Manhattan) said in support of the bill. “The cute puppies, kittens, and bunnies in pet store windows mask a sad reality...Puppy, kitty, and bunny mills use and abuse animals to churn out pets for sale, which are often riddled with congenital diseases [and] cost unsuspecting consumers hundreds or thousands of dollars in veterinary bills and incalculable emotional stress.”²

Matthew E. Bershadker, ASPCA president and CEO, said, “Once signed into law, the Puppy Mill Pipeline Bill will finally end the sale of cruelly bred puppy mill dogs in pet shops across New York state, which has one of the country’s highest concentrations of pet stores that sell puppies.”² The bill now heads to Governor Kathy Hochul to sign into law.²

**REFERENCES**


**TIPS TO KEEP PETS HYDRATED**

Understand the pet’s body language and dehydration signs

Pardo advises owners to get accustomed to examining their pet at home and learning their body language so they know what is “normal” for the dog and it’s clear when something is wrong. She also suggested they become informed about dehydration risk factors and symptoms to recognize.

**REFERENCES**

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*In a field trial, Nocita reduced the need for post-op rescue pain treatment with opioids
**Cranial cruciate ligament

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dvm360®, the leading multimedia provider of animal health care communications, education, and research for veterinary professionals, is delighted to announce the winners of its second annual Veterinary Heroes™ recognition program. Inductees will be honored on Thursday, August 25, 2022, at the Fetch dvm360® Conference in Kansas City, Missouri!

Sponsored by Blue Buffalo Natural, Clevor, Phova, Dr. Treat, Merck, and Zoetis, the program celebrates the achievements of outstanding veterinary professionals who have worked to advance the field and make a difference in animal care.

“As a fellow veterinarian and the master of ceremonies, I am thrilled to congratulate the winners of this award,” said Adam Christman, DVM, MBA, in an organizational release. “It is truly an honor to be part of an essential profession whose hardworking practitioners go above and beyond the call of duty to help animals.”

THE 2022 VETERINARY HEROES™ WINNERS ARE AS FOLLOWS:

**Client Service Representative**
Beth LaBree—Gulf Coast Veterinary Specialists in Houston, Texas

**Dermatology**
James Noxon, DVM, DACVIM—Lloyd Veterinary Medical Center, Iowa State University College of Veterinary Medicine in Ames, Iowa

**Emergency Medicine**
Elizabeth Rozanski, DVM, DACVIM, DACVECC—Foster Hospital for Small Animals, Tufts University Cummings School of Veterinary Medicine in North Grafton, Massachusetts

**Equine Medicine**
Teresa Crocker, DVM, CVA, VSMT—North Coast Equine in Santa Rosa, California

**Feline Medicine**
Jennifer Conrad, DVM—The Paw Project in Santa Monica, California

**General Practitioner**
Jessica Price, DVM—Clinton Pet Vet in New York

**Internal Medicine**
Tammy Anderson, DVM, DACVIM—NorthStar VETS — Veterinary Emergency Trauma & Specialty Center in New Jersey

**Nutrition**
Donna M. Roditic, DVM, CVA, DACVIM—Nutrition and Integrative Medicine Consultants in Athens, Georgia

**Oncology**
Andi Flory, DVM, DACVIM—PetDX in La Jolla, California

**Practice Management**
Matt McGlasson, DVM, CVPM—Noah’s Ark Animal Clinic of Ft Wright, Kentucky

**Surgery**
Randi Ackers, DVM, DACVS—Sun Valley Animal Center in Ketchum, Idaho

The program is also recognizing Alexandre Contreras, VT—Express Pet Care in Homestead, Florida. For more information and to register for the Veterinary Heroes™ awards ceremony, visit the event webpage: https://bit.ly/3HTPkmx

REFERENCE
Thank you to all those who nominated Veterinary Heroes

Winners will be Honored at Fetch Kansas City!
When it comes to spay and neuter surgery, the veterinary profession has seen increases in advancement and public awareness in the past decade. Low-cost and mobile clinics have gained popularity, and high volumes of spay and neuter are performed at humane societies and shelters. As in all aspects of veterinary medicine, veterinarians are introducing new techniques to perform these procedures.

According to Kirk Miller, DVM, ABVP, although spay and neuter procedures have always been done a certain way, multiple techniques exist to perform these surgeries. He noted how important it is to keep up with changes in spay and neuter techniques during his lecture “Alternative Spay/Neuter Techniques” at the Fetch dvm360 conference in San Diego, California. Miller also broke down different procedures and treatments along with the research behind them.1

Kirill Miller, DVM, ABVP, explains different ways in which veterinary professionals can perform spay and neuter procedures as well as new research regarding 2 techniques.
**CANINE NEUTER**

### Prescrotal approach

The traditional procedure for neutering canines commonly taught in veterinary schools has been the prescrotal approach. According to Miller, the surgeon advances each testicle cranially to the scrotum and incises the skin and facial layers over each one. The surgeon then individually removes and double ligates the testicles.1

### Scrotal approach

To deal with high volumes of spay and neuter cases, the scrotal approach has been gaining popularity at veterinary schools. For this technique, the surgeon stabilizes each testicle and makes a single skin incision directly over the scrotum. The surgeon then removes each testicle and performs a double ligature or a ligature with a single knot.

After this procedure, the surgeon closes the subcutaneous or facial layer but may leave the incision open for drainage and healing by second intention. They may also close the incision with cyanoacrylate tissue adhesive.1 Proponents of this latter technique believe the tissue adhesive will give the surgical wound an immediate barrier along with its hemostatic and bacteriostatic properties, according to Miller.

### Sutureless scrotal castration

In a study published in the *Journal of the American Veterinary Medical Association* (JAVMA), multiple veterinarians, including Miller, investigated the scrotal approach and its benefits. From a group of 418 shelter dogs, researchers found that sutureless scrotal castration (SLSC) was safer and faster compared with traditional prescrotal castration (TPSC). The investigators also noted that SLSC had the potential to improve morbidity and mortality rates in canines.2

This newer method is used for pediatric and juvenile dogs in high-quality, high-volume spay/neuter facilities. For this technique, the surgeon makes a single incision on the ventral midline where both testicles are accessed. The surgeon may opt for an opening of the vaginal tunic or a closed castration. Following this, Miller explained, the testicles are individually exteriorized with the hemostat twisted to form an overhand knot in the spermatic cord. The surgeon then cuts the spermatic cord distal to the hemostat and places the cut end over the end of the hemostat to complete the knot. The scrotal skin incision is then closed using a cyanoacrylate surgical skin adhesive. However, Miller noted some surgeons opt to leave the incision open for draining and healing by second intention.1

According to the JAVMA study, the sutureless scrotal technique was demonstrated to be a safe and efficient castration method for juvenile and pediatric canines.2

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**FELINE SPAY**

### The traditional method

The traditional method taught at most veterinary schools involves the double ligation of the ovarian pedicle. The surgeon performs a ventral midline celiotomy and locates the uterus using a spay hook (or Snook hook). After placing a hemostat on the proper ligament, the surgeon tears the ligament with the hemostat or cuts it with a scalpel blade. This allows the ovary to be exteriorized.

Next, the surgeon creates a window within the broad ligament to isolate the ovarian pedicle and places a hemostat across the vascular pedicle proximal to the ovary. Two different absorbable suture ligatures are placed around the pedicle prior to transection. The surgeon then repeats this procedure on the other side before exteriorizing and double ligating the uterine body. At the discretion of the surgeon, a transfixing suture may be considered. After removing the uterus and both ovaries, the surgeon closes the incision.1

### Pedicle tie

For this technique, the ovarian pedicle is “auto-ligated” in the same manner that a surgeon ties the spermatic cord on itself in feline castration. For this ventral procedure, the surgeon performs a midline celiotomy and locates the uterus using a spay hook. Then, after placing a hemostat on the proper ligament, the surgeon tears the ligament with the hemostat or cuts it with a scalpel blade. By doing this, the surgeon allows the ovary to be well exteriorized and creates a window within the broad ligament to isolate the feline’s ovarian pedicle.

Miller explained that through this procedure, a hemostat is directed parallel to the ovarian vascular pedicle and pointed in a proximal direction. The surgeon twists the hemostat to form a simple overhand knot in the vascular pedicle, then cuts it distal to the hemostat. To complete the knot, the surgeon slips the cut end over the end of the hemostat, then repeats the procedure on the other side.

After removing the uterus and both ovaries, the surgeon closes the incision. One may close the incision using an intradermal suture pattern or a cyanoacrylate surgical skin, Miller explained.1

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**CONCLUSION**

Whether veterinary professionals stick to the traditional procedures of spaying and neutering or change to a new method, Miller stressed the importance of doing research to evaluate these techniques and their safety. He hopes that veterinary professionals will welcome recent graduates with experience in these techniques as well as those who would like to learn more about them. Miller believes educating yourself on the new techniques, even if you like the traditional ones, has the potential to make these important treatments safer.1

References available online at dvm360.com
Projections and direction in parasite protection

Vector-borne parasitic diseases are pushing the boundaries of their traditionally endemic regions. A panel of clinicians explains what you need to know.

BY BOB ALABURDA, SENIOR EDITOR

The Companion Animal Parasite Council (CAPC) predicts heartworm disease, Lyme disease, anaplasmosis, and ehrlichiosis all pose "higher than average risks" throughout the US in 2022. CAPC prevalence maps show heartworm infections continuing to trend northeast into the mid-Atlantic region, while Lyme disease continues its march into the southwest. With today’s increasing risks of these vector-borne parasitic diseases and an ever-changing geographic prevalence of the parasites that cause them, an in-depth discussion on parasitic prevention is as critical as ever.

To examine these alarming trends, dvm360’s Chief Veterinary Officer Adam Christman, DVM, MBA hosted a panel discussion with expert clinicians Katina Carter, DVM; Bill Carter, DVM; and Kara Johnson, pet parent and veterinary technician. The group shared their thoughts on the forces driving these trends, their current preventive strategies, and how to get better buy-in on preventive treatment from staff and pet parents alike.

A VIEW FROM THE FRONT LINE

Reflecting on the CAPC forecasts, the group all felt their anecdotal experiences in practice agreed with the prevalence data. “When I look back, even just 10 years ago, I don’t think we’ve seen such a variety tick-borne diseases and intestinal parasites that we’re seeing now,” said Christman.

Both Katina and Bill Carter said they are seeing an increase in these cases in their clinic based in southern New Jersey. “We’re seeing more heartworm, which I typically didn’t see in the New Jersey area as much,” said Bill Carter. “That’s kind of scary,” he added. Both clinicians mentioned treating an increased number of cases of hookworm, whipworm, giardia, and ehrlichiosis over the past few years.

A HIDDEN FACTOR

Why are vector-borne parasitic diseases spreading beyond their typical geographic regions of prevalence (such as Lyme disease in the northeastern US)? The group touched on several factors that may play a role, such as climate change resulting in warmer, wetter...
A 2020 study found that
85%
of dog parks tested positive for parasites.3

winters and the rapidly growing rate of pet ownership in US households.1

The discussion then turned to one factor in the spread of parasitic diseases that may be flying under pet parents’ radar: the rise of dog parks. Christman prompted the panel for their thoughts on a 2020 study in Parasites & Vectors that sought to assess the prevalence of gastrointestinal parasites in dogs visiting off-leash dog parks. The study ultimately found intestinal parasites in 20% of dogs and 85% of dog parks across the country, stating routine administration of parasitic preventives can help reduce the health risk canines in the US.2

“Dog parks are basically a daycare where nobody checks your vaccine records,” said Bill Carter. Commenting on the data, he said, “Because of the way they shed eggs…tapeworms and flukes…those are probably underrepresented in the study.” He added, “That data that were collected came from July and August. That tends to be when the parasite burdens are the lowest because of the hot temperatures. The fact that we’re seeing this high burden in the middle of the summer makes me wonder what’s really going on in winter.”

“…which is exactly the opposite of what clients think,” Katina Carter pointed out.

“They think the snow destroys everything,” said Bill Carter. “It doesn’t work that way.”

Johnson said, “It definitely makes me feel good that I don’t go to dog parks. It’s sad to think that I can’t take the dogs to go play with friends, because I have to worry about them picking up intestinal parasites or really any sort of infectious disease from other dogs.”

AN OUNCE OF PREVENTION

Of course, veterinary professionals are not helpless at the mercy of current trends. So how can clinicians help turn the tide?

Proactive screening

Katina Carter feels that veterinarians should place a greater emphasis on proactively taking stool samples, due to the ever-present issue of noncompliance or imperfect compliance with preventive medications. “I don’t think that in general practice we make a big enough deal about stool samples…It needs to be done one a once a year.”

Bill Carter jumped in, adding, “A lot of the [patients] coming in are completely asymptomatic and shedding. We’re finding roundworms and sometimes hookworms—and these are animals that are not coming in for diarrhea. They’re not sick. They’re just the clients who have a lapse in their prevention.”

Getting them hooked when they’re young

Each of the panel guests stressed the importance of year-round parasite prevention. They each recommend to patients—and give to their own pets—a combination of parasite preventive medications that defend against a broad spectrum of parasites. All 3 spoke about their experiences with Credelio (lotulinar) for flea and tick protection andInterceptor Plus (milbemycin oxime/praziquantel) for prevention of heartworm disease and controlling roundworm, hookworm, whipworm, and tapeworm infections in dogs.

Johnson partially attributed her choice to the medications being indicated for puppies as young as 6 weeks and 8 weeks old, respectively. “As soon as we can start prevention, that is very important,” said Johnson. “I rescued [my dog] at nine weeks [old], so it was perfect that I didn’t have to feel uncomfortable giving [the medications] that young.”

Commenting on how this low age requirement helps with compliance, Christman said, “That’s a big sticking point. The point is that they can just transition all the way [to taking the medications] for the rest of their life. Other ones, you have to wait until they’re 6 months of age.”

Katina Carter added, “We also give them free doses the first time they come in as they’re growing so that it’ll just become a habit. By the time we finish seeing them, they’re already 4 or 5 months old and usually, can be on their adult dose and just get the whole year’s [supply of medication].”

Broad-spectrum parasite protection

Christman described this as “360-degree protection,” as the preventative regimen offers protection against 5 worms plus fleas and ticks. Johnson responded, “It’s all-around protection, and it makes me feel confident…it’s hitting all the bases, so everything is covered: heartworm, intestinal parasites, fleas and ticks...everything.”

Katina Carter said, “In the end, [prevention] can make our job easier...being proactive instead of reactive.”

Christman added, “As veterinarians, we don’t have a lot of time to really go over all the recommendations, so that’s one less thing for us to worry about. Having peace of mind knowing that the safety efficacy is in your flea and tick, heartworm, and parasite prevention, we can worry about other things [like] behavior, endocrinopathies, [and so on]. It’s always good to hear, knowing that you as a team feel confident about what you’re recommending that goes out that door.”

REFERENCES
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86% expected 5-worm coverage instead of 3 worms when requesting comprehensive protection from their veterinarian.¹

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Interceptor Plus is indicated for the prevention of heartworm disease caused by *Dirofilaria immitis* and for the treatment and control of adult roundworm (*Toxocara canis*, *Toxascaris leonina*), adult hookworm (*Ancylostoma caninum*), adult whipworm (*Trichuris vulpis*), and adult tapeworm (*Taenia pisiformis*, *Echinococcus multilocularis*, *Echinococcus granulosus* and *Dipylidium caninum*) infections in dogs and puppies 6 weeks of age or older and 2 pounds of body weight or greater.

Interceptor Plus Important Safety Information
Treatment with fewer than 6 monthly doses after the last exposure to mosquitoes may not provide complete heartworm prevention. Prior to administration of Interceptor Plus, dogs should be tested for existing heartworm infections. The safety of Interceptor Plus has not been evaluated in dogs used for breeding or in lactating females. The following adverse reactions have been reported in dogs after administration of milbemycin oxime or praziquantel: vomiting, diarrhea, depression/lethargy, ataxia, anorexia, convulsions, weakness, and salivation. For full prescribing information see Interceptor Plus package insert.

Credelio Indications
Credelio kills adult fleas and is indicated for the treatment and prevention of flea infestations (*Ctenocephalides felis*) and the treatment and control of tick infestations (*Amblyomma americanum* (lone star tick), *Dermacentor variabilis* (American dog tick), *Ixodes scapularis* (black-legged tick) and *Rhipicephalus sanguineus* (brown dog tick)) for one month in dogs and puppies 8 weeks of age and older and weighing 4.4 pounds or greater.

Credelio Important Safety Information
Lotilaner 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 this class of 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 Credelio in breeding, pregnant or lactating dogs has not been evaluated. The most frequently reported adverse reactions are weight loss, elevated blood urea nitrogen, polyuria, and diarrhea. For full prescribing information see Credelio package insert.


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Healing orthopedic injuries

Have you had a lameness case that wouldn’t get better? It could be a good time to try a different approach.

## Credelio (lotilaner)

**Chewable Tablets**

For oral use in dogs

**Caution:**

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

Before using Credelio, please consult the product insert, a summary of which follows:

**Indications:**

CREDIELIO kills adult fleas and is indicated for the treatment and prevention of flea infestations (Ctenocephalides felis) and the treatment and control of tick infestations (Amblyomma americanum lone star tick, Dermacentor variabilis (American dog tick), Ixodes scapularis (black-legged tick) and Rhipicephalus sanguineus (brown dog tick)) for one month in dogs and puppies 8 weeks of age and older, and weighing 4.4 pounds or greater.

**Dosage Administration:**

CREDIELIO is given orally once a month, at the minimum dosage of 9 mg/lb (20 mg/kg).

### CREDIELIO Group

<table>
<thead>
<tr>
<th>Weight Range (lbs)</th>
<th>Credelio Per Chewable Tablet (mg)</th>
<th>Chewable Tablets Administration</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.4 to 6.6 lbs</td>
<td>36.25</td>
<td>One</td>
</tr>
<tr>
<td>6.7 to 12.0 lbs</td>
<td>112.5</td>
<td>One</td>
</tr>
<tr>
<td>12.1 to 25.0 lbs</td>
<td>225</td>
<td>One</td>
</tr>
<tr>
<td>25.1 to 50.0 lbs</td>
<td>450</td>
<td>One</td>
</tr>
<tr>
<td>50.1 to 100.0 lbs</td>
<td>900</td>
<td>One</td>
</tr>
</tbody>
</table>

### Active Control Group:

<table>
<thead>
<tr>
<th>Weight Range (lbs)</th>
<th>Credelio Per Chewable Tablet (mg)</th>
<th>Chewable Tablets Administration</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.4 to 6.6 lbs</td>
<td>36.25</td>
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<td>One</td>
</tr>
<tr>
<td>50.1 to 100.0 lbs</td>
<td>900</td>
<td>One</td>
</tr>
</tbody>
</table>

**CREDIELIO must be administered with food** (see Clinical Pharmacology).

**Treatment with CREDIELIO can begin at any time of the year and can continue year-round without interruption.**

**See product insert for complete dosing and administration information.**

**Contraindications:**

There are no known contraindications for the use of CREDIELIO.

**Warnings:**

Not for human use. Keep this and all drugs out of the reach of children.

Keep CREDIELIO in a secure location out of reach of dogs, cats, and other animals to prevent accidental ingestion or overdose.

**Precautions:**

Lotilane 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 CREDIELIO in breeding, pregnant or lactating dogs has not been evaluated.

**Adverse Reactions:**

In a well-controlled U.S. field study, which included 284 dogs (198 dogs treated with CREDIELIO and 86 dogs treated with an oral active control), there were no serious adverse reactions.

Over the 90-day study period, all observations of potential adverse reactions were recorded. Reactions that occurred at an incidence of 1% or greater are presented in the following table.

<table>
<thead>
<tr>
<th>Adverse Reaction (AR)</th>
<th>CREDIELIO Group: Number and Percent of Dogs with the AR (n=198)</th>
<th>Active Control Group: Number and Percent of Dogs with the AR (n=86)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight Loss</td>
<td>3 (1.5%)</td>
<td>2 (2.3%)</td>
</tr>
<tr>
<td>Elevated Blood Urea Nitrogen (BUN)</td>
<td>2 (1.0%)</td>
<td>0 (0.0%)</td>
</tr>
<tr>
<td>Phosphorus</td>
<td>2 (1.0%)</td>
<td>0 (0.0%)</td>
</tr>
<tr>
<td>Cholesterol</td>
<td>2 (1.0%)</td>
<td>2 (2.3%)</td>
</tr>
</tbody>
</table>

*Two geriatric dogs developed mildly elevated BUN (24 to 54 mg/dL; reference range: 6 to 31 mg/dL) during the study. One of these dogs also developed pancytopenia and a mildly elevated potassium (6.5 mEq/L; reference range: 3.6 to 5.5 mEq/L) and phosphorus (6.4 mg/dL; reference range: 2.5 to 6.0 mg/dL). The other dog also developed a mildly elevated creatinine (1.7 to 2.0 mg/dL; reference range: 0.5 to 1.6 mg/dL) and weight loss.

In addition, one dog experienced intermittent head tremors within 1.5 hours of treatment, an ear cleaning performed by the owner, and its first dose of CREDIELIO. The head tremors resolved within 24 hours without treatment.

The owner elected to withdraw the dog from the study.

In an Australian field study, one dog with a history of seizures experienced seizure activity (tremors and glazed eyes) six days after receiving CREDIELIO. The dog recovered without treatment and completed the study. In the U.S. field study, two dogs with a history of seizures received CREDIELIO and experienced no seizures throughout the study.

In three well-controlled European field studies and one U.S. laboratory study, seven dogs experienced episodes of vomiting and four dogs experienced episodes of diarrhea between 6 hours and 3 days after receiving CREDIELIO.

To report suspected adverse events, for technical assistance or to obtain a copy of the Safety Data Sheet (SDS), contact Elanco US Inc. at 1-888-545-5973. For additional information about adverse drug experience reporting for animal drugs, contact FDA at 1-888-FDA-VETS or http://www.fda.gov/reportanimalae.

**Effectiveness:**

In well-controlled European laboratory studies, CREDIELIO began to kill fleas four hours after administration or infestation, with greater than 99% of fleas killed within eight hours after administration or infestation for 35 days. In a well-controlled U.S. laboratory study, CREDIELIO demonstrated 100% effectiveness against adult fleas 12 hours after administration or infestation for 35 days.

In a 90-day well-controlled U.S. field study conducted in households with existing flea infestations of varying severity, the effectiveness of CREDIELIO against fleas on Days 30, 60 and 90 compared to baseline was 95.5%, 100% and 100%, respectively. Dogs with signs of flea allergy dermatitis showed improvement in erythema, papules, scaling, alopecia, dermatitis/pyodermatitis and pruritus as a direct result of eliminating fleas.

In a well-controlled laboratory study, CREDIELIO killed fleas before they could lay eggs, thus preventing subsequent flea infestations for 30 days after the start of treatment of existing flea infestations.

In well-controlled laboratory studies, CREDIELIO demonstrated > 97% effectiveness against Amblyomma americanum, Dermacentor variabilis, Ixodes scapularis and Rhipicephalus sanguineus ticks 48 hours after administration or infestation for 30 days. In a well-controlled European laboratory study, CREDIELIO started killing Ixodes ricinus ticks within four hours after administration.

**Storage Information:**

Store at 15-25°C (59-77°F), excursions permitted between 5 to 40°C (41 to 104°F).

**How Supplied:**

CREDIELIO is available in five chewable tablet sizes for use in dogs: 56.25, 112.5, 225, 450, and 900 mg lotilaner.

Each chewable tablet size is available in color-coded packages of 1, 3 or 6 chewable tablets.

**Approved by FDA under NADA 6 141-494**

**Manufactured for:**

Elanco US Inc
Greenfield, IN 46140 USA
Credelio.com

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# Orthopedics

**TREATMENT PROTOCOL**

The patient received extracorporeal shock wave therapy (ECSTW) therapy followed by intraarticular and...
interoasal platelet-rich plasma (PRP) therapy to both shoulders for a series of 3 treatments 2 weeks apart. The treatment of shoulder tendinopathy in both ECSW and PRP is well documented. In addition, the patient received formal rehabilitation therapy for 6 weeks along with instructions for activity restriction and a home exercise program designed to strengthen the shoulder stabilizers and core musculature. She did beautifully, and the lameness resolved.

Unfortunately, the lameness recurred when she returned to day care 4 months later. She presented non-weight bearing lameness on her right front limb and severe pain upon palpation and stretching of her right biceps tendon. Understandingly, the owner was frustrated to see her dog reexperiencing lameness after all she had invested. She expressed it was impossible to restrict her pet’s activity. She described her dog as “crazy” and having attention deficit hyperactivity disorder (ADHD). This is when we called Steve Dale. In addition to my prescriptions to help with behavior modification (trazodone 5 mg/kg by mouth 3 times a day, gabapentin 10 mg/kg by mouth 3 times a day, and Purina Calming Care supplement), Steve prescribed a no-pull harness (Ruffwear Web Master Harness and PetSafe Easy Walk Dog Harness). We may try to avoid anthropomorphizing, but dogs may experience disorders similar to ADHD. Questionnaires have been developed to help identify such conditions in dogs. To address our patient’s ADHD symptoms, we recommended introducing more enrichment and relaxation protocols like dog puzzles, unpredictable feeding times, and hidden food and treats around the house. She was also enrolled in noise work classes, which stimulated her mind without putting her body at risk for reinjury. The no-pull harness made it easier for the owner to walk her in a controlled manner, allowing her to exercise safely and regularly.

As our patient learned the new behavior techniques and resumed rehabilitation and appropriate exercise modification, her lameness resolved and has not recurred. The combined approach of our rehabilitation strategies and behavioral medication allowed our rambunctious Bernedoodle to finally heal and be happy again.

**REFERENCES**

Addressing multimodal PAIN MANAGEMENT with 3 novel approaches

See how clinicians tackle pain management from new angles

Written by Bob Alaburda, Senior Editor

On the frontiers of science, research, and medicine, new treatment modalities constantly emerge. When considering treatment options for multimodal pain management in small animals, clinicians should have the proper tools in their toolbox. Here are 3 techniques beginning to garner attention:

1. FEAR FREE TECHNIQUES

Steve Dale, CABC, and Leilani Alvarez, DVM, DACVSMR, CVA, CCRT, presented their session “Pain Can Be Healed: Multimodal Now Includes Dog Training” at the 2022 Fetch dvm360® Conference in Charlotte, North Carolina. The pair drew parallels to human medicine research showing how stress, anxiety, depression, and other negative moods can increase the perception of pain. In studies examining chronic lower back pain, total hip replacement, and total knee arthroplasty, fear and anxiety surrounding pain worsened outcomes in terms of pain perception and function. Conversely, they said, a positive outlook led to lower levels of pain and disability in one study. Results of another study showed a significant reduction in pain for 12 months when antidepressants were combined with a pain management plan.

The presenters said this evidence suggests a link between state of mind and pain perception, pointing to cognitive strategies for pain management in humans as a guideline for reducing fear, stress, and anxiety in animal patients. They recommended investigating Fear Free Certification, a program that educates veterinary professionals on techniques for preventing and alleviating negative emotions in their patients. The goal is to reduce stress, anxiety, and fear for the pet as part of a multimodal approach to pain management.

2. BEHAVIORAL TRAINING

Dale and Alvarez explained that behavior can lead to chronic soft tissue injuries. "I see, particularly in small dogs, jumping on and off the furniture all day long. They're landing on slippery surfaces, breaking down that carpal cartilage, and it presents to me as carpal hyperextension injuries," said Alvarez.

The pet may recover from or prevent such injuries by undergoing customized behavioral training designed to eliminate or modify the offending behavior. The patient may achieve this with in-home or virtual visits from an animal behavioralist or a care plan from a veterinarian. "We want to not only prevent the injury from recurring [but also] prevent new injury as well," said Dale.

3. HYPERBARIC OXYGEN THERAPY

For years, physicians have widely used hyperbaric oxygen therapy (HBO) in human medicine to treat patients with many conditions including decompression sickness, serious infections, nonhealing wounds, and anemia. Its use in veterinary medicine is relatively new, with research still emerging and a limited number of veterinary hospitals in the United States employing the modality.

During HBO, the animal is placed safely and comfortably in a chamber with an atmosphere composed of 100% oxygen and a pressure 1.5 to 3 times above normal atmospheric pressure, thereby allowing more oxygen to the tissues throughout their body. According to the University of Florida College of Veterinary Medicine Small Animal Hospital, this treatment generally results in a reduction in swelling, stimulation of new blood vessel formation into the healing/swollen tissue, a reduction in pressure caused by head or spinal cord injuries, improved [wound] healing, and improved infection control. Although currently limited to a small number of veterinary hospitals, HBO presents a possible new modality for pain management on the horizon pending further research.

References available online at dvm360.com
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¹Double-blind, placebo-controlled canine clinical studies with Royal Veterinary College 2015 (Data on file & School of Veterinary Science, Massey University 2020 (Manuscript in preparation)
²Study conducted by Royal Veterinary College. Data on file. ³Kynetec VetTrak, April 2022. Sales of YuMOVE® branded products through veterinary wholesalers. ³Brand Tracking Study, April 2022
Diagnose what’s going on with the skin of this English bulldog and keep reading for the pathogenesis of the disease and management options.

A 4-year-old spayed English bulldog presented with acute onset skin lesions. Her owners had just traveled across the state, and several days after returning home, noticed red bumps on her skin. She was not reported to be pruritic, but her skin lesions rapidly worsened.

On physical examination the dog was quiet, alert, and responsive with a rectal temperature of 102.5 °F. Her skin was painful to the touch. Clinical pictures of her skin lesions are shown in Figures 1, 2, and 3. Cytology of an intact pustule is shown in Figure 4.

Based on this information, what differential should you consider?

A. Allergies
B. Pemphigus foliaceus
C. Cutaneous lupus erythematosus
D. Superficial staphylococcal folliculitis

Answer: B. Pemphigus foliaceus

This dog’s history, clinical picture, and cytologic findings were consistent with the subcorneal pustular disease pemphigus foliaceus (PF). Additional differentials to consider included cutaneous adverse drug reaction, severe staphylococcal folliculitis and furunculosis, and acantholytic dermatophytosis.1

PF is the most common autoimmune blistering disease in dogs.2 A cytologic hallmark of PF is inflammation characterized by acantholytic keratinocytes (the large purple cells shown on Figure 4) admixed with neutrophils, with or without eosinophils. This acantholysis occurs because of the production of autoantibodies targeting desmocollin 1 in the desmosome, the glue that holds the keratinocytes together.2,3

“PF may occur spontaneously in dogs of any age and with no known trigger. It is also possible that the development of PF may be due to an adverse cutaneous drug reaction therefore a thorough drug history is always warranted.4 In this patient, the recent travel may have been a stressful trigger that induced her PF.”

On dermatologic examination, this dog had numerous pustules with severe secondary crusting affecting her face, pinnae, paw pads, dorsum, ventrum, and limbs. An excellent differential for a pustular crusting disease is staphylococcal folliculitis. Staphylococcal infections, however, rarely affect several select locations on the dog such as the face, pinnae, and paw pads. When pustular crusted lesions are observed in these locations, an autoimmune disease such as PF should be prioritized as a differential. The definitive diagnosis of PF should be made with skin biopsies and histopathology because treatment involves long-term immunosuppression.4

Including intact pustules and crusts in the biopsy samples is crucial because PF cases often have few to no changes in the dermis.5 Biopsies taken of this dog confirmed the clinical suspicion of pemphigus foliaceus.

Glucocorticoids at immunosuppressive doses, accompanied by a concurrent immunosuppressive therapy (cyclosporine, azathioprine, mycophenolate, doxycycline/niacinamide, or chlorambucil) are typically recommended for treatment.6 Spontaneous PF will likely need to be treated for the life of the pet, which is why glucocorticoids as sole therapeutics are not recommended in dogs. No 2 patients respond the same to treatment, so trial and error may be required to establish the most suitable immunosuppressive protocol for that individual.

For this patient, treatment was initiated with dexamethasone (0.2mg/kg orally, once daily) and mycophenolate (12.5mg/kg orally, twice daily) for immunosuppression and doxycycline (5mg/kg twice daily) based on culture and susceptibility for the secondary infection. Significant clinical improvement occurred in the month following treatment initiation, and the dexamethasone was gradually tapered until remission was maintained with twice-daily mycophenolate and twice-weekly dexamethasone at 0.03 mg/kg.

References available online at dvm360.com
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Local analgesic techniques for gonadectomy: focus on intraperitoneal lavage

An expert provides answers to frequently asked questions

More than 53 million pet dogs (69% of total US dog population) and approximately 47 million pet cats (80% of the total US cat population) had been gonadectomized in the US at the time of the most recent pet ownership survey (2016), according to data from the American Veterinary Medical Association. Surgical pain is most effectively controlled using multimodal analgesia, which should include local anesthetic blockade. Advantages of local anesthetics include intraoperative nociception and postoperative pain relief that predictably extends beyond the expected duration of the drug.

Generally, local anesthetics are inexpensive and easy to use. Local anesthetic techniques for gonadectomies include peritoneal lavage and testicular block, which are both highly effective and easy to perform. This article focuses on intraperitoneal lavage, and testicular blocks will be covered in a future issue.

**INTRAPERITONEAL LAVAGE FOR OVARIOHYSTERECTOMY (OHE)**

To lavage the peritoneal cavity, first desensitize the incision site by injecting local anesthetics into the skin and subcutaneous tissues. Follow this with surgically incising the skin and abdominal wall, then injecting (or instill or squirt) a standard dose of local anesthetic (Table) into the abdomen through the incision using a sterile syringe (no needle). The drug can be injected immediately after the abdominal wall is incised (more effective) or immediately prior to closing the abdominal incision (may be more practical because the drug isn’t absorbed by sponges used to control bleeding).

At completion of the OHE, close the incision per routine surgical protocol, leaving the drug in the abdomen. This technique desensitizes the serosal surfaces in the abdominal cavity, including ovarian and uterine tissues. Efficacy and safety studies have been done for intraperitoneal lavage in both dogs and cats for the drugs listed in the Table. In human medicine, intraperitoneal lavage is used not only for hysterectomies but also to decrease intraoperative nociception and postoperative pain from other abdominal surgeries, including cesarean section. Intraperitoneal lavage is commonly used for these surgeries in veterinary medicine.

Although no research is yet published, experts commented that “it is our consensus that [incisional and intraperitoneal local anesthetic administration] should be used for any type of abdominal surgery.

**FREQUENTLY ASKED QUESTIONS**

**Should the syringe tip be directed toward the mesovarium ligaments and uterine body to direct the drug administration to the surgical sites?**

This has been described as an option, but the impact on efficacy is unknown.

**Is there a concern of uptake of the drug into the blood stream?**

See safety studies listed in the Table.

**Which drugs are preferred for this technique?**

The longer-duration drugs, bupivacaine and ropivacaine, are preferred for this technique.

**Is the amount of drug needed for the incisional block included in the total volume of local anesthetic to be injected?**

Yes, but the volume used in the skin is minimal for an OHE, so most of the drug is instilled into the abdomen. The high end of the dose range is recommended for this technique.

**Is the amount of lidocaine used on the arytenoids for intubation included in the total volume of local anesthetic to be injected?**

No; this requires only a few drops of lidocaine.

**Table. Drug Dosage and Safety**

<table>
<thead>
<tr>
<th>Drug</th>
<th>Dose/species</th>
<th>Comments</th>
</tr>
</thead>
</table>
| Lidocaine| 2-4 mg/kg (cats), 4-6 mg/kg (dogs) | In a safety study in dogs, 8.8 mg/kg (intraperitoneally) plus 2 mL incisional lidocaine caused no adverse effects. Lidocaine plasma concentrations were below toxic levels after 8 mg/kg intraperitoneally plus 2 mg/kg incisional.
| Bupivacaine| 1-2 mg/kg (cats), 2-4 mg/kg (dogs) | In the study listed above, 4.4 mg/kg bupivacaine (intraperitoneally) plus 2 mL incisional bupivacaine caused no adverse effects. The 2 mg/kg bupivacaine administered intraperitoneally to cats resulted in low serum concentration and no signs of toxicosis.
| Ropivacaine| 1-2 mg/kg (cats), 2-4 mg/kg (dogs) | Efficacy and safety are predicted to be similar to bupivacaine. |

For references, visit dvm360.com.
Get the drop on toxicology emergencies

Erik Zager, DVM, DACVECC, discusses animal toxicity emergencies and a new eye drop emetic for dogs.

written by BOB ALABURDA, SENIOR EDITOR

Pet toxicity cases are on the rise in the United States, with the ASPCA (American Society for the Prevention of Cruelty to Animals) Animal Poison Control Center reporting that it handled 401,550 such cases in 2021, a 22% increase from 2020. To help clinicians address this issue, Erik Zager, DVM, DACVECC, joined dvm360 Live to discuss animal toxicity treatment options. Zager is a board-certified emergency and critical care specialist and co-department head of the emergency and critical care services at Philadelphia Animal Specialty & Emergency in Pennsylvania. Zager and host Adam Christman, DVM, MBA, examined common pet toxins and explored a new FDA-approved drug called Clevor (ropinirole ophthalmic solution) from Vetoquinol for inducing vomiting in dogs.

COMMUN TOXICITY EMERGENCIES

Zager began with a primer on some common categories of toxicities for which veterinary professionals should be prepared. Nearly half of all calls received by Pet Poison Helpline involves animals ingesting human medication, but Zager added that veterinary medication can also cause an emergency: “We see human medications that dogs ingest accidentally. [We see] veterinary medications also. Sometimes a dog is supposed to be on 1 tablet of pain medication and gets into the whole bottle.”

Adding to the list of common toxicities he sees in practice, Zager stated, “We see plants around the house that have certain toxicities. Recreational drugs can be a big thing, especially with legalization of marijuana [being] prevalent, and we see a lot of marijuana ingestion.”

POISON CONTROL AND RESPONSE TIME

Christman commented on the importance of response time in emergency cases and asked Zager about when to involve a third-party poison control service. Zager said, “As an emergency doctor, if someone calls about chocolate [toxicity], I know exactly how to calculate how much chocolate [their dog has ingested]. I can have them come right in and get [the dog] to vomit.” However, Zager said, “Certain types of human prescription drugs or other types of chemical products, cleaning things [are also] toxic to dogs...As much as I'd like to know all the things in the world, I don't have a complete repository of every toxin in my brain. So having them call poison control is sometimes helpful because they can calculate the toxic dose and figure out what the treatment steps are.”

NEW AND TRADITIONAL EMETIC AGENTS FOR DECONTAMINATION

On treating the emergency in the clinic, Zager said, “Decontamination is one of our first steps, and so [we induce] emesis or vomiting...Traditionally, apomorphine was the go-to, but luckily now there’s an FDA-approved drug [called] Clevor. It’s actually an eye drop, so [it is] very easy to administer [with] very good efficacy to induce emesis.”

Diving into the details of the drug, Zager added, “[Clevor] comes in little individual packets, open them right up, and then it’s just a little eye dropper. The packets tell you exactly how many eye drops go in [and] whether to split it between the 2 eyes, if the patient has 2 eyes. Emesis usually happens within 20 to 30 minutes. You can [administer the dose] a second time if they don’t vomit, but [it’s] pretty quick [and] efficacious in getting them to vomit. Again, [it’s a] very important step in the decontamination process.”

He also explained how to stop vomiting after it has been induced: “Similar to morphine, [Clevor] does have ability for reversal [with] just a dose of metoclopramide. And luckily, you get them to stop vomiting because oftentimes the next treatment is activated charcoal. Giving a patient who’s already vomiting activated charcoal can sometimes be difficult, so it’s important to be able to get them to stop vomiting as quickly as you get them to start.”

CLOSING WORDS

To wrap up his thoughts on the new drug, Zager said, “We’re past syrup of ipecac at this point. We got into apomorphine, but [away from] what you’re used to, but veterinary medicine is about making sure you’re up-to-date, embracing new products, and advancing your practice every day.”

REFERENCES


Sometimes it’s a little difficult to get [away from] what you’re used to, but veterinary medicine is about making sure you’re up-to-date, embracing new products, and advancing your practice every day.”

—Erik Zager, DVM, DACVECC
Editor’s note: This article is one in a series on the ABCs of veterinary dentistry for the general practitioner.

“When you hear hoofbeats, do not look for zebras.” This notion was drilled into our consciousness during the clinical years at veterinary school. This is usually true in dentistry, but thanks to modern imaging and diagnostics, there are surprises we call zebras. You do not know what you are going to find unless you take the time to open the mouth and examine each tooth using periodontal probes, explorers, test strips, and imaging.

Some zebra examples are as follows:

1 SKIN LESIONS THAT ARE MORE THAN SKIN DEEP

Figure 1A shows presentation of apparent ventral neck skin lesions. Differential diagnosis included bite wounds from a dog, cat, snake, or spider. In Figure 1B, skin lesions are prepped. In Figure 1C, a mouth examination revealed advanced periodontal disease, the proximate cause of the skin lesions, which were extensions of dental disease. A radiograph of the right mandible revealed marked periodontal disease affecting the right and left mandibular first and second molars. Figure 1D shows the right mandibular first and second molars extracted. Figure 1E presents the left mandibular first and second molars and fourth premolar affected by advanced periodontal disease.

2 UNCOMPLICATED TOOTH FRACTURES

Dogs and cats often fracture some of the enamel and dentin on their teeth after chewing on antlers, bones, nylon toys, or rocks. Unless the pulp is exposed, we do not pay much attention. Anatomically, there are tubules that travel from the pulp through the dentin ending below the enamel. When the dentin layer is breached, these tubules may communicate discomfort from pressure and cold or hot temperatures. They may also act as a path for oral bacteria to infect the pulp. All fractured teeth must be radiographed and monitored.

Figure 2A shows uncomplicated right mandibular first molar fractures. Figure 2B presents intraoral radiograph of the right mandible with periapical lucencies.

3 THE “ROUTINE” DENTISTRY

There is rarely a routine dental procedure in clinical practice compared to human dentistry where patients present with clean teeth to have them cleaned more thoroughly. Our veterinary dental patients are presented by caregivers who are uncomfortable with oral malodor. Halitosis is a sign of a condition in the mouth that commonly occurs secondary to periodontal pockets that hold malodorous decomposing food and oral debris. In some zebra cases, comorbidities such as kidney disease and diabetes promote the progression of advanced periodontal disease.

Figure 3A shows the left mandible of an older dog with moderately elevated levels of blood urea nitrogen, creatinine, symmetric dimethylarginine, and serum phosphorus as well as moderate plaque and tartar that were presented for routine dentistry. Figure 3B presents intraoral radiograph of the right mandible with periapical lucencies.
Are your patients getting the canine osteoarthritis (OA) pain and inflammation relief they need?

Recommend Galliprant as first-line treatment

- FIRST-IN-CLASS non-COX inhibiting NSAID
- MODE OF ACTION TARGETS canine OA pain and inflammation while reducing the impact on GI, kidney, and liver homeostasis
- FOR ALL STAGES of OA from the earliest clinical signs*

*Approved for use in dogs older than 9 months of age and greater than 8 pounds.
**Monitoring is recommended if used long-term.

INDICATION
Galliprant is an NSAID that controls pain and inflammation associated with osteoarthritis in dogs.

IMPORTANT SAFETY INFORMATION
Not for use in humans. For use in dogs only. Keep this and all medications out of reach of children and pets. Store out of reach of dogs and other pets in a secured location in order to prevent accidental ingestion or overdose. Do not use in dogs that have a hypersensitivity to grapiprant. If Galliprant is used long-term, appropriate monitoring is recommended. Concomitant use of Galliprant with other anti-inflammatory drugs, such as COX-inhibiting NSAIDs or corticosteroids, should be avoided. Concurrent use with other anti-inflammatory drugs or protein-bound drugs has not been studied. The safe use of Galliprant has not been evaluated in dogs younger than 9 months of age and less than 8 lbs (3.6 kg), dogs used for breeding, pregnant or lactating dogs, or dogs with cardiac disease. The most common adverse reactions were vomiting, diarrhea, decreased appetite, and lethargy. For full prescribing information see Galliprant package insert.


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GALLIPRANT® (grapiprant tablets)

For oral use in dogs only
20 mg, 60 mg and 100 mg flavored tablets
A prostaglandin E₂ (PGE₂) EP₄ receptor antagonist; a non-cyclooxygenase inhibiting, non-steroidal anti-inflammatory drug

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

Before using Galliprant, please consult the product insert, a summary of which follows:

Indication:
GALLIPRANT (grapiprant tablets) is indicated for the control of pain and inflammation associated with osteoarthritis in dogs.

Dosage and Administration:
Always provide “Information for Dog Owners” Sheet with prescription.
Use the lowest effective dose for the shortest duration consistent with individual response.
The dose of GALLIPRANT (grapiprant tablets) is 0.9 mg/lb (2 mg/kg) once daily.

Contraindications:
GALLIPRANT should not be used in dogs that have a hypersensitivity to grapiprant.

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

For use in dogs only. Store GALLIPRANT out of reach of dogs and other pets in a secured location in order to prevent accidental ingestion or overdose.

Precautions:
The safe use of GALLIPRANT has not been evaluated in dogs younger than 9 months of age and less than 8 lbs (3.6 kgs) once daily.

Adverse Reactions:
In a controlled field study, 285 dogs were evaluated for safety when given either GALLIPRANT or a vehicle control (tablet minus grapiprant) at a dose of 2 mg/kg (0.9 mg/lb) once daily for 28 days. GALLIPRANT-treated dogs ranged in age from 2 yrs to 16.75 years. The following adverse reactions were observed:

### Table 1. Adverse reactions reported in the field study.

<table>
<thead>
<tr>
<th>Adverse reaction*</th>
<th>GALLIPRANT (grapiprant tablets) N = 141</th>
<th>Vehicle control (tablets minus grapiprant) N = 144</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vomiting</td>
<td>24</td>
<td>9</td>
</tr>
<tr>
<td>Diarrhea, soft stool</td>
<td>17</td>
<td>13</td>
</tr>
<tr>
<td>Anorexia, inappetence</td>
<td>9</td>
<td>7</td>
</tr>
<tr>
<td>Lethargy</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>Buccal ulcer</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Immune mediated hemolytic anemia</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

*Dogs may have experienced more than one type or occurrence during the study.

GALLIPRANT was used safely during the field studies with other concurrent therapies, including antibiotics, parasiticides and vaccinations.

To report suspected adverse drug events and/or to obtain a copy of the Safety Data Sheet (SDS) or for technical assistance, call 1-888-545-5973.

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

Information for Dog Owners:
Owners should be advised of the potential for adverse reactions and be informed of the clinical signs associated with drug intolerance. Adverse reactions may include vomiting, diarrhea, decreased appetite, and decreasing albumin and total protein. Appetite and stools should be monitored and owners should be advised to consult with their veterinarian if appetite decreases or stools become abnormal.

Effectiveness:
Two hundred and eighty five (285) client-owned dogs were enrolled in the study and evaluated for field safety. GALLIPRANT-treated dogs ranging in age from 2 to 16.75 years and weighing between 4.1 and 59.6 kgs (9 – 131 lbs) with radiographic and clinical signs of osteoarthritis were enrolled in a placebo-controlled, masked field study. Dogs had a 7-day washout from NSAID or other current OA therapy. Two hundred and sixty two (262) of the 285 dogs were included in the effectiveness evaluation. Dogs were assessed for improvements in pain and function by the owners using the Canine Brief Pain Inventory (CBPI) scoring system. A statistically significant difference in the proportion of treatment successes in the GALLIPRANT group (63/131 or 48.1%) was observed compared to the vehicle control group (41/131 or 31.3%). GALLIPRANT demonstrated statistically significant differences in owner assessed pain and function. The results of the field study demonstrate that GALLIPRANT, administered at 2 mg/kg (0.9 mg/pound) once daily for 28 days, was effective for the control of pain and inflammation associated with osteoarthritis.

Storage Conditions:
Store at or below 86° F (30° C)

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Manufactured for:
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November 2018
imaging of the rostral left mandibular canine and first, second, and third molars with little periodontal support. **Figure 3C** shows a left mandibular fourth premolar and first molar. **Figure 3D** presents a left maxilla, mandible, and cranium consistent with renal secondary hyperparathyroidism with fibrous osteodystrophy. Therapy for this pet included multiple extractions, phosphorus binders, and renal support.

**4 BREED-RELATED GINGIVAL HYPERPLASIA**

Gingival hyperplasia is relatively common in the boxer, golden retriever, English bulldog, and rottweiler breeds. When it presents in a different breed, it is time to think about zebras. Medication-induced gingival enlargement can occur from the administration of cyclosporine, phenytoin derivatives, and calcium channel blockers. Gingivectomy to decrease the depth of pseudopockets and replacement of calcium channel blockers with hydralazine can be effective in resolving gingival hyperplasia.

**Figure 4A** shows medication-induced gingival enlargement affecting the left maxilla in a dog being treated with amlodipine. **Figure 4B** medication-induced gingival enlargement affecting the rostral maxilla. **Figure 4C** shows immediate appearance of the rostral maxilla post gingivectomy.

**5 SWOLLEN FACE AND SLAB FRACTURE/PERIAPICAL ABSCESS**

Look for zebras when some signs do not fit a common diagnosis, especially if those signs appear in addition to a swollen face, protruding third eyelid, or firm swelling. In **Figure 5A**, a swollen right face and protruding third eyelid are shown. **Figure 5B** presents a crown root fracture of the right maxillary fourth premolar. **Figure 5C** shows an intraoral radiograph revealing abnormal increased densities apical to the fourth premolar. **Figure 5D** presents surgical exposure of oral mass for histopathology, which revealed osteosarcoma.

**DIAGNOSTIC AIDS TO DISCOVER ZEBRAS**

- Williams periodontal probe
- Explorer diagnostic instrument
- OraStripdx—a diagnostic test strip for the measurement of dissolved thiol levels can be used as an exam room indicator of gingival health and periodontal status even when periodontal disease does not appear clinically. The original OraStrip test became unavailable a few years ago, but the newer OraStripdx is easier to use and more economical. **Figure 6A** shows an OraStripdx test. **Figure 6B** shows a test strip placed on a cat’s gingiva in the exam room. **Figure 6C** presents a reading consistent with periodontal disease.
- Intraoral imaging

I would love to see and share some of your dental zebras. Please email them to me at dentalvet@aol.com.
MANAGING feline behavior with modifications

Animal behavior experts discuss common issues with cats and recommended treatment options

**Written by Caitlin McCafferty, Associate Editor**

In interviews with *dvm360*, Carlo Siracusa, DVM, PhD, DACVB, DECAWBM, and Lena R. Provoost, DVM, DACVB, from the Behavior Medicine Clinic at Penn Vet’s Ryan Veterinary Hospital in Philadelphia, Pennsylvania, as well as Liz Bales, VMD, a cat expert on the Dean’s Alumni Council at the University of Pennsylvania School of Veterinary Medicine and on the advisory boards for *dvm360*, American Association of Feline Practitioners’ Cat Friendly Practice, Vet Candy, and Fear Free, discussed common feline behavioral issues and how to manage them.

**WHAT ARE SOME COMMON FELINE BEHAVIOR ISSUES?**

**PROVOOST:** The 2 most common ones we see are elimination in undesirable locations, otherwise known as inappropriate elimination, and aggression directed toward both familiar and unfamiliar people. And that can manifest as stalking, chasing, pouncing, biting, and vocalizations like hissing and scratching.

**SIRACUSA:** I’d say the same. This mirrors what the literature says. Inappropriate elimination is the top concern for people and then aggression, but [feline aggression] doesn’t have the same relevance as dog aggression.

**WHAT CAUSES THESE BEHAVIORAL ISSUES?**

**PROVOOST:** It depends on the motivation for the behavior. When you have an inappropriate elimination case, you try to figure out whether this is a marking behavior, an elimination behavior, aka toileting behavior. Also, is it anxiety based? Or is this a normal behavior where the cat is signaling its presence by leaving its scent vs the cat feeling anxious about its environment and attempting to feel more secure and stable?

**SIRACUSA:** I would add that inappropriate elimination and aggression may seem unrelated but are not. One thing with aggression is that people tend to be more concerned about their cat urinating everywhere than hissing or swatting. People get very concerned if a dog is growing but not as concerned if a cat is manifesting aggression, but this aggression may actually trigger inappropriate elimination. Many cases of inappropriate elimination, in fact, are caused by some type of social conflict that does not manifest as severe aggression.

**WHAT DO YOU RECOMMEND FOR CORRECTING INAPPROPRIATE ELIMINATION?**

**BALES:** The first thing you want to do is look for a medical cause medical. That includes a chemistry, complete blood count, urinalysis by cystocentesis, urine culture, and some [form] of imaging to look for bladder stones/kidney stones. If a cat is 1 to 10 years old without another medical condition, it’s highly unlikely [to be] a urinary tract infection. Crystals don’t necessarily mean stones, and if there are crystals, you can have a crystal of one type and a stone of another. That is another challenge to deal with. If you find a medical problem, you need to treat it.

Fifty percent to 70% of the time, all [test results are] negative. If this is the case, it’s time to look at the environment you are asking your cat to live in. Cats commonly urinate outside of the litter box, and have bouts of bloody, painful urination in response to an environment that does not meet their minimum behavioral needs.

The way that humans set up their homes typically doesn’t take into consideration their cat’s behavioral needs. Trying to figure out a particular stress, which I call the last straw, and remove it is really hard. The better play is to look at the whole home environment and intentionally set it up in a way that meets your cat’s minimum behavioral needs, and it’s highly likely that the problems will disappear. Not only are you less likely to have medical and behavioral problems but also less likely to create them. Every kitten and cat should live in a house that’s set up to meet their minimum needs.

**DO YOU HAVE ANY TIPS FOR CLIENTS TO BE COMPLIANT WITH AT-HOME TREATMENT PLANS FOR BEHAVIOR?**

**PROVOOST:** We do offer a follow-up period, so we encourage clients to reach out to us if there are any questions. We give them a detailed plan but also tell them not to feel overwhelmed. Maybe take 1 point at a time and work on it for a week. Focus on trying to manage it, but realize all the things we may be implementing now are for a long-term goal in the future.

**BALES:** Educate. A litter box, food, and water are not enough. We need to simplify adequate cat care and help people understand what a cat needs to feel safe and how to provide that in an easy, affordable way. Help people understand how important these things are and that providing them is not only the humane thing to do, but it also prevents problems down the road.

Why wait until you have a problem? If every person who [left] the shelter with a kitten or cat understood their minimum needs, and how to meet them, the world would be a much better place for cats and their caretakers.

**WHAT IS DECODING YOUR CAT?**

**SIRACUSA:** It’s the book by the American College of Veterinary Behaviorists on cats. [Decoding Your Cat: The Ultimate Experts Explain Common Cat Behaviors and Reveal How to Prevent or Change Unwanted Ones] was written by veterinarians, and I am a coeditor. It has the approach of empowering cat owners with science-based knowledge and it covers when a behavioral problem may be the manifestation of a physical problem. I think it has [a] unique perspective.

**IS THERE ANYTHING NEW OR EXCITING HAPPENING IN THE WORLD OF FELINE BEHAVIOR?**

**BALES:** I’m excited that people are talking about it. So many of us did not get this education in veterinary school. You have to work really hard, even as a veterinarian, to get this information. If the vets don’t have it, how are the average pet parents going to get it? I’m excited it’s being taken seriously as an important part of physical health is mental health for animals as well as people.
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*Survey conducted among small animal veterinarians who recommended omega-3 supplements
*Source: Survey conducted among small animal veterinarians who recommended animal supplements.
Protecting adopted pets from heartworm disease

Owners, rescue staff, and veterinarians must make special considerations during transport and adoption of dogs infected with heartworms

written by
Kate Boatright, VMD

Kate Boatright, VMD, is a 2013 graduate of the University of Pennsylvania in Philadelphia and a practicing veterinarian, freelance speaker, and author in western Pennsylvania. She is passionate about mentorship, education, and addressing common sources of stress for veterinary teams and recent graduates. Outside clinical practice, Boatright actively participates in organized veterinary medicine at the local, state, and national levels.
Heartworm disease has been diagnosed worldwide, including in all 48 contiguous states in the United States. Stray dogs transported long distances by rescue organizations may be at higher risk of heartworm disease, especially those originating from highly endemic areas. Because of the long prepatent period, it is easy to unknowingly transport infected dogs and create new reservoirs of infection.

Responsible testing, treatment, and prevention of heartworm disease in rescue populations of dogs are essential for the health of both the individual dog and the overall population. After adopting a new dog, owners should educate themselves to prevent any lapses in prevention or treatment for heartworm disease.

**HEARTWORM DISEASE REVIEW**

Transmission of the causative nematode, *Dirofilaria immitis*, occurs when a mosquito takes a blood meal from a dog with circulating microfilariae. These microfilariae develop to third-stage larvae (L3) in the mosquito and are then passed on to another dog during a subsequent blood meal. After 2 additional molts, *D. immitis* reaches the adult stage and begins to produce microfilariae 6 to 9 months after infection.

Available point-of-care tests for heartworm rely on detection of an antigen produced by adult worms, particularly females. In addition, the American Heartworm Society (AHS) recommends all patients be screened for microfilariae, as microfilariae have been detected in the absence of an antigen in some cases.

The severity of symptoms in infected patients depends on worm burden relative to patient size and activity level. Clinical signs can range from mild cough and exercise intolerance to pulmonary hypertension and right-sided heart failure, and severe infection may result in death. Because of this, clinicians recommend year-round prevention. Heartworm-preventive drugs are widely available, safe, and effective; all FDA-approved products rely on macrocyclic lactone (ML) drugs.

**THE IMPACT OF PET TRANSPORT ON HEARTWORM PREVALENCE**

Between 2013 and 2016, positive heartworm antigen tests increased by 15.3% nationwide, representing a significant increase from previous years. Regional differences in prevalence remained, with the southeastern United States seeing an increase of 17.9% in prevalence and the rest of the country seeing an increase of 11.4%.

Over the similar period of 2013-2017, heartworm incidence in Colorado increased by 67.5%. During this study period, more than 114,000 dogs were transported to the state, with the majority coming from states with higher heartworm prevalence.

Despite recommendations for testing prior to transport, only 35% of the rescue organizations receiving dogs required heartworm testing, treatment, or prevention prior to transport, as shown in a 2016 survey. This resulted in many dogs being transported with unknown heartworm disease status and risk of infection.

**CONSIDERATIONS FOR THE TRANSPORT OF INFECTED AND AT-RISK DOGS**

There are 2 major considerations when transporting dogs with known heartworm infection or dogs from an area with a high prevalence of disease. First, the safety of the dogs, especially if they are infected, must be a priority. Secondly, the risk of spreading heartworm disease must be considered and minimized. The AHS and the Association of Shelter Veterinarians (ASV) have developed guidelines for transporting dogs with the goal of minimizing heartworm transmission.

Before transport, all dogs should take both a heartworm antigen and a microfilaria test. If both are negative, the pet should start prevention treatment and restet in 6 to 7 months because of the long prepatent period of the disease. If either test is positive, transport should be postponed. Additionally, symptomatic dogs should not be transported because exercise, overheating, and excitement place dogs at higher risk of progressive disease. Although it would be ideal to treat all dogs with a positive result prior to transport, in many cases, rapid transport saves lives. Minimizing stress and excitement will protect the health of the dog during transport.

For pets with a positive result that must be transported prior to treatment, every effort should be made to prevent the dog from becoming a reservoir of infection. All dogs with a positive result for either the antigen or microfilariae should receive a 30-day course of doxycycline to reduce the development of further microfilaremia and prevent microfilariae from developing into infective larvae in the intermediate host. Dogs that test positive for the antigen but negative for microfilariae should also receive an ML preventive prior to transport. Dogs that test positive for microfilariae, regardless of antigen status, should receive 1 of the following treatments:

- **Topical preventive product containing moxidectin, which can eliminate most circulating microfilariae**
- **ML preventive and topical insect repellent, which will prevent mosquito bites and transmission of heartworm larvae for 30 days**
- **ML preventive and isoxaolin product 24 hours prior to transport, which will kill mosquitoes shortly after feeding and prevent development and transmission of heartworm larvae**

**HEARTWORM TREATMENT PROTOCOLS**

The AHS has a detailed treatment regimen for dogs infected with *D. immitis*. Treatment begins with the administration of a heartworm preventive and a 30-day course of doxycycline at 10 mg/kg by mouth twice a day. Doxycycline kills the heartworm symbiote Wolbachia, reducing the pathology associated with adult heartworm death during treatment and decreasing transmission by inhibiting microfilaria development. An approved ML product should be administered monthly throughout treatment. Adulticidal treatment with melarsomine should be administered by deep intramuscular injection on treatment days 60, 90, and 91. Additionally, exercise restriction is essential from the time of diagnosis until 6 to 8 weeks following the final melarsomine injection.

Slow-killing methods, which involve the continuous dose of ML preventives alone, are not recommended because of the time required to kill the worms. During this time, the disease pathology continues, as does the potential for selection of ML-resistant worms.

**CARE OF NEWLY ADOPTED DOGS**

The owner of the adopted pet should receive all records, including test results and date of the most recent ML preventive dose or stage of infection. At the time of adoption, new owners should receive information about retesting following transport, routine testing, and the importance of year-round prevention. Shelter and rescue staff are in the best position to provide this education, as dogs that are up-to-date on vaccinations may not see a veterinarian for months following adoption. Because ML preventives are most effective against L3 and young L4 larval stages, a single missed dose can result in the development of infection.

Treatment of dogs with heartworm disease may not be possible in a shelter or rescue setting, but if a period of less than 12 months has passed since the completion of the doxycycline treatment regimen and monthly preventives have been administered, adulticidal treatment may be instituted following adoption. These dogs should remain exercise restricted until 6 to 8 months past the final injection. If a dog begins heartworm treatment but faces interruption, the stage of treatment and length of interruption should be considered. If a dog received the first of the 3 melarsomine injections, the second and third injections may be administered if the treatment lapse was less than 6 months. If treatment lapses were longer than these specified periods, the dog should restart treatment.

**TAKE-HOME POINTS**

Heartworm disease poses a risk to dogs throughout the United States. Although transporting rescue dogs throughout the country can increase adoption rates and save lives, the risk of disease transmission must be considered. Instituting routine heartworm antigen and microfilaria testing prior to transport and following the AHS/ASV guidelines will both protect infected dogs from worsening disease and prevent spread of the disease. Once dogs are adopted, new owners must be advised of the current heartworm disease status and informed of when the next preventive or treatment should be administered.

References available online at dvm360.com
3 steps to protect your practice from ransomware

Attackers use a wide range of techniques to break into systems, find sensitive data, and deploy encryption tools to lock data.
physician organizations, reported their data infrastructures are unprepared to respond to attacks. The survey estimated that health care providers with 500 or more records are a staggering 300% more vulnerable to data breaches.1

Numerous hospitals and medical centers—including those providing veterinary services—have had operations severely impacted, or even halted by, attacks, which is challenging under normal circumstances, but nearly insurmountable coming through a pandemic. In the instances reported, files and systems became infected, forcing practitioners to use manual pen and paper systems to keep operations from shutting down completely.

In one widely reported veterinary case, York Animal Hospital in Maine lost its server filled with patient information as well as backup data during a 2021 cyberattack. The hospital was forced to rely on limited paper records, saved emails, and information provided by clients to rebuild many of its destroyed files.2

Attackers use a wide range of techniques to break into systems, find sensitive data, deploy encryption tools to lock data, and then demand a ransom in exchange for retrieving encryption keys. By employing the measures outlined below, veterinary practitioners can help protect their business, their patients, and their data from ransomware attacks.

**Upgrade your security infrastructure**

Another reason health care systems are easy targets is they tend to have a mix of older, legacy equipment and systems, as well as cutting-edge technology. If the older systems are not properly maintained, updated, and/or patched, they become vulnerable. Older medical devices, such as MRI machines or machines with databases built into them, have vulnerabilities that are well known to seasoned ransomware attackers, such as password-related back doors due to weak manufacturer-set passwords or poor password security practices.

Future-proofing information systems and the application infrastructure against ransom attacks is essential whether the practice has suffered an attack. Practitioners must assume that the precursors to the next attack are already inside the system. Once inside a system, ransomware and associated malware are designed to look like normal operations. This is how they can dwell inside networks for weeks and months, executing undetected.

Advanced cybersecurity solutions enable visibility into essentially every application function during runtime, with real-time insight into performance. The aim is to stop exploits as soon as they occur before any significant damage is done. These solutions are designed to detect and stop any code that deviates from normal.

**INVEST IN AN IT STAFF**

One key thing that makes a health care system an easy target is an understaffed IT department. For all the advanced medical technology and expertise hospitals and medical centers have in spades, they are frequently less prepared in the IT department. Technical staff and security funding tend to be in limited supply, and bad actors will schedule their attacks on weekends or off-hours, when they know IT staff is scaled back from the regular workweek.

Investing in a professional IT staff will ultimately save practices valuable time and money. Organizations need to shift to a “prepare and prevent” mind-set, rather than “deal with the cleanup after the fact.”

**Educate all employees**

All employees, from doctors to front office staff, must be on high alert. Cybercriminals are using increasingly manipulative exploits during the global health crisis. It’s important for every practice to educate their staff about phishing email and other potential risks to avoid. Research states that nearly 93% of attacks infect systems from a phishing email with a malware-laced link. “Drive-by downloading” is another method in which a user accesses an infected website and becomes infected.

Particularly with an increase in remote work, medical networks are even more vulnerable, and staff need to be extra cautious. Oftentimes medical staff need to access critical data from remote laptops, some of which may be personal laptops or devices that have users other than the employee. Without remote work, server workloads would mainly only be exposed to private networks. Now they are exposed to remote workers’ unsecured devices, further exposing practice networks.

Staff should enable 2-factor authentication on network devices and systems and follow a password management policy that enforces regular updates and strong passwords. Implement a reliable backup and recovery system protected from network access. Regularly update all software, operating systems, and antivirus solutions. These small steps in everyday practice workflow can ultimately be the first barrier of defense from a ransomware attack.

Regardless of how much practices prepare, hackers will continue to hack successfully. The question health care systems face now is whether their network is prepared to handle better and more frequent attacks without shutting down completely. Health care organizations are critical infrastructure, providing essential services for the public. Their many vulnerabilities leave them exposed, but by implementing these key steps to protect their organization, practitioners can strengthen and fortify their security stance.

**References available online at dvm360.com**

Written by Willy Leichter

Leichter has over 20 years of experience in product marketing, product management, outbound marketing, communications, digital marketing, and demand generation. His roles have included VP of marketing for an industry leader in application-aware workload protection.
Too often we substitute good leadership with fighting our teams. We think yelling at or intimidating them will get them to accomplish what we want. This always makes me think of the leaders of yesterday who would yell in meetings and slam their fists on the table. It was a perverse technique and one that lingers.

The reason it continues to exist is that it often does get results. It puts employees in a place where they fear the outcomes if they don’t do exactly as they are told. As a result, individuals assume they are doing a good job leading when their metrics are showing positive outcomes. One of the many problems with this is that it is temporary. Workers can only operate in an environment of fear for so long before they hit a point of burnout.

When a veterinary team hits this point, things start to break down. Individuals stop caring whether they meet expectations because they know they will get yelled at either way. Some will start looking for new roles and take with them all the knowledge and training you have provided. You then must start over with new team members, assuming anyone even wants to join this toxic team.

I do not think I am alone in saying that this is not what good leadership looks like. It is much easier to fight, yell, and walk away than it is to take the time and energy required to be a great leader.

Leadership training, part 2 of 3

REFERENCE


written by
Caitlin Keat, MS, BS
Keat is the chief operating officer at Empowering Veterinary Teams. When she isn’t handling her duties as an engineer, she specializes in program management. Caitlin loves spending time with her husband and their 2 girls, doing all things outdoorsy.
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Rehabilitation services are emerging in veterinary medicine in parallel with the credential and formal training recently recognized by the American Veterinary Medical Association—the American College of Veterinary Sports Medicine and Rehabilitation specialty.

At the 2022 Fetch dvm360® Conference in Charlotte, North Carolina, presenter Janice L. Huntingford, DVM, DACVSMR, MD-TCVM, CVA, CVPP, CCRT, CAVCA, also explained that clients now view these services as essential for geriatric patients, canine athletes, and pets recovering from certain surgeries. Along with this, she shared key reasons that integrating rehabilitation, including a range of therapeutic exercise and modalities (eg, hydrotherapy, ultrasound, etc), would be especially advantageous for your practice.

**Addresses Functional Problems**

Rehabilitation provides a unique service because the goals of treatment are functional and are created specifically for patients who need to improve their movement or quality of life when other methods solely may not prove effective.

Huntingford illustrated an example in a dvm360® interview: “If you have a dog who has difficulty walking—it’s already had its cruciate repaired but it’s still not walking—it may be because its muscles are painful. Rehabilitation allows you to take those dogs and create a scenario where they’re able to walk normally again, because you’re really dealing with functional not structural problems.”

**Offers Service for Geriatric Patients**

Rehabilitation is ideal for geriatric canine patients because they typically have various health problems, and medication can’t address all of them, according to Huntingford. Additionally, these dogs often have stomachs that are sensitive to drugs. Arthritis medications, such as nonsteroidal anti-inflammatories, are notorious for causing gastrointestinal upsets. Rehabilitation therapy is perfect for these pets that require nondrug pain relief.

"Small-animal practitioners may want to start doing rehabilitation because it gives them more tools in their toolbox when treating geriatric dogs who have pain and mobility issues,” Huntingford said in the interview. “Many of these dogs have problems taking conventional drugs. The medication may cause vomiting, or diarrhea, or the patient may have kidney disease and just can’t handle pain medications. But they still need to have their pain managed and need help with mobility. In that case, you can do rehabilitation techniques [such as] therapeutic exercises, joint mobilization, hydrotherapy, laser, acupuncture...it allows you to continue to treat your patients.”

**Strengthen Vet-Client Bond**

Furthermore, engaging in rehabilitation medicine bonds you with patients and clients. Huntingford said pet owners are often grateful you are treating their older patients—those recovering from surgery, those with osteoarthritis, and all others in need of an alternate therapy. The clients appreciate that.

**Reference**

1. Huntingford J. Integrating rehabilitation into a busy general practice. Presented at: Fetch dvm360® Conference; April 22-24, 2022; Charlotte, NC.

**TIPS & TRICKS**

Janice L. Huntingford, DVM, DACVSMR, MD-TCVM, CVA, CVPP, CCRT, CAVCA, shared with attendees some invaluable tips and tricks for success when integrating rehabilitation offerings at your practice:

- Integrative rehabilitation techniques that are most effective include acupuncture, chiropractic, massage, and herbal therapies
- Train and utilize your team members
- Create special programs for weight loss, osteoarthritis, fitness, and canine athletes, as this increases revenue.
- Offer packages with discounts.
- Speak at community events, client-focused events, and with colleagues.
- Continue to learn some excellent resources include rehabvets.org, fourleg.com, and onlinepethealth.com.
WHERE PROTECTION MEETS AFFORDABILITY

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<tr>
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<th>REVOLUTION® (selamectin)</th>
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<tr>
<td>Same active ingredient and dosing regimen as Revolution® (selamectin)</td>
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<tr>
<td>Same protection against heartworms, fleas and problematic parasites</td>
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<td>Product color coding matches Revolution® for ease of product conversion</td>
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<td>Identical, weight-specific product dosing packaging</td>
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<td>Unique twist and apply minimizes application errors</td>
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<td>Best price always plus highest margin opportunity</td>
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*Based on Revolt® prices of cats and dogs up to 40 lbs.

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**Revolt® (selamectin)**

**Topical Parasiticide for Dogs and Cats**

**DESCRIPTION:**
Revolt (selamectin) Topical Parasiticide is available as a colorless to yellow, ready to use solution in single dose tubes for topical (dermal) treatment of dogs six weeks of age and older and cats eight weeks of age and older. The content of each tube is formulated to provide a minimum of 2 mg/mL (mg of body weight of selamectin). The chemical composition of selamectin (C52H59NO12) is (1R,2R)-26-cyclohexyl-4-[(1R,2S)-6-[(2S,3S)-4,5-dimethoxy-3-O-α-D-glucopyranosyl]-5-dimethyl-2-decylphosphoryl]-22,23-dihydro-5-hydroxyiminoavermectin A1a.

**INDICATIONS:**
Revolt is recommended for use in dogs six weeks of age or older and cats eight weeks of age and older for the following parasites and indications:

- **Dogs:**
  - Revolt kills adult fleas and prevents flea eggs from hatching for one month and is indicated for the prevention and control of flea infestations (Ctenocephalides felis), prevention of heartworm disease caused by Dirofilaria immitis, and the treatment and control of ear mites (Udornlina zosterae). Selamectin is also indicated for the treatment and control of roundworm (Toxocara canis) and intestinal hookworms (Ancylostoma tubaeforme) infestations in cats.

**WARNINGS:**
- Not for human use. Keep out of the reach of children.
- In humans, Revolt may be irritating to skin and eyes.

**PRECAUTIONS:**
- Prior to administration of Revolt, dogs should be treated for existing heartworm infestations. At the discretion of the veterinarian, infected dogs should be treated to remove adult heartworms. Revolt is not effective against adult worms and, while the number of circulating microfilariae decreases below 100% in dogs, however, if first administered > 2 months after exposure to infective larvae. Thus, in heartworm endemic regions, delaying initiation of heartworm prevention using Revolt beyond 2 months of first exposure to infective vectors such as mosquitoes may increase the risk of infection due to the emergence of adult heartworms. Nematode Treatment in Cats (Of A. caninum) and for the control of tick (Dermacentor variabilis) infections in dogs.

**ADVERSE REACTIONS:**
- Topical adverse drug reaction in cats: Pruritus, rashes, erythema, atrophy, hair loss, and, rarely, dry skin. Hair loss was observed in all treatment groups, including the vehicle control. The only adverse reaction observed in a clinical study was transient localized alopecia with or without inflammation at or near the site of application. Adverse reactions were observed in dogs in all treatment groups, including the vehicle control. The only adverse reaction observed in a clinical study was transient localized alopecia with or without inflammation at or near the site of application.

**DOSSAGE:**
- The recommended dosage is 2.0 mg selamectin per pound (mg/kg of body weight). Administer the entire contents of a single dose tube for two tubes used in combination for dogs weighing over 130 pounds of Revolt typically in accordance with the following tables. (See **ADMINISTRATION** for the recommended treatment interval.)

**CAUTION:**
- Use in dogs or cats with a history and was malnourished and underweight (see **WARNINGS**).

**ADMINISTRATION:**
- A veterinarian or veterinary technician should participate in the treatment of the animal.
- The table of the skin and the scab in 3-4 minutes to empty its entire contents directly onto the skin in one spot. Keeping the tube capped, drop the empty tube in the liquid and lift to remove. Check the tube to ensure that it is empty.

**FEA CON**:
- Flammable - Keep away from heat, sparks, open flames or other sources of ignition.

**SAFETY:**
- Selemctin, the active ingredient in Revolt, is a macrocyclic lactone compound. These compounds effectively prevent the development of macrocyclic lactones decreases below 100% in dogs, however, if first administered > 2 months after exposure to infective larvae. Thus, in heartworm endemic regions, delaying initiation of heartworm prevention using Revolt beyond 2 months of first exposure to infective vectors such as mosquitoes may increase the risk of infection due to the emergence of adult heartworms. Resolution of the pruritus associated with the mite infestations was observed in approximately 50% of the dogs 30 days after the first dose may be required in some dogs. Monthly use of Revolt will control any subsequent sarcoptic mange mite infestations. Because of the difficulty in finding sarcoptic mange mites on skin scrapings, effectiveness assessments also were based on resolution of clinical signs. Resolution of the pruritus associated with the mite infestations was observed in approximately 50% of the dogs 30 days after the first treatment and in approximately 40% of the dogs 30 days after the second monthly treatment. Tick Control in Dogs and Cats
- For the treatment of ear mite (O. cynotis) infestations in dogs and cats, Revolt should be administered once every 4 to 6 months. Cats, including pregnant and lactating females, breeding males and females, puppies six weeks of age and older, and avermectin-sensitive collies. A kitten, estimated to be 5-6 weeks old (0.3 kg), died 8 1/2 hours after receiving a single treatment of selamectin at 30 mg/kg. No adverse reactions were observed. The safety of selamectin administered orally also was tested in case of accidental oral ingestion. Oral administration of selamectin at the recommended topical dose for 5 to 6 month-old beagles did not cause any adverse reactions. In a preclinical study, selamectin was administered orally to nematode-sensitive colons. A kitten, estimated to be 5-6 weeks old (0.3 kg), died 1/2 hours after receiving a single treatment of selamectin at the recommended dose. The kittens displayed clinical signs which included muscle spasms, salivation and neurological signs. The kittens were euthanized and macroscopic and histologic evaluations were performed (see **WARNINGS**).

**DOGS:**
- DOGS: In safety studies, selamectin was administered at 1, 3, 10, and 30 times the recommended dose to six-week-old puppies, and no adverse reactions were observed. The safety of selamectin administered orally also was tested in case of accidental oral ingestion. Oral administration of selamectin at the recommended topical dose for 5 to 6 month-old beagles did not cause any adverse reactions. In a preclinical study, selamectin was administered orally to nematode-sensitive colons. A kitten, estimated to be 5-6 weeks old (0.3 kg), died 1/2 hours after receiving a single treatment of selamectin at the recommended dose. The kittens displayed clinical signs which included muscle spasms, salivation and neurological signs. The kittens were euthanized and macroscopic and histologic evaluations were performed (see **WARNINGS**).

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**STORAGE CONDITIONS:**
- Store below 30°C (86°F).

**HOW SUPPLIED:**
- Available in eight separate dose strengths for dogs and cats of different weights (see **DOSSAGE**). Recommended for use in dogs 6 weeks of age and older and in cats 8 weeks of age and older.

**For cats over 22 lbs use the appropriate combination of tubes.**

<table>
<thead>
<tr>
<th>Dogs (lbs)</th>
<th>Package Color</th>
<th>mg per tube</th>
<th>Potency (mg/mL)</th>
<th>Administered volume (mL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 5</td>
<td>Rose</td>
<td>15 mg</td>
<td>60</td>
<td>0.25</td>
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<tr>
<td>5.1-15</td>
<td>Blue</td>
<td>45 mg</td>
<td>60</td>
<td>0.75</td>
</tr>
<tr>
<td>15.1-22</td>
<td>Tawpe</td>
<td>60 mg</td>
<td>60</td>
<td>1.0</td>
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</tbody>
</table>

For cats over 30 lbs use the appropriate combination of tubes.

<table>
<thead>
<tr>
<th>Cats (lbs)</th>
<th>Package Color</th>
<th>mg per tube</th>
<th>Potency (mg/mL)</th>
<th>Administered volume (mL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 5</td>
<td>Rose</td>
<td>15 mg</td>
<td>60</td>
<td>0.25</td>
</tr>
<tr>
<td>5.1-10</td>
<td>Purple</td>
<td>30 mg</td>
<td>120</td>
<td>0.25</td>
</tr>
<tr>
<td>10.1-20</td>
<td>Brown</td>
<td>60 mg</td>
<td>120</td>
<td>0.5</td>
</tr>
<tr>
<td>20.1-40</td>
<td>Marion</td>
<td>120 mg</td>
<td>120</td>
<td>1.0</td>
</tr>
<tr>
<td>40.1-85</td>
<td>Teal</td>
<td>240 mg</td>
<td>120</td>
<td>2.0</td>
</tr>
<tr>
<td>85.1-130</td>
<td>Plum</td>
<td>360 mg</td>
<td>120</td>
<td>3.0</td>
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</tbody>
</table>

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Will higher veterinary fees fuel pet health insurance?

Price increases in the past have not resulted in a major decline in client visits, but inflation may elicit a different outcome this time around.

Inflation is hitting many sectors of the United States economy, and there is no reason to suspect the veterinary profession will be spared. Veterinary hospitals, like many businesses, are seeing an increase in the cost of supplies and materials. Additionally, the demand for veterinary services increased exponentially during the COVID-19 pandemic, as people acquired pets and doted more on their existing pets. The net effect has resulted in a major labor shortage for both licensed veterinary technicians and veterinary doctors, which is driving up compensation for these team members.

The effect of inflation and the increased demand for veterinary services in an already tight labor market will lead to price increases for veterinary care at all levels.

Expenditures at the veterinary hospital are made with discretionary income. Although price increases in the past have not resulted in a major decline in client visits, it is fair to ask whether that may be different this time around. One factor that may be different now is that the scale of increases may need to be more on the 10% to 20% vs a more traditional 3% to 7% annual increase. The higher level of fee increases will test how elastic or inelastic demand for veterinary services are with the general pet-owning public.

During the COVID-19 pandemic, families bonded with their pets more than ever, with most (95%) considering them a family member. Opting out of care because of cost is likely not a popular choice for most pet parents at this point. Are we at an inflection or price point where more pet parents have not overwhelmingly seen the value. Part of this may be that it has not enjoyed widespread endorsement in the media here and veterinary offices either haven’t specifically endorsed it or have found little client interest.

Pet owners can expect to see substantial increases in pet health care costs near term if they haven’t already. Perhaps this will be the tipping point that will drive clients to obtain pet insurance in larger numbers.

Pet insurance has grown approximately 20% each of the past 3 years in the United States, so it does appear that pet parents are warming up to the idea and seeing the benefit of being better prepared for the unexpected. Although a low number of pets (3%) are insured in this country, California bucks this trend, with 19% of pets insured. California is also one of the most expensive states for veterinary care, so it does support the thesis that as pet care costs go up, so does the number of insured pets.

Wellness plans are also likely to gain in popularity as pet care becomes more costly, giving clients a way to budget out preventive care. The bottom line is that many pet parents want to take good care of their pets’ health care needs, but when funds are not available, economic euthanasia becomes a reality. Pet parents that have the foresight to obtain both wellness plans and pet insurance are in the best position to avoid tough economic choices when it comes to their pets’ medical care. Yes, as a profession, we must increase fees, but at the same time, we must do a good job of promoting insurance and wellness plans, which is a win-win-win scenario for all involved.

References available online at dvm360.com

written by

Jeff Rothstein,
DVM, MBA

Rothstein is the founder and copresident of Mission Veterinary Partners, headquartered in Novi, Michigan, which operates more than 250 veterinary hospitals in more than 30 states. He is a frequent presenter at veterinary conferences and veterinary schools and can be contacted at jeff.rothstein@mvetpartners.com.
6 steps to giving great feedback
(and changing behavior for the better)

Effective, constructive change starts with listening and asking questions.

I can almost guarantee that you have a colleague or team member living rent free in your head, taking up valuable attention and energy. Who is that person? How do you feel when you think about the last feedback conversation you had with them? If you said, “Not great,” I understand. It’s difficult to give feedback.

We hesitate to give feedback because it feels counterproductive. The person might get angry. The situation might get worse. We don’t know what to say. We don’t want to hurt their feelings. But feedback is not inherently negative, sometimes there is positive feedback to give. But even negative feedback can be constructive and when done correctly can help that individual achieve their goals.

TRY THESE 6 STEPS TO FRAME FEEDBACK MORE EFFECTIVELY:

1. Provide feedback more often

Waiting too long makes it more difficult to deliver the feedback that would make your relationships stronger. Feedback is better done as a maintenance activity than as a 1-time project.

On the positive side, if you give regular feedback about what’s going well, you encourage more of that behavior. Plus you put emotional chips in the bank that you can draw on when you need to have a more difficult conversation. You’ll be starting from a place in the relationship where the person feels appreciated.

Even when you want to ask for a change to someone’s behavior, more frequent feedback is better. It’s far easier to address a problem when it’s starting. Letting it grow leaves you feeling more upset, and the other person may feel frustrated or ambushed when you bring up something that’s been going badly for ages.

2. Get yourself in the right mindset

3. Focus on what you want most

4. Start by asking questions

5. Share your thinking

6. Agree to clear next steps

Written by
Marnette Falley
Falley is an International Coach Federation–certified executive coach, consultant, and leadership development trainer with more than 20 years of experience in the veterinary market. She helps businesses and teams identify and activate personal and organizational strengths to overcome persistent barriers and adapt faster to changing business needs.
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2 Get yourself in the right mind-set

There's a huge difference between asking, “Can I give you some feedback about how you could make my life easier?” and asking, “Can I give you some feedback that will help you achieve your goals faster?” And yet the feedback may be the same. Approach the conversation thinking about how you can help that other person.

It's also important to approach the conversation with curiosity. What might you not know? What circumstances might change the way you feel about the behavior or situation? What other solutions are there? Feedback conversations should be real conversations—ideally the information flows both ways.

Then, with your curiosity firmly in place, prepare to listen.

This can be difficult to do if you're in a hurry, distracted, or upset. So stack the deck in your favor by picking a time when you feel calm, choosing a private and quiet space, and setting aside a reasonable amount of time.

3 Focus on what you want most

In the heat of the battle, it's easy to lose track of the big picture. If Sally's been late every day, you might think the only thing you want is for her to be on time. But that's not true if Sally is a good team member. What you want is for Sally to continue to make great contributions to your practice. You and Sally both want her to be successful. You both may want her to take on more responsibility and become an even stronger player. And this 1 behavior is one of the top indicators of high-performing teams.

It has to be OK to give and get feedback and to make mistakes. If it's not, team members spend an inordinate amount of time and energy protecting themselves from judgment and trying to make sure they never do anything wrong, ever.

So that individual you're talking to will only change if they see a reason to change. What can you do to help them want what you want?

4 Start by asking questions

How do you get that crucial 2-way feedback conversation started?

Let's say you heard a team member had a testy exchange with a client. Your instinct is to lay down the law about great service. Instead start by saying that you heard the team member faced a difficult situation and ask what went well. Then ask what they would do differently next time. Stick to open-ended questions so you don't just get yes and no answers. Start questions with “What” and “How.” “Why” questions tend to sound judgmental and can unintentionally raise the heat on a conversation.

If nothing comes up, you can raise the issue more directly. But don't assume. Try something such as, “I'm glad to hear that you feel like Mrs Smith left happy. I heard that she seemed agitated, but I didn't want to assume anything until I heard your perspective. What might have given someone that impression?”

5 Share your thinking

Finally, you get to the feedback part, assuming you still have any. It's key to focus on the person's behavior, not on the person. Studies show that psychological safety is one of the top indicators of high-performing teams.

It has to be OK to give and get feedback and to make mistakes. If it's not, team members spend an inordinate amount of time and energy protecting themselves from judgment and trying to make sure they never do anything wrong, ever.

Think back to the best feedback you ever received. What did the person say, and why was it meaningful? How did you feel? Now think about positive feedback that you just shrugged off. Why did it not resonate?

6 Agree to clear next steps

Asking for a very specific change helps set you up for success if you need to revisit the conversation. If you're not sure what the right next step would be, ask. You could say, “What do you suggest as a next step to make sure we don’t find ourselves back in this situation?” Even if the first suggestion isn't the right one, it gives you something to respond to.

After you provide feedback, take a minute to think. What went well? What would you want to do differently next time?

Jot down a quick note about when you had the conversation and what you agreed to. It's easy to remember it differently down the road. A few notes can help you see if you weren't as specific as you should have been or they will help you address the issue with confidence if there was clear agreement.

You can't change anyone. However, when we change our approach, the individuals around us respond differently.

It's also true that we all really only do what we want to do.

So that individual you’re talking to will only change if they want to change. What can you do to help them want what you want? ©
For many, the veterinary profession is more than a career; it’s a calling. However, it takes more than a sense of purpose to be successful and fulfilled in the animal health industry. A recent webinar hosted by dvm360®, Chief Veterinary Officer Adam Christman, DVM, MBA, examined how Banfield Pet Hospital approaches animal care in a way that targets the best outcomes for both pets and clinicians.

DEI AND CULTURALLY COMPETENT CARE

Marissa Rothenbaum, DVM, shared Banfield’s focus on equity, inclusion, and diversity (EID) and how “culturally competent care” factors into patient treatment. In her words, the mission statement for this philosophy is “how we appreciate each other’s unique perspectives and contributions and use them to...make a better world for pets.”

Previously interim director of equity, inclusion and diversity and co-lead of the Asian and Pacific Islander Diversity Resource Group (DRG) at Banfield, Rothenbaum, shared how UNIDOS, its Latinx DRG, helped Banfield further its EID-driven priorities: “In 2019, we introduced translation [and] interpretation services across the country...to support all our teams [and] create spaces where our clients feel comfortable and welcome. They can speak the language they’re most comfortable speaking and feel more comfortable sharing and acknowledging [our differences].”

Q U A L I T Y  P A T I E N T  O U T C O M E S

Taneeka Bautista, DVM, the director of veterinary quality for Banfield Pet Hospital, joined JoAnn Morrison, DVM, MS, DACVIM, the director of veterinary science at Banfield, to speak about quality assurance and improvement systems for patient outcomes.

Bautista recommended using the “5 Whys” approach to find the root cause of an error or unwanted outcome. The key to fixing a problem, she said, is to simply ask “Why?” at least 5 times. “[If] you continue to ask questions, you will eventually get to the root cause of the problem and the processes that can be addressed to reduce the likelihood of it occurring in the future,” said Bautista. “The root cause is the factor of an adverse event that, if removed, would prevent that event from recurring...If contributing factors are identified, then actions [may] be taken to correct those concerns. This targets the systems and processes that may be involved, removing the culture of individual blame when there’s a concern.”

M E A N I N G F U L  S E L F - C A R E  I N  S M A L L  D O S E S

Lisa Stewart-Brown, LCSW, MBA, took the virtual stage for the next topic: mental health and well-being. As the current program manager of mental health and well-being for Banfield Pet Hospital, she has developed and implemented strategies and initiatives supporting the emotional and mental health of the veterinary professional community.

Why is self-care so important? Stewart-Brown said the veterinary profession attracts highly empathetic and sensitive people who face a combination of financial stress, emotional trauma from animal suffering, staffing shortages, and more. Stewart-Brown said these issues have an impact on veterinary professionals, and because of this, she recommended creating a self-care plan.

According to Stewart-Brown, Banfield takes a holistic approach to health and well-being by focusing on 5 key dimensions: healthy body, healthy mind, healthy finances, healthy career, and healthy community. She suggested focusing on 1 or 2 domains and making small, manageable changes to help improve them. To achieve this, she explained the “Replace, Limit, Try, Enjoy” system. For example, instead of committing to exercising 6 days per week, be more aware of moving one’s body, or enjoy a physical activity that brings one joy. Stewart-Brown told attendees to remember “self-care doesn’t mean ‘me first’; it means ‘me too.”

J O B  S E A R C H  B E S T  P R A C T I C E S

The final segment of the webinar offered job search tips for new graduates, courtesy of Ava Bartley, LVT. She advised job seekers to ensure their résumé is tailored directly to the role they hope to obtain. She said, “Anytime anyone’s reading a résumé, they’re going to [make] sure you are motivated to fill the role specific to their clinic rather than a general space.”

Bartley also recommended asking important questions during an interview or hospital observation, stating, “Inquiring about development opportunities is critical based on where you want to go...and what your career path might look like. If you were to ask me in tech school if I [would] be working on campus relationships with [veterinary] schools, I would not have believed you! But my experience with Banfield has been wonderful. They’ve always celebrated my strengths in areas I [may] not have been aware of so that I could get to where I am today.”
IMPROVE PERFORMANCE WHILE STAYING COMPLIANT

Search engine optimization (SEO) and ADA compliance can work together to create a better user experience. An ADA-compliant website requires images to be properly named, creating an SEO-friendly naming convention. File names should be lowercase and separated by hyphens.

Using properly named images can help your content be found in relevant searches and achieve a higher ranking because search engines will look for proper alternative text to determine your rank. Users who explore the web by utilizing a screen reader often navigate link to link. Anchor text should be accurate to the page it directs to, so that your pages are indexed properly, such as with Google Search Console and other engines.

GET YOUR LEGAL FORMALITIES IN ORDER

ADA noncompliance carries legal complications. It is essential to ensure your website has proper accessibility to avoid repercussions like those experienced by Domino’s Pizza.¹ In 2019, the Supreme Court declined to hear a case on whether the franchisee’s website must be accessible to individuals with disabilities. As a result, an earlier ruling from the 9th US Circuit Court of Appeals remained in effect. That ruling sided with a blind man who had sued Domino’s over website accessibility. The Supreme Court’s decision not to hear the case also strengthened advocates’ arguments that inaccessible business websites are an economic barrier to individuals with disabilities.

To prevent such legal problems, use artificial intelligence–powered testing tools to evaluate your website.² Next, make changes to your site based on scan results and keep up with any changes to standards.

ARE YOU BUYING DIGITAL ADS BUT LEADING TO A NONCOMPLIANT WEBSITE?

We all know social media and Google Ads increase website traffic, but traffic directed to a website not meeting ADA requirements is a billboard for a lawsuit. It is vital to address accessibility issues prior to buying ad placements to avoid emphasizing what your site lacks.

In addition to expanding your clientele, increasing profits, and building an ethical brand, having an ADA-compliant website will help you avoid penalties, boost SEO performance, and improve usability.³

REFERENCES


When it comes to the digital world, an ADA-compliant website can be browsed... with assistive devices used by individuals with disabilities.

Jennifer Guli

Guli is a veteran in the digital world, and a seasoned marketing professional with over 16 years of experience. Style and substance is the benchmark of Guli’s work. Her close attention and keen eye for detail always makes something special out of everything she touches. Her accomplishments as a web content developer & writer, artist, and event execution are known throughout the veterinary industry.

I think of myself as a creative wingwoman for small businesses. My forte is creating aesthetically pleasing and engaging websites that provide a positive user experience. Most importantly, I assist in constructing a compliant web framework that plays a crucial part in site development and legal obligations. Americans With Disabilities Act (ADA)-compliant websites are the future of the digital world, and businesses are legally obligated to integrate features meeting national law requirements.

WHAT IS ADA COMPLIANCE?

The ADA was signed into law in 1990 and prohibits discrimination based on disability in schools, jobs, transportation, and all public places.¹ When it comes to the digital world, an ADA-compliant website can be browsed easily with assistive devices used by individuals with disabilities. This ensures inclusivity and is mandatory for websites funded by state or local governments and for business websites.

Vision-impaired users of a site may have difficulty reading smaller fonts or fonts in specific colors. If these colors do not properly contrast with your website background, ability to adjust font sizes and colors is a must.

As for styles, sites should include relative sizes for the text and avoid inline styling. Users should be able to resize text without assistive technology up to 200% without loss of content or functionality.
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- Non-Union Fractures

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written by
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DVM, CCRT
Vitucci graduated magna cum laude from John Carroll University with a biology degree. She obtained her DVM from The Ohio State University in 2007. After graduation, she moved to the St Louis, Missouri, area and practiced at a small animal general practice for 2 years, before purchasing County Animal Hospital with her husband in October 2009. Vitucci began her rehabilitation training in 2019 and obtained her canine rehabilitation therapist certification through the Canine Rehab Institute in 2021. Synergy Veterinary Rehabilitation opened within County Animal Hospital in 2019. After selling their practice and moving to the Florida panhandle, Vitucci joined PulseVet Technologies as the small animal business manager in May 2021.

New shock wave technology needs no sedation
Small animals can now benefit from an effective treatment for injuries and chronic pain.

Noninvasive medicine is becoming increasingly popular among pet owners as they seek alternative and advanced therapies, irrespective of cost, to improve the quality of life of companion animals. By offering a clinically proven, safe, and sedation-free solution to intractable conditions and injuries—tendon tears, nonhealing fractures, lick granulomas, osteoarthritis, chronic pain, and so on—clinics can enhance their reputation, boost their bottom line, and deliver better patient care.

For more than 20 years, shock wave therapy has been the standard of care for chronic pain and tendon/ligament injuries in equine medicine, but not in small animal medicine because of the need for sedation it previously entailed. With the launch of the X-Trode by PulseVet, a device that provides quick and effective relief without anesthesia, the technology may soon become a staple of all vets.

Imagine walking into your practice right now and telling clients that there is a noninvasive, regenerative modality that takes only 3 to 5 minutes per treatment area, requires just 1 to 3 treatments, and is covered by most pet insurance policies. Do you think they would be interested?

WHAT IS IT?
When people hear the term shock wave, they often think of electrical shock. However, a shock wave is simply a fast, energy-carrying sound wave. Although applied externally, these waves can travel through living tissue and induce biological changes that modulate inflammation, decrease pain, and promote healing.

ITS HISTORY
Shock wave therapy was first used to break up kidney stones in humans (lithotripsy). Early research showed that shock wave energy accelerated bone growth, a fact that motivated investigators to evaluate its effects on other tissue. This work ultimately led to its application in the treatment of musculoskeletal disorders and the introduction, in 1999, of EquiTron, the first veterinary shock wave device. The smaller, more convenient VersaTron was launched in 2002, and equine shock wave therapy took off.
Generating Shock Waves

There are 3 types of shock wave generators: electrohydraulic, electromagnetic, and piezoelectric. Electrohydraulic devices are capable of producing the greatest peak energy and largest focal area. Electromagnetic and piezoelectric devices generate less energy and deposit it in a smaller focal area. Both of these generators were developed to disintegrate renal calculi without damaging the surrounding tissue and are considered true shock wave generators only at high-energy settings. In addition, radial pressure wave devices are also frequently marketed as shock wave generators, but they use mechanical energy (as does a small jackhammer) and do not produce a true shock wave.

How Does it Work?

Shock wave therapy is applied superficially, and its focused, high-energy sound wave is released when it reaches an area of high acoustic impedance, such as a bone-tendon interface or the surface of a cell. This energy causes cells to exude an array of anti-inflammatory, angiogenic, and osteogenic proteins that modulate inflammation, increase blood supply, and lead to bone formation. Cytokines are released that return chronic conditions to the acute stage to initiate the healing process. Angiogenic growth factors are secreted that improve functional capillary density, allowing for a greater blood supply to the area and thus promoting healing.9-11 Bone morphogenetic protein is released to stimulate osseous regeneration.9-11 Shock waves also improve the fiber alignment in tendons and ligaments for improved quality of healing.9,10

In 2021, PulseVet released the X-Trode, a handpiece that broadens the focal area and deposits the energy across a larger volume of tissue, reducing treatment-associated discomfort. This advance makes it possible for dogs and cats to comfortably receive treatment without being sedated.

What Are the Indications?

There are more than 20 evidence-based treatments for equine and canine indications, including tendon and ligament injuries, bone and wound healing, osteoarthritis, and chronic pain.

Injuries to Tendons and Ligaments

Shock wave therapy has been proven to decrease inflammation and increase fiber alignment in tendons and ligaments. Supraspinatus tenosynovitis and injuries to biceps and the Achilles tendon have been successfully treated with shock waves.1,2 In a study performed at Seattle Veterinary Specialists, 87% of dogs with biceps or supraspinatus tendinopathies (particularly moderate-to-severe cases) had a good or excellent outcome after 1 to 3 treatments. The median follow-up time was 95 months. All patients received shock wave therapy without complications.3 In a prospective study of patellar ligament desmitis after tibial plateau levelling osteotomy (TPLO), shock wave significantly decreased ligament thickness compared to the control group.4

Osteoarthritis and Non-neurologic Back Pain

Shock wave therapy has become an integral part of a multimodal approach to osteoarthritis management. By reducing inflammatory cytokines within the joint, cartilage degradation decreases (due to inhibition of chondrocyte apoptosis), thus it has been shown to manage pain symptoms and slow the progression of the disease.5 At the University of Tennessee in 2010, 15 dogs with end-stage elbow osteoarthritis were assigned to receive 2 shock wave treatments or placed in a sham group. Those in the shock wave group showed significant improvement in peak braking and peak propulsion and had an increase of 4.5% in peak vertical force (PVF) compared with the sham group’s PVF decrease of 2.6%.6

For non-neurologic back pain, another study on 38 dogs and 2 cats showed a median lasting improvement of 13.5 months after a single treatment of the lumbosacral area.7 Of the 87% of patients that had a positive outcome, 77% showed results within one week.8 Clinical research is ongoing, with a lumbosacral pain study currently being conducted at The Ohio State University small animal veterinary hospital, sponsored by the Morris Animal Foundation.

Chronic Wounds

Shock wave therapy is now approved for the treatment of diabetic ulcers in humans and has been shown to improve skin flap healing.9,11

Broken Bones

A study of 3 dogs showed that shock wave therapy accelerated the healing of fractures and osteotomies and was particularly effective for use in delayed union or trophic nonunion fractures. In these dogs, whose delayed union or nonunion was present for more than 15 weeks after TPLO surgery, a single shock wave treatment resulted in complete union after 12 weeks.10 Another study showed shock wave treatments accelerated bone healing after TPLO. Patients received 2 shock wave treatments, the first immediately after surgery and the second 2 weeks later. Healing at 8 weeks was significantly higher in patients receiving treatment than in those in the sham group. All shock wave patients were considered completely healed at 8 weeks, compared with only half of those in the control group.11

Treatment Protocol

For optimal energy transmission, ultrasound gel is applied to the canine epidermis. (Dogs with thick coats may need to have their hair clipped.) Treatment takes from 3 to 5 minutes per area, and most patients require no sedation. Indications require a total of 1 to 3 treatments, 2 to 3 weeks apart. No major adverse effects and very few contraindications have been reported. Shock wave therapy is safe, effective, and easy to incorporate into practice.

Why Offer it?

Shock wave therapy is clinically proven by more than 20 years of published clinical research to be safe and effective. It is easy to use; training of veterinary technicians is straightforward for the 5-minute treatment. Because it only requires between 1 and 3 treatments, practice workflow is not impacted, providing substantial cash flow and profitability for the practice. Most of all, it is great for pet patients.

References available online at dvm360.com
What happens after the sale
An insider’s view of selling to a corporate veterinary group

Congratulations! After years of hard work, you are about to realize the equity from your veterinary hospital after recently selling the business. Your beloved veterinary hospital grew into a multimillion-dollar business serving the community of pets and their owners for many years. The success of your business came from a love of the profession, great client service, growth in medical services, innovation, long hours, and hard-earned business acumen. This allowed you as a veterinary practice owner to attract the attention of veterinary consolidators. After months of research, haggling, and sleepless nights, you mutually agree upon a valuation, and the sale is imminent. You breathe a sigh of relief and plan your retirement.

Although this is a momentous occasion, you made sure to examine all aspects of selling your beloved veterinary practice. You consulted with your tax adviser on the best model, the optimum time of year, and other potential consequences. You may have chosen a total cash sale, cash and equity, or a partial sale to maintain some operational control; what happens after the sale may vary according to the buyer. You are satisfied with the process and set the closing date. The countdown begins.

Selling your veterinary practice while continuing to work there is analogous to selling your home while continuing to live there. The new owners move in, but you don’t move out. The process after the sale can be a relief, but it can also prove emotionally and physically exhausting.

It is at this stage that the full reality of no longer owning the business may cause traumatic feelings. The selling veterinarians will often experience the stages of grief as they turn their “child” over to new guardians. After the sale, a veterinary corporation typically requires the selling veterinarian to continue working in the practice and participate in a transition period to maintain stability. If a selling DVM leaves abruptly, there may be an exodus of staff and clients that would be devastating to the new owners.

You now move into the next phase of selling: onboarding and integration into the new veterinary group. At this point, the date and time for the closing are set. Until that day, you and other hospital leaders will have potentially increased contact with veterinary group management. You may expect multiple calls and emails daily. The practice manager will be called upon to provide vendor account information, utilities, and local service contacts. Human resources will need all staff names, dates of birth, tenure information, and accrued vacation time to set up payroll for day 1.

Sellers do not often let their hospital team know that they are selling until a week or even 24 hours before the sale. They may be concerned about staff leaving or associate veterinarians resigning when told their employer is changing, especially when their new employer is a veterinary corporation. You should give your team the appropriate time to process this change because their new employer will experience the stages of grief as they turn their “child” over to new guardians. After the sale, veterinarians will often experience the stages of grief as they turn their “child” over to new guardians. After the sale, veterinarians will often experience the stages of grief as they turn their “child” over to new guardians. After the sale, veterinarians will often experience the stages of grief as they turn their “child” over to new guardians.

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• Did the process interrupt the normal flow of business? Was the team flooded with calls from numerous departments? Did people from the home office show up unexpectedly?
• When was the final inventory performed? (This is usually done within 24 hours of closing. If your team is not familiar with regular inventory accounting, you should plan it well.)
• Was the onboarding for human resources and payroll processes done in person or electronically? Who trained the team on the new processes?
• How were employee work hours logged after the sale? For example, did they use time clocks or practice management software?
• Were there any unexpected changes in agreements made since the sale? (These would include both “handshake” and written agreements.)
• Was there a vested interest in keeping your team “whole”? Or were wholesale changes made immediately after the sale?
• What would you change about the process from initial contact to negotiation to the closing date to integration?
• Were you satisfied with the transaction and outcome?
• And most importantly, would you sell to this group again?

Along with the sellers to which you are directed, call upon others informally. Keep in mind, just as with any reference, you may be led only to those who will speak in positive terms. There is no taboo about selling to a consolidator anymore, so asking your colleagues about their experiences with this group is critical. You should also ask to speak to the integration team or manager. Hopefully, you have been assigned a concierge team with a point person to which you can pose the following questions:

• Who can meet with the team to answer their questions before the sale? They will want to know about benefits, whether schedules will change, and whether reporting will change (who is their “boss” now?). Doctors will have concerns about drug supply, their schedules, their contracts, etc. These questions must be answered thoughtfully, honestly, and completely.
• How are banking changes handled? A crucial transition must occur for all deposits at the time of sale. Even if this happens in the middle of the day, the credit card machines must be changed to send all revenue into a new bank account at that time. If the seller continues to receive funds in their bank account, these funds will need to be transferred, which can create headaches.
• What is the process for bank deposits post sale? Is the practice manager required to make deposits with a certain frequency? How is this audited?
• Who will handle the change in accounts? Vendor accounts under the seller must be closed and new accounts opened for the time of sale so that the new owner is immediately billed for all orders and invoices. This applies to external reference laboratory services, utilities, payroll, maintenance services, etc.
• If branding is to occur, when and how will the name change and notice of new owners become public? When will new signage be erected and the website changed?
• Will staff receive new uniforms immediately?
• When is staff eligible for benefits, and what is the enrollment process?
• What is the expectation for interaction with the corporate home office and regional managers?
• What policies and processes will change? Is there a team member handbook for human resources processes?
• How are financial benchmarks, goals, and budgets set?

Many veterinary groups have formed special onboarding/integration teams that shepherd newly purchased hospitals through this process. An onboarding team should consist of a veterinarian as well as a non-DVM manager, and both should be change management experts. Many groups still struggle with this process because of lack of staff, knowledge, experience, skill, and, most significantly, emotional intelligence. A clearly defined written process should be shared with the seller prior to closing. Planning is 1 of the 6 strategies for coping with change,2 and hundreds of tasks must be done during closing and integration. Well-managed veterinary groups have an intentionally organized integration process to set a positive tone for the working relationship going forward. Otherwise, poorly executed onboarding may cause frustration, anger, regret, spiteful behavior, dissent, and attrition. A superbly performed process will help the staff be inquisitive, open, insightful, and helpful.

Integrating this process from the start will help everyone be less anxious of other impending changes.3 Although most sellers continue to work, they may step back from their leadership role and decrease their work hours shortly after the sale. However, during the integration phase, staff should know you are fully involved with them. They should know you are confident in your decision to sell, and they should see how it will benefit them. This is a complicated process that is both transactional and emotionally charged. Senses are heightened and hackles will be up, and staff may feel left out and blindsided by the change.

The integration process is especially significant when the new owner is a veterinary aggregator. The negative connotation associated with veterinary aggregators requires an overabundance of caution and care after closing. As the seller, being there for your team during this time is important; however, the veterinary group must provide a scrupulous and conscientious approach to integration. The life of the practice depends on it. References available online at dvm360.com
Within the veterinary community, opportunities abound to learn and grow as both a professional and a person. With Medical World News®, dvm360® highlights the latest medical advances, tips to protect your mental health, hospital design innovations, and more information for veterinarians everywhere.

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See the needle, see the target and improve your success rate.
Editor’s note: All names and businesses in this dilemma case are fictitious, but the scenario is based on real occurrences.

All Pets Animal Hospital was a large, privately owned small animal practice. The staff consisted of 8 veterinarians and 60 support personnel, but the hospital administration had difficulty attracting new staff members. As a result, the hospital director and administrators met to formulate an effective approach to secure new staff.

Industry challenges and the changing job market had made acquiring new team members a challenge. Thus, the hospital administration decided to conduct a comprehensive poll of all staff members to determine workplace priorities. What qualities made their jobs attractive and rewarding, and what issues led to dissatisfaction and the desire to work elsewhere?

The results of the survey proved surprising but extremely helpful. Many things had changed in the past 2 pandemic years, including work priorities. Salary and pay scale were no longer at the top of the list. During these stressful times, other priorities had replaced the traditional criteria for veterinary job seekers.

The survey indicated the highest priorities were work schedule and staff support. Family obligations required unique schedule flexibility. Additionally, workforce shortages led to staff being overwhelmed and deprived of coworker support to maintain quality care. These issues often led veterinary staff members to look for other opportunities.

Benefits packages also ranked high on the employee priority list. Economic volatility and rising health care costs made these packages more important than base pay itself. Health care, dental care, vision care, and pension plans significantly affect day-to-day quality of life.

The question may arise: Why are current veterinary workplace priorities centered on the family unit? One reason may be that the staff salary goals have largely been met. Most well-run veterinary facilities offer similar pay scales for their workforce. A veterinarian or technician rarely leaves a position to make more money. Although signing bonuses may entice new staff, a 1-time offer unaccompanied by other criteria will lead to high turnover.

The administrators implemented what they learned and adjusted their employment packages. More importantly, they concluded that the industry’s diverse demographics and the emphasis on balancing work and family represented a healthy, positive direction for the profession.

I am proud to say my dad practiced small animal medicine 85 years ago. I remember seeing him come home from work smelling distinctly of ether. Our patients and their problems have not changed much, but the profession certainly has.

The bottom line has always been, and continues to be, very important. In a profession not significantly bolstered by medical insurance, a profitable bottom line allows veterinarians to diligently treat their patients. But although monetary reward has its place, it no longer represents the center of professional satisfaction in veterinary medicine. The quote “We’ve come a long way, baby” applies to our profession.

Today’s veterinary medicine is a fulfilling discipline that should consider both clinic life and home life. If it can do this, our future will look bright.
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Feline Orofacial Pain Syndrome: THE GNAWING SENSATION
Feline orofacial pain syndrome (FOPS) is a neuropathic pain disorder that was first reported in the 1990s. The pathophysiology of the disease is poorly understood; however, it is believed to be related to a genetic mutation within the Burmese breed and cross breeds. The human equivalents of this disease are trigeminal neuralgia and burning mouth syndrome. Clinical signs can start as early as 14 weeks of age (median age at presentation, = 7 years). Cats presenting with this disease commonly show signs of facial and/or oral pain. Owners and veterinarians may notice excessive chewing, rubbing and pawing at the face, and/or oral lesions from self-mutilation. Triggers for episodes, which can last several hours, often are random. Long periods of time can occur between episodes. Diagnosis of the disease is based on exclusion. Physical examination must include a thorough oral and neurologic evaluation. Affected patients have varying degrees of dental/oral disease and pathology, but the examination is otherwise normal. Baseline blood work is typically unremarkable, and consultation with a boarded-certified neurologist may be beneficial in both making a diagnosis of FOPS and ruling out other neurologic conditions. A number of different medications have been used to manage this disease, including, but not limited to, nonsteroidal anti-inflammatory agents or corticosteroids, antidepressants, anxiolytics, and anticonvulsants. Recent published data indicate that anticonvulsants (eg, phenobarbital) may be most effective in improving clinical symptoms. The goal of treatment is to provide relief of clinical symptoms and improve overall quality of life. Generally, the prognosis is fair to good. Future studies are needed to provide a better understanding of the pathophysiology and, hopefully, better management of this disease.

**ETIOLOGY OF FOPS**

Breeders have reported being aware of this disease, but, because there is a lack of an established mode of inheritance, continued breeding with the same familial lines has not been altered. Some Burmese breeders have reported having to wrap paws to protect the kittens from self-mutilation; however, this medical history is rarely passed on to new owners, as breeders don’t believe it to be significant or recurrent problem. FOPS is believed to be a primary neuropathic pain disorder affecting branches of the trigeminal nerve (cranial nerve 5). The trigeminal nerve provides both sensory and motor impulses to different regions of the head, including, but not limited to, the maxilla and mandible. The 3 main branches of this nerve are the ophthalmic, maxillary, and mandibular nerves, with the latter 2 providing the main sensory innervation to the maxilla and mandible. Both of these main nerves split into multiple other nerves. In FOPS, pain appears to be localized to the oral cavity, including the lips and tongue. Localization of such discomfort and pain is difficult in our veterinary patients; in the case of FOPS, location of the pain source could provide important information regarding our understanding of the pathophysiology.

**SIMILARITIES WITH HUMAN NEUROLOGIC CONDITIONS**

In humans, FOPS is similar to trigeminal neuralgia (TN) and glossodynia. TN is characterized by brief periods of severe pain in the mandible and maxilla that often are preceded by mild sensory stimulation (eg, shaving, wind, eating, drinking, and/or light touch). This condition is divided into classical or secondary TN; the classical form mirrors FOPS in felines, with the maxillary and/or mandibular nerves being most frequently affected. Like FOPS, TN is often unilateral. Interestingly, an even rarer form of TN has been linked to familial genetics.

**Trigeminal neuralgia**

Classical TN is suspected to be secondary to compression by a nearby blood vessel (usually, an artery in the cerebel-lolopontine cistern) or other morphologic changes of the trigeminal nerve. This condition is called a “neurovascular conflict with compression.” In the proximal 25% of the nerve, Schwann-cell myelination transitions to oligoden-droglia myelination; this region is suspected to be weak region that is more susceptible to compression. Another theory suggests that hyperexcitability of the neurons results from upregulation of voltage-gated sodium channels within the trigeminal ganglion and trigeminal subnucleus caudalis due to a genetic mutation and/or induced sympathetic activity caused by environmental stress. The pathophysiology of the condition in cats is unknown, and compression of the trigeminal nerve by a nearby blood vessel has not been found.
NEUROPATHIC PAIN OF FOPS

Glossodynia

The second human condition that is similar to FOPS is glossodynia, also known as burning mouth syndrome. Humans affected with this condition have abnormal taste perception, psychosocial distress, dry mouth, and a tingling, burning, and prickling sensation of the oral mucosa, especially the tip of the tongue. In FOPS patients, on the other hand, the caudal tongue is often uncomfortable, and mutilation lesions are often present. The cause of glossodynia is unknown and is considered idiopathic.4

Unlike for FOPS, the criteria for a diagnosis of burning mouth syndrome includes no evidence of lesions of the oral mucosa. Glossodynia is divided into 2 main types, primary (idiopathic) and secondary. It is subclassified based on severity and duration of symptoms. Both the central and peripheral neurologic pathways can be involved in the primary (idiopathic) form. In the secondary form, underlying local and/or systemic physiologic stimuli is the cause of symptoms. Treatment, which can be multimodal, mostly depends upon the form of the condition. Interestingly, both topical and systemic treatments have been used to relieve symptoms of burning mouth syndrome.5 Topical treatments for FOPS patients have not been described.

Figure. Treatment of FOPS

SIGNALMENT AND PRESENTING COMPLAINT
Burmese or Burmese cross, male or female, any age (median age, 7 y)
Excessive chewing, rubbing, and/or pawing at the mouth, focal facial seizures, facial/ oral lesions/ulcers

Age < 1 y

Diagnosis: Physical examination: includes a thorough oral and cranial nerve assessment
Blood work: CBC, serum chemistry, thyroxine level
Neurology consult: MRI and electromyography

DIAGNOSTICS

Age > 1 y

PRIMARY MEDICATIONS
Phenobarbital
Diazepam

SECONDARY MEDICATIONS
Robenacoxib
Buprenorphine
Amitriptyline or fluoxetine

LONG-TERM THERAPY
Regular dental care, +/- wean off medications

TREATMENT
Start with dental cleaning, +/- extractions

PHYSICAL EXAMINATION
Oral: mixed dentition, +/- oral lesions
Neurologic: cranial nerves WNL, unremarkable
Physical: unremarkable

PHYSICAL EXAMINATION
Oral: varying degree of dental disease, +/- oral/facial lesions
Neurologic: +/- abnormal jaw tone and facial sensation
Physical: +/- decreased body condition

Neuropathic pain depends upon 4 main criteria—central sensitization, peripheral activation, dysregulation of central inhibition, and phenotypic differences in the amyloid-β fibers of mechanoreception.

In FOPS patients, central and/or ganglionic processing may be dysfunctional, and it possibly is caused by damage to the oral cavity from teething and/or dental disease.6 Although FOPS is characterized by symptoms similar to those of both TN and burning mouth syndrome, the true role of the trigeminal nerve and other neurologic pathways remains a mystery.

SIGNALMENT AND HISTORY

The age range of documented FOP cases is 14 weeks to 16 years (median, 7-8 years). In kittens, there are 2 peak periods. The first is around 14 weeks of age; it is often associated with vaccine administration and mouth ulceration. The second peak is around 5 months of age; it is associated with teething.

In kittens, the problem often resolves with resolution of mouth ulceration and teething. More often than not, when signs and symptoms associated with FOPS are seen in young kittens, they commonly are mistaken for teething pain and discomfort. Treatment with pain medications may lead to some improvement. Owners and clinicians, however, may note that there is incomplete resolution of signs until the stimulus (ie, teething in young kittens) is resolved or removed. Unfortunately, kittens who present with FOPS symptoms most commonly will have recurrence of clinical signs as a mature cat.3 Further, episodes can occur after prolonged periods and even years.6

As with the age of onset, FOPS can present with a wide range of nonspecific symptoms. Cats may have a short “prodromal” period of anxiety before an episode. During episodes, patients often appear to be in discomfort and distress; there is no alteration of mentation during or after an episode. They can be distracted at any time before or during an episode. During an episode, many owners may believe that their pet is experiencing a seizure or a focal facial seizure. It is important to ask the owner about mentation before, during, and after the episode. Unfortunately, an owner’s description of seizure-like activity and/or focal facial seizures cannot be completely ruled out based upon the history of the episodes and patient signalment.>>
FOPS generally expressed as oral discomfort and changes in behavior indicating pain, including excessive rubbing or pawing at the mouth and possible oral ulcerations. The owner may also describe a cat with episodes of exaggerated or repetitive chewing or licking behaviors. These episodes can last from minutes to hours. The onset of clinical signs are often acute. The discomfort is often unilateral; if they are bilateral, however, one side is typically worse than the other. Weight loss and inappetence can occur in some patients.

The most common trigger of FOPS is dental disease. Up to 63% of patients can have concurrent dental lesions including, but not limited to, resorptive lesions, ulcers, and other dental disease of cats. As previously stated, the most common trigger is teething in young kittens. Touching, grooming, and drinking and/or eating food can also trigger FOPS. Stress triggers may include residence in a multicat household, introduction of a new kitten, construction, the death of the primary caretaker, a move to a new house, and a visit to a veterinary hospital or boarding facility. The episodes also can occur spontaneously without an obvious trigger.

### Diagnosis of FOPS

FOPS can be a very difficult and frustrating disease to diagnose because of its mysterious pathophysiology and random disease triggers. There is no specific diagnostic test available to effectively and efficiently detect FOPS.

The diagnosis is one of exclusion and/or response to symptomatic therapy. Differential diagnosis includes, but is not limited to, dental disease (feline chronic gingivostomatitis, juvenile gingivitis, juvenile hyperplastic gingivitis), oral foreign body, trigeminal nerve sheath tumor, trauma, abscess/cellulitis, temporomandibular joint (TMJ) disease, liver disease with secondary hepatic encephalopathy, complex psychomotor seizures, brain structural abnormalities (tumors), feline hyperesthesia syndrome, and otitis media.

A complete physical examination (including cranial nerve evaluation) and an oral examination must be performed. Physical findings can include varying degrees of dental disease and of ulcerated lesions of the oral mucosa, tongue, lips, and chin. There may be evidence of self-mutilation of the face, mouth, and tongue. Neurologic examination is often normal, but abnormal jaw tone and facial sensation may be present. Pain should not be elicited during opening and closing of the mouth. Ensure that the TMJs are palpated for any laxity. Blood work (eg, complete blood cell count, thyroxine test, and serum chemistry panel) will be unremarkable; a stress leukogram and/or mildly elevated glucose level secondary to excitement may be noted. Pending patient basic blood work results, determination of pre- and postprandial serum bile acid levels may be indicated. An MRI, electromyography, and consultation with a board-certified neurologist can be used to rule out other diagnoses. Electromyography of the tongue, masticatory muscles, or pharynx will be normal in FOP patients. Histopathology of lesions are consistent with trauma, with secondary inflammation and granulation tissue.

### Treatment of FOPS

When a patient presents with suspected FOPS based upon clinical signs and, potentially, breed, dental care is the mainstay of therapy; palliative medications to target neuropathic pain is recommended (Figure). At least temporarily, approximately 50% of patients can experience improvement with dental treatment. Thus, a thorough dental cleaning with extraction of any oral foreign body, trigeminal nerve sheath tumor, trauma, abscess/cellulitis, temporomandibular joint (TMJ) disease, liver disease with secondary hepatic encephalopathy, complex psychomotor seizures, brain structural abnormalities (tumors), feline hyperesthesia syndrome, and otitis media.

A complete physical examination (including cranial nerve evaluation) and an oral examination must be performed. Physical findings can include varying degrees of dental disease and of ulcerated lesions of the oral mucosa, tongue, lips, and chin. There may be evidence of self-mutilation of the face, mouth, and tongue. Neurologic examination is often normal, but abnormal jaw tone and facial sensation may be present. Pain should not be elicited during opening and closing of the mouth. Ensure that the TMJs are palpated for any laxity. Blood work (eg, complete blood cell count, thyroxine test, and serum chemistry panel) will be unremarkable; a stress leukogram and/or mildly elevated glucose level secondary to excitement may be noted. Pending patient basic blood work results, determination of pre- and postprandial serum bile acid levels may be indicated. An MRI, electromyography, and consultation with a board-certified neurologist can be used to rule out other diagnoses. Electromyography of the tongue, masticatory muscles, or pharynx will be normal in FOP patients. Histopathology of lesions are consistent with trauma, with secondary inflammation and granulation tissue.

### Medications Used for FOPS Treatment

<table>
<thead>
<tr>
<th>Drug category</th>
<th>Drug (trade name)</th>
<th>Dosage and frequency</th>
<th>Route</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anticonvulsants</td>
<td>Phenobarbital</td>
<td>1-3 mg/kg twice daily</td>
<td>Orally</td>
<td>Obtain serial phenobarbital levels and blood work every 6 mo.</td>
</tr>
<tr>
<td></td>
<td>Diazepam (Valium)</td>
<td>0.25-1.0 mg/kg twice daily</td>
<td>Orally</td>
<td>Long-term oral dosing can lead to idiosyncratic hepatic failure.</td>
</tr>
<tr>
<td></td>
<td>Gabapentin (Neurontin)</td>
<td>3-5 mg/kg twice daily to start; gradually increase to 8-10 mg/kg 2-3 times daily</td>
<td>Orally</td>
<td>Consider lower dosing in cats that have preexisting renal disease.</td>
</tr>
<tr>
<td></td>
<td>Pregabalin (Lyrica)</td>
<td>1-2 mg/kg twice daily</td>
<td>Orally</td>
<td>Medication is not widely available/used in veterinary medicine.</td>
</tr>
<tr>
<td>Anti-inflammatory</td>
<td>Robenacoxib (Onsior)</td>
<td>2 mg/kg once daily for 3 days</td>
<td>Orally</td>
<td>Labeling recommends use for up to 3 days.</td>
</tr>
<tr>
<td></td>
<td>Prednisolone</td>
<td>1-2 mg/kg once daily; to discontinue, institute a tapering schedule</td>
<td>Orally</td>
<td>Avoid prednisone use in cats when possible.</td>
</tr>
<tr>
<td>Anxiolytics</td>
<td>Fluoxetine (Prozac)</td>
<td>0.5-1.3 mg/kg once daily</td>
<td>Orally</td>
<td>Be aware of serotonin syndrome with overdose and administration with concurrent serotonergic drugs.</td>
</tr>
<tr>
<td></td>
<td>Amitriptyline (Elavil)</td>
<td>0.5-2.0 mg/kg once daily</td>
<td>Orally</td>
<td>Increased bioavailability when given with food. Be aware of serotonin syndrome with overdose and administration with concurrent serotonergic drugs.</td>
</tr>
<tr>
<td>Opioid</td>
<td>Buprenorphine (Buprenex)</td>
<td>0.01-0.02 mg/kg 3-4 times daily</td>
<td>Transmucosal</td>
<td>Euphoric events may occur in cats.</td>
</tr>
</tbody>
</table>

When a patient presents with suspected FOPS based upon clinical signs and, potentially, breed, dental care is the mainstay of therapy; palliative medications to target neuropathic pain is recommended (Figure). At least temporarily, approximately 50% of patients can experience improvement with dental treatment. Thus, a thorough dental cleaning with extraction of any diseased teeth, based upon dental x-rays or CT, should be performed. In cats given a diagnosis of FOPS, regular dental cleaning should be planned as part of their annual examination.

In addition to dental care, anticonvulsants, anti-inflammatory medications, opioids, and/or antidepressants/anxiolytics often are needed, at least for a period of time (Table). In retrospective, nonblinded studies, use of anticonvulsants (eg. phenobarbital, diazepam, gabapentin, pregabalin) have been most effective.

Phenobarbital is a common first-line epileptic drug that acts on the postsynaptic neuron at the GABA<sub>A</sub> receptor site and other areas involved in the modulation the neuron activity. The GABA<sub>A</sub> receptors are found in abundance in the dorsal horn and trigeminal ganglion; they participate in the signaling pathways for pain perception. When the GABA<sub>A</sub> receptor is activated, it opens a channel that allows negatively charged chloride ions to flood past the neuron membrane, thus changing the membrane potential of the neuron. Phenobarbital administration helps to hyperpolarize the postsynaptic neurons via chloride ions, leading to a lower resting membrane potential.
This lower resting membrane potential is part of the mechanism to reduce seizure activity in epileptic patients. The exact effect of phenobarbital that provides symptomatic relief in patients with FOPS is not understood. Phenobarbital treatment is extra-label in cats, and dosing ranges between 1 and 3 mg/kg orally every 12 hours. Depending upon the patient’s age and preexisting conditions, serum phenobarbital levels and blood work should be monitored at least every 6 months. Diazepam can be given at 0.25 to 1.0 mg/kg orally every 12 hours. For felines with neuropathic pain, gabapentin starting at 3 to 5 mg/kg orally every 12 hours has been given, with a gradual increase, as needed, to 8 to 10 mg/kg orally every 8 to 12 hours, as needed. Mechanisms of action for both drugs may involve calcium channels within the neuron cell membranes.

Further pharmacologic studies are needed to address the mechanism of action and efficacy of these medications in felines with neuropathic pain and to understand the utility of treatment in patients with FOPS. Patients with preexisting kidney disease should have a reduced gabapentin dosage based upon the International Renal Interest Society stage. The pharmacokinetics and pharmacodynamics of pregabalin are very similar, yet there are limited studies in veterinary medicine; it currently is not as widely used as other medications. Pregabalin may improve symptoms of neuropathic pain at a dose of 1 to 2 mg/kg orally every 12 hours. Anticonvulsants have produced the best responses when given alone after dental cleaning. Anti-inflammatory medications (2 mg/kg of robenacoxib given every 24 hours orally for 3 days) or a tapering prednisone dose; anxiolytic drugs (0.5-1.3 mg/kg of fluoxetine orally given every 24 hours or 0.5-2.0 mg/kg of amitriptyline orally given every 24 hours); and/or of buprenorphine given orally every 6 to 8 hours or transmucosally can be added, as needed.

A retrospective study by Rusbridge et al showed that anti-inflammatory and opioid medications showed some effectiveness in controlling pain and discomfort in some cases. Anti-inflammatory and opioid medications are often used as add-on therapies in difficult cases. While therapy is being initiated, concurrent E-collars, paw covers, or nails caps should be used to prevent further self-mutilation. The environment should be stress-free; owners should consider use of pheromone diffusers and sealed, additional litter boxes.

**PROGNOSIS**

Prognosis is generally fair to good. Rusbridge et al reported that 12 of 113 cases were euthanized due to FOPS, and 86 of 113 cases had either improved symptoms or complete resolution of signs with medication. The goal of all therapeutics is to alleviate clinical symptoms and improve quality of life. Spontaneous remission can occur in some cats, and some can be weaned off medications entirely or between recurrent bouts. Approximately one-third of patients will require long-term treatment.

Ultimately, a better understanding of the pathophysiology of neuropathic pain will lead to better diagnostics, therapeutics, and improvement in the quality of life in cats affected by this disease. References available online at dvm360.com

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**CE EXAM**

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1. Genetics are believed to play a role in feline orofacial pain syndrome (FOPS) in which breed?
   a. Birman
   b. Ragdoll
   c. Persian
   d. Burmese
   e. British Shorthair

2. What physical examination findings may be found in patients affected by FOPS?
   a. Dental disease or teething, oral/facial ulcers and lacerations, weight loss, abnormal facial sensation, abnormal jaw tone
   b. Dental disease, unilateral facial paralysis, nystagmus
   c. Dental disease, abnormal mentation, nystagmus, oral/facial lesions, weight loss
   d. Abnormal jaw tone, abnormal facial sensation, facial lacerations, excessive chewing, vomiting, facial focal seizures
   e. None of the above; patients presenting with FOPS have an unremarkable physical, oral, and neurologic examination.

3. Although medications such as phenobarbital and gabapentin have been used to reduce clinical symptoms in FOPS patients, which of the following should be used first in adult cats?
   a. Acupuncture
   b. Surgical correction of the compression of the trigeminal nerve
   c. Reduction of environmental stress/behavioral modification
   d. Trigeminal nerve block
   e. Thorough dental cleaning

4. What are the 2 peak periods of FOPS in kittens presenting with FOPS, and what symptoms are noted during these periods?
   a. 4 weeks, weaning and introduction of solid foods; 14 weeks, vaccine administration and mouth ulcers
   b. 4 weeks, weaning and introduction of solid foods; 5 months, vaccine administration and mouth ulcers
   c. 14 weeks, vaccine reactions and mouth ulcers, 5 months, teething
   d. 8 weeks, transition to new home, deworming, and first round of vaccinations; 6 months, teething
   e. 5 months, teething; 1 year, transition from kitten food to adult food

5. MRI imaging of the head has revealed compression of the trigeminal nerve by related vasculature in ______ medicine; however, compression has not been confirmed in ____ medicine.
   a. Veterinary, human
   b. Human, veterinary
   c. Compression has been proven in both human and veterinary medicine.
   d. Compression has not been proven in either human or veterinary medicine.

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INSTRUCTIONS:
Begin the course test online after reading this article at dvm360.com/journal/CE/July2022
Whether you’re a newly graduated veterinarian or an established practitioner contemplating a different career path, consider this: There has never been a better opportunity for you to become your own boss, and the perks of practice ownership have never been more evident.

**WHAT DO THE DATA SHOW?**

Recent research by the American Veterinary Medical Association (AVMA) shows both the opportunity and the benefits of practice ownership. On the opportunity side, approximately 40% of practice-owning veterinarians are thinking of selling their practice in the next 5 years, according to findings from the 2021 AVMA Census of Veterinarians.¹

**WHAT ABOUT THE PERKS?**

Practice owners have higher satisfaction rates than veterinarians in other job positions. They are more likely to be satisfied with their job, their compensation, and the profession in general. In terms of satisfaction with their lifestyle, practice owners rate second only to relief veterinarians.

There are also psychological benefits. Data from the AVMA census show practice owners are at less risk for burnout than associate veterinarians, even though many work longer hours. The reason is unclear from the research but may have something to do with owners having control over all aspects of the practice—everything from hours of operation to mission and culture. Then there are the personal rewards, such as greater engagement and the freedom to exercise one’s passion.

**AND THERE’S MORE**

Practice owners also enjoy certain financial perks:
- Paying oneself
- Power over deciding how much profit to reinvest and how much to take home
- Owning an asset that will increase in value over time
- Tax benefits

By contrast, incomes of associate veterinarians are limited to their direct salary and compensation, and those incomes average approximately $50,000 per year less than practice owners.

**SO WHAT’S HOLDING YOU BACK?**

Let’s consider some common concerns about practice ownership—and why they don’t need to make you dismiss this as a career path.

**What about student debt?**

It may seem counterintuitive, but student debt is no barrier to practice ownership from a business-financing perspective. A veterinary degree is an important asset, representing strong earning potential, and lenders recognize this. What’s more, buying a practice could help you pay off your student loans at a faster pace by generating more income for you while building equity in the business and increasing your net worth.

Intrigued? AVMA Axon has helpful webinars that explain in further detail how practice ownership can make financial sense, even for veterinarians with student debt.

**What about the long hours?**

When transitioning to the role of practice owner, work-life balance can certainly be a concern. Especially if you’re starting a practice from scratch, it may take a few years of focus and long hours to get the practice running the way you envisioned it. But this investment ultimately allows you control over the time you spend working and your own quality of life.

And you don’t need to do it all alone. When the AVMA brought together business experts, economists, and successful practitioners to identify what sets successful veterinary practices apart from others, one of the characteristics they identified was the owner’s ability and willingness to empower others.² Work on overcoming any resistance you might have to delegating responsibilities and recruit someone to help. Delegating can be as good for the business as it is for you.

An important—and often underused—role is that of credentialed veterinary technicians (CVTs). When we make full use of the skills of our CVTs, the whole practice operates more efficiently. This
can translate to more free time for you, allowing you to focus on your passion. Plus, CVTs feel more challenged, satisfied, and valued at work—the whole team wins.

WHAT ABOUT THE MANAGEMENT ASPECT?

There’s no getting around it. Successful practice ownership requires leadership and communication skills, business acumen, and an ability to delegate, among other skills. Data indicate that the top reason veterinarians cite for having no interest in buying a practice is having no interest in the management aspects. Other than retirement, the top reason owners give for selling their practice is being tired of the management duties, cited by 14% of those thinking of selling.

Maybe it’s time for both groups to reconsider. As a practice owner, you make the staffing decisions, which can include hiring to cover your weaknesses or hiring individuals capable of handling the things you’d rather not be responsible for. This might translate to hiring a practice manager or developing one of your existing staff members to take on these duties.

Such a decision makes financial sense, too. According to the AVMA census, every hour a veterinarian spends performing management duties is an hour that could be spent seeing patients instead, a difference of approximately $300 in revenue.

The practice itself is also something that can grow and become a valuable liquid asset. Additionally, AVMA’s suite of practice management tools cover the gamut of management issues, including the following:

- Growing profitability
- Leading teams
- Marketing and building client relationships
- Managing operations
- Embracing telemedicine

THE BOTTOM LINE

If you are not already a practice owner, now is an opportune time to consider becoming one. Ownership can bring with it substantial benefits, including a lower risk of burnout, being your own boss, and paying off student debt faster than possible in a staff role, to name but a few. The practice itself is also something that can grow and become a valuable liquid asset.

If you are already a practice owner, consider mentoring early-career veterinarians to foster the skills and desire to one day lead or buy a practice—maybe your practice. Mentorship can be personally rewarding, help you share your own workload, and strengthen the veterinary profession for years to come.

MORE RESOURCES TO DRAW ON

The AVMA also offers a wealth of resources to help make practice management easier and more efficient. One is the standard chart of accounts, recommended by the American Animal Hospital Association, Veterinary Management Group, and other professional organizations. This helpful tool provides an efficient way to capture and assess financial health of a veterinary practice. Find it at avma.org/Accounting.

Additionally, AVMA’s suite of practice management tools cover the gamut of management issues, including the following:

- Growing profitability
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- Marketing and building client relationships
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- Embracing telemedicine

REFERENCES

Colic surgery delivers a painful reminder

For the past 30 years, colic surgery in the middle of the night has been an unchanging ritual at Brock Veterinary Clinic. And for 20 to 25 of those years, I was the only veterinarian there that could do them, so I was up all night 1 to 5 times a week. But the years have passed, and now there are 4 of us able to do them. My up-all-night life has settled down quite a bit. Thank goodness.

However, one event from a few years ago has never left my memory bank. It was about 3 AM when a horse was brought in with severe abdominal pain. The diagnosis was clear. “It is a hernia…best I can tell, it is about 8 inches long. The force of that horse’s foot tore your muscles. You need to get it fixed soon. I will set you up for surgery in a couple of days,” the physician said.

I could be the only vet in the world who was kicked so hard by an anesthetized horse that he required surgery. Sheesh.

When I finally cut the back hobble enough that it broke through, I was not at all prepared for what happened next. The horse’s fanny fell about 18 in onto an 18-in-thick pad. How could that be dangerous? Well, let me tell you, those pads had a lot of bounce to them. The horse’s back legs were straight and fixed that way. When 600 lb of horse posterior hit those springy pads, one of those legs whipped around in a circle at the speed of sound. On recoil, it smashed me in my fat tummy before I could even try to dodge.

This knocked all the air out of my body, leaving me piled up in the corner, wishing I were a person who cussed more. It hurt. But in a few minutes, I was back in the game. We got the horse down, and everything went well from there.

GETTING ON WITH BUSINESS

Three days later, however, I still had pain in my tummy. It was accompanied by a soft spot just to the left of my belly button. I figured this was not good. And it wasn’t. I called my friend, a human soft tissue surgeon who brings horses to me. I told her about the event and the worrisome soft spot next to my belly button. She made me an appointment to see a physician, and off to Lubbock, Texas, I went.

The diagnosis was clear. “It is a hernia…best I can tell, it is about 8 inches long. The force of that horse’s foot tore your muscles. You need to get it fixed soon. I will set you up for surgery in a couple of days,” the physician said.

Driving home from the appointment, I thought I could be the only vet in the world who was kicked so hard by an anesthetized horse that he required surgery for a hernia. Sheesh.

The surgery required a 10-in mesh to correct the defect and a long lecture from my doctor that I should not lift anything weighing more than 10 lb for at least 6 weeks.

I went home to lick my wounds and lie around a while. Guess what? Thirty-six hours later, the doctor who fixed my hernia called my cell phone and said, “I have a [horse with] bad colic that I feel sure is going to need surgery. Can I bring it on down?”

“What?” I said. “You just told me 2 days ago not to lift anything heavier than a rump roast and you are wanting me to pick up giant horse guts that weigh at least 50 lb?” Funny how things change.

“I will scrub in with you and do all the heavy lifting. If you tell me what I need to do and what we are looking at, we can make it work,” was her reply.

I wasn’t worried about all that. What did worry me was the fact that my belly was painful and kept me in bed. I wasn’t sure I could stand up for a 2-hour surgery, much less pick up a horse gut packed with doo-doo.

She said if I would meet her there, she would put a system in my incision that would deliver lidocaine to the incision site so I would be able to stand up straight and help her. “Sure thing,” I said. If she had a way to make me feel better, I was in. I also wanted to help her horse.

We met at the clinic and the party started. She fixed up a system in my incision, and I felt like a million bucks. We worked as a team to save the horse’s life that day. I was amazed. As I watched her do the surgery under my advice, I realized how good a surgeon she was. I mean, really good. It made me happy she had been the surgeon to fix my boo-boo.

The lidocaine didn’t last very long when she removed the system after the surgery. Let me tell you something: I was happy the horse had lived and I’d watched her do the surgery, but my surgery site was a painful rascal for the next few days.

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