CBD Research First. Product Second.

We take R&D seriously.

That’s why we’ve made the industry’s largest investment in research and development. And why we’re committed to conducting rigorous research on CBD to fully understand its effects on dogs and cats. We put research first, because we believe the health and safety of pets is second to none. And when that CBD research turns into CBD products, you’ll be the first to know.

Learn more at canopyanimalhealth.com
CBD Safety First. Product Second.

We hold ourselves to the highest standards.

Safety is key to producing CBD products. And that means doing the work required to investigate the safety of short- and long-term dosing. We’ve made the largest research and development investment in the industry to fully understand CBD’s effects on dogs and cats. And when that CBD research turns into CBD products, you’ll be the first to know.
COVID-19: employment law updates

A recent webinar for veterinary practice owners and managers shed some light on how to reduce workplace exposure to the novel coronavirus, and their legal rights and responsibilities regarding their employees and their business.

By Amanda Carrozza

News and regulations related to COVID-19 are changing on a daily, if not hourly, basis. To date, veterinary practices have been labeled as essential businesses by states that have mandated stay-at-home orders and/or the closure of non-essential businesses. Even with the ability to operate, it is hardly business as usual for veterinary hospitals. In the midst of taking measures to safeguard themselves and their families, veterinary hospital owners and managers are tasked with protecting staff, clients, patients and the overall business during these uncertain times.

“Once we get through this initial crisis period of flattening the curve that we’re trying to do, we are still going to be at a level of some sort of crisis for the next...
THE PROTECTION DOGS COME RUNNING FOR.

The only Real-Beef Chewable isn’t just the #1 choice of dogs,¹ owners,² and veterinarians³ - it’s the one dogs look forward to. HEARTGARD® Plus:

✓ Protects dogs from heartworm disease and treats and controls 3 species of hookworms and two species of roundworms
✓ Is approved for puppies as young as 6 weeks of age
✓ Over 30 years of trusted prevention

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.HEARTGARD.com.

² Data on file at Boehringer Ingelheim.
³ Data on file at Boehringer Ingelheim.
New evidence is evaluating CBD use in horses

Cannabidiol is already being used to mitigate obsessive-compulsive behaviors in horses. This study aims to find out whether it’s actually working.

ever since the 2018 Farm Bill removed industrial hemp from the Controlled Substances Act, the availability and popularity of canna-bidiol (CBD) products have skyrocketed. But it remains unclear whether CBD is safe or effective, and the research to find out is in its infancy. Data on CBD use in horses is more scarce than data on dogs and cats, so researchers at Tarleton State University’s Equine Center in Stephenville, Texas are conducting a study to learn more about the effects of CBD in horses. (Tarleton State is a member of the Texas A&M University system.)

“I have just been overwhelmed by the level of interest in this study,” says Kimberly Guay, Ph.D., assistant professor at the university, in an article on the Texas A&M Today website. “By now, horse owners have all heard the hype about the potential benefits of CBD. Here at Tarleton, we are working to give them the reliable data that’s just not there yet,” Dr. Guay says.

The study, led by Dr. Guay, is measuring the effect of CBD on inflammation, stress and stereotypical negative behaviors in horses, as well as pain and lameness scores.

For the trial, Dr. Guay and student researchers are administering different forms of CBD (i.e., oil or pellets) to the study horses, and measuring and evaluating the physiologic effects on the horses’ heart rate and cortisol level. They are also observing horses after dosing to see whether CBD has an impact on obsessive-compulsive behaviors such as cribbing (when a horse bites on a fence or gate). Dr. Guay says they are also tracking how long CBD stays in the horse’s system.

“[By] the end of this study, we hope to have the data that will define and document what exactly is going on with the horses. Is it actually helping to minimize stress and stereotypical behavior? ... Once we have this for horses then we’d like to see if we can increase wellbeing within our food production animals,” Dr. Guay says.

Results of this study are expected to be published next year. 

dvm360
As the global COVID-19 pandemic and consequent public health crisis continue, health care providers on the front lines deserve all the support needed to continue serving their patients.

With new updates on the novel coronavirus coming fast, we aim to provide you with the most timely, relevant information possible across both our digital and print platforms. Keep an eye on dvm360.com for the latest developments, as we will continue to share insights on how to navigate these unprecedented times in your veterinary business.

One of these developments, reported on our website in late March, were statements from the World Small Animal Veterinary Association (WSAVA) and American Veterinary Medical Association (AVMA) urging that veterinary businesses be deemed essential during this crisis. As of press time, some states, including Maryland, Michigan, Connecticut and Pennsylvania, had already categorized veterinary practices as essential businesses. In its call for authorities to classify all veterinary hospitals as "essential," officials with the AVMA stated that "veterinary teams provide essential animal care, play a critical role in protecting the health of animals that enter the food supply, and serve as trusted members of the local community in disaster situations."

On our website, videos and articles from some of the best in the business offer pearls about changes they’ve made in their practices to continue providing essential care to their patients while protecting the safety of themselves, their teams and their clients.

In addition to tips and tactics from veterinarians and team members, you’ll also find the latest reports about COVID-19 and pets—including news from Idexx officials, who have reported “no positive results in pets ... of SARS-CoV-2, the coronavirus strain responsible for the coronavirus disease 2019 (COVID-19) respiratory outbreak in humans,” which is some much-needed positive news in this otherwise dark healthcare chapter.

Thank you for reading. Stay safe, and continue to follow us on dvm360.com for the latest news.

Thanks for reading!

—Mike Hennessy Sr.
Chairman and CEO
SOME SEE BARRIERS
WE SEE BREAKTHROUGHS

When urinary issues get between your patient and their family, look to Hill’s Prescription Diet c/d Multicare Stress.

1. The ONLY nutrition shown in a controlled study to reduce the rate of recurring feline idiopathic cystitis (FIC) signs by 89%1

2. Dissolves struvite stones in as little as 7 days (average 27 days)2

3. Added L-tryptophan and hydrolyzed casein to help manage stress, a known risk factor for FIC3,4

Ask Hill’s Veterinary Consultation Service (800-255-0775) about urinary nutrition that’s A STEP AHEAD FOR THEIR BEST LIFE


Mission: Build an institution

A longstanding community practice needs a facility that reflects its high standards of care—and fulfilling that mission earned the practice highest honors in the 2019 dvm360 Hospital Design Competition.

COMMUNITY

04
» Chairman's letter

10
» From the CVO

13
» Reader feedback

50
» Continuing education calendar

56
» Products360

The dilemma

36
» Discount care or full disclosure? Marc Rosenberg, VMD

AVMA eye on economics

38
» Your accounting system may be hiding opportunity Matthew Salois, PhD

Stampede

54
» The office desk chair Bo Brock, DVM

Letter of the law

32
» Avoid real estate hiccups when buying a clinic Christopher J. Allen, DVM, JD

Can we talk?

34
» To be a leader, be a leader Michael Paul, DVM
When it comes to fast relief from allergic itch without the common side effects of steroids* 

**IT WOULD BE A SHAME TO MAKE THEM WAIT**

APOQUEL (oclacitinib tablet) gives dogs fast, effective allergic itch relief that starts working within 4 hours¹

**INDICATIONS**
Control of pruritus associated with allergic dermatitis and control of atopic dermatitis in dogs at least 12 months of age.

**IMPORTANT SAFETY INFORMATION**
Do not use APOQUEL (oclacitinib tablet) in dogs less than 12 months of age or those with serious infections. APOQUEL may increase the chances of developing serious infections, and may cause existing parasitic skin infestations or pre-existing cancers to get worse. APOQUEL has not been tested in dogs receiving some medications including some commonly used to treat skin conditions such as corticosteroids and cyclosporine. Do not use in breeding, pregnant, or lactating dogs. Most common side effects are vomiting and diarrhea. APOQUEL has been used safely with many common medications including parasiticides, antibiotics and vaccines.

For more information, please see Brief Summary of full Prescribing Information on adjacent page.

---

*Common side effects of steroids include polyuria, polydipsia and polyphagia.*⁴ Side effects of APOQUEL reported most often are vomiting and diarrhea.⁵

*Based on survey data from veterinarians (n=250) and pet owners (n=150).²³

¹Based on survey data from veterinarians (n=250) and pet owners (n=150).²³


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*APQ-00654R2_R01_APOQ_Campaign_JA_Update_ASize.indd 1 4/26/19 8:13 PM*
In the 283 dogs that received APOQUEL, the following additional clinical signs were reported after beginning APOQUEL (percentage of dogs with at least one report of the clinical sign as a non-pre-existing finding): pyoderma (12.0%), non-specified dental lumps (12.0%), otitis (9.9%), vomiting (9.2%), diarrhea (6.0%), histiocytoma (3.9%), cystitis (3.5%), anorexia (3.2%), lethargy (2.8%), yeast skin infections (2.5%), pododermatitis (2.5%), lipoma (2.1%), polydipsia (1.4%), lymphadenopathy (1.1%), nausea (1.1%), increased appetite (1.1%), aggression (1.1%), and weight loss (0.7).

Control of Pruritus Associated with Atopic Dermatitis

In a masked field study to assess the effectiveness and safety of oclacitinib for the control of pruritus associated with atopic dermatitis in dogs, 216 dogs treated with APOQUEL and 220 dogs treated with placebo (vehicle control) were evaluated for safety. During the 30-day study, there were no fatalities and no adverse reactions requiring hospital care. Adverse reactions reported (and percent of dogs affected) during Days 0-7 included diarrhea (2.3% APOQUEL, 0.9% placebo), vomiting (2.3% APOQUEL, 1.6% placebo), lethargy (1.8% APOQUEL, 1.4% placebo), anorexia (1.4% APOQUEL, 0% placebo), and polydipsia (1.4% APOQUEL, 0% placebo). In most of these cases, signs spontaneously resolved with continued dosing. Five APOQUEL group dogs were withdrawn from study because of: darkening areas of skin and fur (1 dog); diarrhea (1 dog); fever, lethargy and cystitis (1 dog); an infiltrated footpad and vomiting (1 dog); and diarrhea, vomiting, and lethargy (1 dog). Dogs in the APOQUEL group had a slight decrease in mean white blood cell counts (neutrophil, eosinophil, and monocyte counts) that remained within the normal reference range. Mean lymphocyte count for dogs in the APOQUEL group increased at Day 7, but returned to pretreatment levels by study end without a break in APOQUEL administration. Serum cholesterol increased in 25% of APOQUEL group dogs, but mean cholesterol remained within the reference range.

Continuation Field Study

After completing APOQUEL field studies, 239 dogs enrolled in an unmasked (no placebo control), continuation therapy study receiving APOQUEL for an unrestricted period of time. Mean time on this study was 372 days (range 1 to 610 days). Of these 239 dogs, one dog developed demodicosis following 273 days of APOQUEL administration. One dog developed dental pigmented viral plaques following 206 days of APOQUEL administration. One dog developed a moderately severe bronchopneumonia after 272 days of APOQUEL administration; this infection resolved with antimicrobial treatment and temporary discontinuation of APOQUEL. One dog was euthanized after developing abdominal ascites and pleural effusion of unknown etiology after 450 days of APOQUEL administration. Six dogs were euthanized because of suspected malignant neoplasms, including thoracic metastatic, abdominal metastatic, splenic, frontal sinus, and intracranial neoplasms, and transitional cell carcinoma after 17, 120, 175, 49, 141, and 286 days of APOQUEL administration, respectively. Two dogs each developed a Grade II mast cell tumor after 52 and 91 days of APOQUEL administration, respectively. One dog developed low grade B-cell lymphoma after 392 days of APOQUEL administration. Two dogs each developed an apocrine gland adenocarcinoma (one dental, one anal sac) after approximately 210 and 320 days of APOQUEL administration, respectively. One dog developed a low grade oral spindle cell sarcoma after 320 days of APOQUEL administration.

To report suspected adverse events, for technical assistance or to obtain a copy of the MSDS, contact Zoetis Inc. at 1-888-963-8471 or www.zoetis.com.

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

Storage Conditions:

APOQUEL should be stored at controlled room temperature between 20° to 25°C (68° to 77°F) with excursions between 15° to 40°C (59° to 104°F).
Alternative medicine

03

» New study is evaluating CBD use in horses

Parasitology

14

» The who, what, when and where of ticks

Infectious disease

18

» Vaccine aims to nip FIP in the bud

Endocrinology

20

» UC Davis veterinarians create life-saving Addison’s disease diagnostic tool

Pain management

22

» Pain management scholarship still open for technicians

COVID-19

24

» Idexx reports negative COVID-19 results for thousands of canine and feline samples

» AVMA, WSAVA: veterinary practices are ‘essential businesses’

» COVID-19: employment law updates

Surgery STAT

40

» How to perform a caudal epidural in horses

Dentistry

42

» The ABCs of veterinary dentistry: V is for ventilation monitoring

Parasitology

46

» My dog has ‘heatworms’ … well, maybe

Neurology

47

» What’s new, what’s tried-and-true: an update on small animal seizure management
These are tough times, but our profession is tougher

We’re all in this together, and I couldn’t be prouder of the work veterinary professionals are doing.

To say that our world has been turned completely upside down is an understatement. As healthcare practitioners, we take steps every day to protect our health and that of our patients. Even more so now with COVID-19 here. Coronaviridae have been around for ages and infect dogs and cats with strains that aren’t known to infect people.

Here’s what we know

We know that COVID-19 affects humans. The coronavirus strain that causes COVID-19 is SARS-CoV-2 (formerly 2019-nCoV). Transmission occurs via an infected person’s bodily secretions (e.g., saliva, mucus). Transmission via touching a contaminated surface or object and then touching the mouth, nose, or eyes is possible.

We know that pets exposed to COVID-19 are not at risk for developing these signs. The American Veterinary Medical Association (AVMA) guidelines recommend taking a commonsense approach when interacting with pets.1 As you’ll read in this issue and on dvm360.com, while there have been no reports of pets becoming sick with COVID-19, people who are sick with COVID-19 are advised to limit contact with animals until more information is known about the virus. If possible, having another family member or neighbor care for the pet is recommended to help avoid excessive contact.

Resiliency on full display

At the time of this writing, I’ve officially been chief veterinary officer at MJH Life Sciences for 7 days, during which I have been in communication with veterinarians around the world about the COVID-19 pandemic. What really has resonated with me through all those conversations, emails and messages is how incredibly resilient our profession is.

I’m not surprised. We have weathered storms in our communities before. There have been moments in my own career where, just like many veterinarians, I felt depressed, unworthy, undervalued, the list goes on. I know you can relate. And in such a challenging time as we are in, I can honestly say I have never been more proud to call myself a veterinarian and to be part of a community that is simply remarkable.

One colleague who owns a fully mobile veterinary practice expressed her concerns about going into people’s homes. When one of her feline patients presented for a possible abscess, she noticed human mucus on top of the cat’s head. Given the current pandemic, this caused immediate pause for this practice owner, enough that she decided to close her business temporarily and start doing virtual visits instead. She has focused on her clients with valid veterinarian-client-patient relationships and is working with them and their pets via Facetime. She even partnered with a company to help have her patients’ medical records all online in a convenient app should the owners need them for future use. This veterinarian doesn’t know when she will reopen her mobile unit, but she does know she is providing exceptional care to her patients right now in the best way she knows how.

A new normal

I look at the public health concerns over COVID-19 as good practice for when a newly emerged (or current) infectious disease comes our way and creates alarm. Veterinary healthcare teams are continuing to provide service and care for patients while remaining mindful of their pet parents. Fastidiously cleaning the high-traffic human touch points with disinfectants is helping keep the threat of a potential viral overload at bay. Veterinary healthcare teams are holding weekly team meetings to make sure they are educated and providing the necessary education to pet parents over the phone and online. Many veterinary hospitals are even hiring professional cleaning crews to help with disinfecting and sanitizing their facilities. New clients are asked to fill out all necessary paperwork online or via an app ahead of time.

Patience is truly a virtue during these times. A fellow pet parent of mine told me she waited three hours to receive a refill of her dog’s ear medication and it was worth every minute. “To see humanity come together during times of crisis is truly remarkable,” she told me. “When it comes to our pets, we all give that little extra patience since they can’t talk to us and tell us. Veterinarians are our heroes.” Countless testimonials such as these may be the new normal for some time. I’m OK with that.

A veterinary hospital in Chicago removed all of its chairs from the waiting room so the healthcare team became even more aware that all pet parents were to be escorted to and from their car. They even bought a “red carpet” to make every client feel like a VIP as they are being escorted into the hospital. Another veterinary practice in New York City has switched its entire transaction system to Venmo, Paypal and Apple Pay. No credit cards are accepted and minimal cash (with gloves) is exchanged to help avoid person-to-person contact.

Thank you

I am truly proud to see how the veterinary community has stepped up and come together during such difficult times. On behalf of the dvm360 family, thank you for all you continue to do, risking your own lives while helping those that can’t speak for themselves and putting their pet parents at ease. Thank you for continuing to provide care while being incredibly resourceful and mindful of the virus that has plagued our world. A virus may damper the way we live, but it won’t ruin our passion for our profession, our communities and, most importantly, our animals. Continue to fight the fight. We are in this together and we will come out on top.

—Adam Christman, DVM, MBA
Chief Veterinary Officer

REFERENCE

Deworm with Confidence

Get the most comprehensive broad-spectrum dewormer* for dogs.

CAUTION: Federal (U.S.A.) law restricts this drug to use by or on the order of a licensed veterinarian. DOSAGE: Not for use in puppies less than 3 weeks of age or weighing less than 2 lbs. CONTRAINDICATIONS: Do not use in pregnant animals.

*Based on label comparisons.
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The first and only FDA-approved treatment with THREE active ingredients labeled solely for intestinal parasites.

Fights nine different species of intestinal parasites. Available in easy-to-administer Taste Tabs®.

Contact your Bayer sales representative today.
**Dronctal® Plus** (praziquantel/pyrantel pamoate/febantel) Taste Tabs®

Broad Spectrum Chewable Anthelmintic Tablets for Dogs

**DESCRIPTION:** Dronctal® Plus Taste Tabs® (praziquantel/pyrantel pamoate/febantel) Broad Spectrum Chewable Anthelmintic Tablets for Dogs are available in three tablet sizes. Each size is scored for convenient oral administration.

Each Dronctal Plus Taste Tab® for Puppies and Small Dogs contains 22.7 mg praziquantel, 22.7 mg pyrantel base as pyrantel pamoate and 113.4 mg febantel.

Each Dronctal Plus Taste Tab® for Medium Sized Dogs contains 68.0 mg praziquantel, 68.0 mg pyrantel base as pyrantel pamoate and 326.4 mg febantel.

Each Dronctal Plus Taste Tab® for Large Dogs contains 136.0 mg praziquantel, 136.0 mg pyrantel base as pyrantel pamoate, and 688.4 mg febantel.

**ACTION:** Dronctal® Plus Taste Tab® Tablets contain three active ingredients having different modes of action and spectra of activity. Praziquantel is active against cestodes (tapeworms). Pyrantel is absorbed, metabolized in the liver and excreted in the bile. Upon entering the digestive tract from the bile, oestacodal activity is exhibited. Following exposure to praziquantel, the tapeworm loses its ability to resist digestion by the mammalian host. Because of this, the tapeworms, including the scolexes, are very rapidly killed after administration of praziquantel. In many instances only disintegrated and partially digested pieces of tapeworms will be seen in the stool. The majority of tapeworms are digested and are not found in the feces.

Pyrantel is active against hookworms and ascarids. Pyrantel potentiates the cholinergic action of acetylcholine in the neuromuscular junction. As a result, the smooth muscle of parasitic worms is paralysed or killed.

Febantel is active against nematode parasites including whipworms. Febantel is rapidly absorbed and metabolized in the animal. Available information suggests that the parasite’s energy metabolism is blocked, leading to energy breakdown and Egestion (energy uptake).

Laboratory efficacy and clinical studies conducted with Dronctal® Plus Anthelmintic Tablets demonstrate that each of the three active ingredients act independently without interference. The combined tablet formulation provides a very wide spectrum of activity against the indicated species of intestinal helminths.

**INDICATIONS:** Dronctal® Plus (praziquantel/pyrantel pamoate/febantel) Taste Tabs® Broad Spectrum Chewable Anthelmintic Tablets are indicated for removal of Tapeworms (Diphyllidium caninum, Taenia pisiformis, Echinococcus multilocularis, and Dipylidium caninum) and for removal of Hookworms (Ancylostoma caninum, Dirofilaria immitis, Ascarids (Toxocara canis, Toxascaris leonina), and Whipworms (Trichuris vulpis) in dogs.

**CONTRAINDICATIONS:** DO NOT USE IN PREGNANT ANIMALS. Dogs treated with elevated levels (8 times the 3 times labeled dose) of praziquantel in clinical studies in the United States. These studies included a total of 6 animals harboring E. multilocularis and 12 animals harboring E. multilocularis in dogs.

**CAUTION:** There are no known contraindications against the use of praziquantel or pyrantel pamoate in dogs.

**PRECAUTIONS:** Strict hygiene precautions should be taken when handling dogs or feces suspected of harboring cestode or nematode parasites. Praziquantel is a very effective compound for the treatment of cestode or nematode infections in dogs. If these procedures are not possible, the eggs can be destroyed by soaking the feces in a sodium hypochlorite solution of 3.5% or greater. All areas where the animal was maintained or in contact with should be thoroughly cleaned with sodium hypochlorite and allowed to dry completely before reuse.

**WARNING:** KEEP OUT OF REACH OF CHILDREN.

**USE DIRECTIONS:**

**DRONTAL® PLUS TABS TABLETS DOSAGE CHART**

<table>
<thead>
<tr>
<th>For Puppies and Small Dogs*</th>
<th>For Medium Sized Dogs</th>
<th>For Large Dogs</th>
</tr>
</thead>
<tbody>
<tr>
<td>(2 – 11 lbs.)</td>
<td>(12 – 22 lbs.)</td>
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<td>Body Wt. No. of Tablets Body Wt. No. of Tablets Body Wt. No. of Tablets</td>
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<tr>
<td>1 – 4</td>
<td>0.5</td>
<td>26 – 30</td>
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<td>5 – 10</td>
<td>1.0</td>
<td>31 – 40</td>
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<tr>
<td>11 – 12</td>
<td>1.5</td>
<td>41 – 60</td>
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<tr>
<td>13 – 18</td>
<td>2.0</td>
<td>21 – 25</td>
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<tr>
<td>26 – 30</td>
<td>0.5</td>
<td>31 – 40</td>
</tr>
<tr>
<td>41 – 60</td>
<td>2.5</td>
<td>91 – 120</td>
</tr>
</tbody>
</table>

*NOT FOR USE IN PUPPIES LESS THAN 3 WEEKS OF AGE OR DOGS WEIGHING LESS THAN 2 LBS.

**ADMINISTRATION:** Most dogs do not display any clinical signs after treatment with Dronctal® Plus Taste Tab Tablets. The tablets may be offered to the dog by hand. Alternatively tablets may be given directly by mouth or offered in a small amount of food. Fasting is neither necessary nor recommended prior to or after treatment.

**RETEATMENT:** For those animals where reinfection is likely to occur, clients should be instructed in the steps to eliminate prevention; otherwise, retreatment may be necessary. This is true in cases of Dipylidium caninum where reinfection is almost certain to occur if fleas are not removed from the animal and its environment. In addition, for control of Echinococcus multilocularis, a program of regular treatment every 21 to 30 days may be indicated (see Echinococcus multilocularis section below).

**ECHINOCOCCUS MULTILIOCARLUS:** Echinococcus multilocularis is a tapeworm species usually found in wild canids, including foxes, coyotes and wolves. The parasite has also been identified in domesticated dogs and cats. Dronctal® Plus Taste Tab Tablets contain a single oral treatment.

The adult tapeworm is small (1-4mm) and resides in the intestinal tract of the definitive host (wild or domestic canids). Eggs from the adult tapeworm are shed in the feces. Rodents such as mice and voles serve as the intermediate host. Eggs ingested by rodents develop in the liver, lungs and other organs to form multicellular cysts. The life cycle is completed after a canid consumes a rodent containing infective cysts. Larvae within the rodent develop into the adult tapeworm in the intestinal tract of the canid. Eggs may be passed in the feces of the canid approximately 28 days later.

The original geographic distribution of E. multilocularis was primarily confined to northern areas of North America. Current evidence indicates migration of the parasite was into the domesticated canid habitats.

Domestic dogs living in E. multilocularis endemic areas that roam freely with the opportunity to catch wild rodents are at risk of infection. Pet owners should be advised on how to minimize this risk. Proper restraint of dogs should be encouraged, along with regular treatment with Dronctal® Plus Taste Tab Tablets.

Additional information on the life cycle and epidemiology of this parasite is available in veterinary parasitology textbooks.

**DIAGNOSIS:** Diagnosis of E. multilocularis in canids is difficult. The adult tapeworm produces no clinical signs of infection. Tapeworm segments (proglottids) are usually not observed in the feces. E. multilocularis eggs, observed using microscopic fecal examination procedures, are similar in appearance to those of common species such as Toxocara.

**CONCLUSION:** In the diagnosis of E. multilocularis may be available from a state veterinary diagnostic laboratory. Additional information regarding areas where E. multilocularis is suspected or has been confirmed may be obtained from area veterinary schools or the Centers for Disease Control in Atlanta, GA.

**TREATMENT:** Dogs infected with E. multilocularis should be treated to prevent exposure of humans to infective eggs and to break the parasite’s life cycle. The dosage of Dronctal® Plus Taste Tab Tablets for removal of E. multilocularis is the same as that indicated for the removal of the other tapeworm species listed on the label. Laboratory efficacy studies conducted with Dronctal Plus tablets have demonstrated the recommended dosage is 100% effective.

Under condition of continual exposure to wild rodents, retreatment of the dog at 21-26 day intervals is recommended to prevent the shedding of infective eggs.

**Efficacy:** A total of 176 dogs and puppies with naturally acquired or experimental parasite infections were included in 4 well-controlled laboratory studies to establish the efficacy of Dronctal® Plus Anthelmintic Tablets. In addition, 103 dogs and puppies were included in 5 veterinary clinical studies conducted in 5 veterinary clinics at different geographic locations throughout the United States to further evaluate safety and efficacy. These studies included dogs of various sizes, ages and breeds. Data from these studies demonstrated Dronctal® Plus Anthelmintic Tablets are safe and efficacious for the removal of the parasite species included on the label when used as directed. Results obtained in the laboratory and clinical studies indicate small numbers of hookworm and roundworm eggs may be passed in the feces up to 7 days after treatment although the worms themselves were eliminated. A follow-up fecal examination should be conducted 2 to 4 weeks after treatment to determine if reinfection has occurred.

**STORAGE CONDITIONS:** Dronctal® Plus Taste Tab Tablets should be stored at or below 77°F (25°C). Unblistered whole or partial tablets should be stored in a tightly sealed container.

**HUMAN SAFETY:** Do not use in humans. Do not use in pregnant or lactating animals. Do not use in animals with a known hypersensitivity to the ingredients in the dosage form. For use on dogs only. Do not use concomitantly with other anthelmintics.

**ADVERSE REACTION:** None of the 103 dogs treated with Dronctal® Plus Anthelmintic Tablets in the clinical field studies exhibited drug-related side effects. Of the 40 dogs treated with Dronctal Plus in laboratory studies, 2 dogs exhibited vomiting, 1 puppy exhibited bloody/mucus feces and stool and 1 puppy exhibited water/f solely.

**WARNING:** Retreatment may be necessary in some cases to eliminate all stages of the parasite. Clients should be instructed in steps to eliminate reinfection; otherwise, retreatment may be necessary. This is true in cases of Dipylidium caninum where reinfection is almost certain to occur if fleas are not removed from the animal and its environment. In addition, for control of Echinococcus multilocularis, a program of regular treatment every 21 to 30 days may be indicated (see Echinococcus multilocularis section below).

**Echinococcus Multilocularis:** Echinococcus multilocularis is a tapeworm species usually found in wild canids, including foxes, coyotes and wolves. The parasite has also been identified in domesticated dogs and cats and is potentially a serious public health concern because it may infect humans.

The life cycle of the parasite is based on a predation-prey relationship as depicted.
Disagreeing with Dr. Stone

I WOULD—AND DO—OPERATE differently from Dr. Stone. I am a practice owner in upstate New York and I have worked for owners like Dr. Stone. These owners want their technical staff and associate veterinarians to tolerate bad behavior from clients until the client is irate and belligerent. In my opinion, that is waiting way too long before protecting your staff.

I agree with Dr. Stone’s associate: It is not too much to ask to be treated with respect. At my hospital, if a client shows disrespect, gives attitude, is impolite or challenges my or my staff’s competence in a rude way, I fire the client with a polite, professionally worded letter informing them of the termination of service. The mental health of my staff and me outweighs the costs of letting clients go from the practice. In my area there are an abundance of pets and clients. As veterinary professionals, we are providing help and care. There is no reason to have to deal with unpleasant, mean-spirited people who return our kindness with a miserable attitude and ingratitude. If more veterinary professionals protected their staff more aggressively, respect for the veterinary profession would only increase.

I agree with Dr. Rosenberg. We are professionals when we step into the exam room and we need to be professional to convey our message to the client so that the necessary patient care is implemented. I also agree that there is no reason to escalate a confrontation with a client as this will not help with patient care.

But I agree and disagree with Dr. Rosenberg’s statement that “the key to successfully helping our pet patients depends on our successful interactions with their owners.” I have interacted with clients for 15+ years as a professional doing exactly as Dr. Stone and Dr. Rosenberg would have it. It does not make clients nicer or cause them to respect me or my staff. It just sends a clear message that bad behavior will be tolerated and they have the green light to behave poorly any time they feel like it. I am all for professional behavior, but once a client shows that they are going to be rude, nasty, disrespectful and impolite on a consistent basis it is time to let the client go.

—Dr. James David Nickel
Whitesboro, NY

More on the ‘whitest profession’

I WOULD LIKE TO OFFER a comment about a recent letter in *dvm360* (“Whitest profession in America’ inappropriate”; February 2020).

The facts are relatively straightforward: Over 90% of veterinarians are white in a country where about 81% of the workforce is white. Imagining this is an accident rather than the result of systemic racism is naive or disingenuous. Acknowledging an injustice is critical to rectifying it, and we cannot shy away from clearly and directly describing an unjust reality if we seriously hope to change it.

It is not unusual for white people to feel personally attacked or accused of racism when white privilege and discrimination against people of color is discussed, but it is an unfortunate and unnecessary reaction. I have been lucky in having friends patient enough to explain the difference between acknowledging the systemic factors that favor white people in American society and accusing individual white people of being undeserving or racist. White privilege doesn’t mean white people have not had to struggle or face adversity as individuals. It simply means that our skin color has been an advantage rather than an added obstacle in our life’s journey. As a relatively old, white, male veterinarian, I can acknowledge the injustice that has favored those like me without feeling that the effort and struggles I endured to get where I am are being invalidated. I may be good at my job and even deserving of it as an individual, but so are many who have not had the same opportunities I’ve had. It does not diminish me to acknowledge this, but it does engender a responsibility to contribute to a more just future.

Rather than getting upset about the word “white” or open discussion of white privilege, I think it more useful to try and be part of the solution. The article Dr. Clemente responded to (“What it would take to change the ‘whitest profession in America’”; December 2019) offers specific, appropriate steps to improving diversity and inclusion in veterinary medicine, including “leveraging power and privilege to advocate on behalf of others.” I find nothing at all objectionable in that.

—Brennen McKenzie, MA, MSc, VMD
Los Altos, CA
skeptvet.com
Parasitology

**The who, what, when and where of ticks**

A flagship study details tick infestations in pet dogs and cats in the United States.

**Pets and people share environments, which means they also share parasites and their associated zoonotic diseases. Perhaps the scariest of the blood-sucking hangers-on are ticks. But our understanding of tick parasitism has been sparse thus far.**

A 2007 review of more than two million veterinary records in 40 states found ticks that were present on 1.3% of dogs. Yet until now, little was known about the respective prevalence of individual tick species and their specific life stages on dogs and cats. In a large-scale study conducted by investigators at Oklahoma State University, ticks collected from pets were identified by species, gender and life stage; characterized by attachment site; and delineated by month and geographic location found.

From February 2018 to January 2019, tick submissions were solicited from 190 veterinary practices throughout the United States: A total of 10,978 ticks were harvested from 1,494 dogs and 336 cats.

**Veterinary practices were provided with kits that facilitated submission and sample quality control. Sample data included tick removal date; geographic location and attachment site on pet; age, gender, weight and spay/neuter status of pet; and estimated percentage of time the pet spends outdoors.**

Morphologic examination was conducted on each tick to determine its genus/species, gender and life stage. Molecular identification was used when morphologic identification was precluded by specimen damage or ambiguity.

Ticks were submitted every month of the year, with the highest numbers of ticks recovered from both dogs and cats in July, from the South and Midwest.

**Twelve tick species were identified.** The black-legged ("deer") tick, *Ixodes scapularis*, was found on 27.4% of dogs, followed by the black-legged tick, *Dermacentor variabilis* (23.1%), and the brown dog tick, *Rhipicephalus sanguineus* (11.4%). A smaller number of dogs were infested with over 4,700 ticks, although one dog was infested with over 4,700 ticks, only 5.5% of the 1,494 dogs in the study bore more than nine; most had just a single tick.

A total of 14 tick species were identified among the canine samples. The greatest portion of dogs—35.6%—was infested with the American dog tick, *Dermacentor variabilis*. The black-legged ("deer") tick, *I. scapularis*, was found on 27.4% of dogs, followed by the Lone Star tick, *Amblyomma axillum*, and the brown dog tick, *R. sanguineus* (11.4%). A smaller number of dogs were infested with *Amblyomma maculatum*, *O. megnini*, *H. longicornis*, and other *Ixodes* and *Dermacentor* species. Co-infestations with more than one tick species were documented for 93 dogs (6.2%).

When investigators tabulated tick species with respect to percentage of total ticks, the brown dog tick was by far the most prevalent in the canine samples, at 62%; the presence of this large number of ticks—6,252—on a mere 174 dogs suggests large groupings of larvae/nymphs, which can number a few thousand in a single hatch. The Lone Star tick composed 19.1% of submissions; the American dog tick, 10.2%; and the black-legged tick, 5.7%.

Attachment site data from single-species infestations of adult ticks (available for over half of the canine submissions) showed species distinctions in attachment site preference. The American dog tick, the black-legged tick and the brown dog tick were more commonly attached dorsally, specifically to the head, ears and neck; brown dog ticks were also attached, albeit less frequently, on the abdomen, axillae, groin, legs and paws. The Lone Star tick was more commonly attached ventrally, to the abdomen and axillary/inguinal regions.

**Feline findings**

Feline submissions came from 109 veterinary clinics in 39 states. Cats ranged in age from 18 days to 18 years, and averaged 4.4 kg. Fifty-nine percent were female compared with 49.6% for the general pet cat population; a disproportionately small percentage of the cats were sterilized. Over 56% of the cats were reported to spend more than 70% of their time outdoors.

Infestation intensities ranged from one to 38 ticks, with an average of 2.6 ticks collected from each cat.

Twelve tick species were identified. The black-legged tick was present on 46.4% of the cats, the Lone Star tick on 29.5% and the American dog tick on 17.9%. A smaller
number of cats hosted *O. megatini, R. sanguineus, A. maculatum, H. longicornis,* and other *Ixodes* and *Dermacentor* species. Co-infections were documented in 14 cats (4%).

Most tick submissions consisted of the Lone Star tick (38.5%), the black-legged tick (32.2%) and the American dog tick (13.7%).

Attachment site data from single-species infestations were provided for 33 cats (10%). As in the dog sample, the American dog tick and the black-legged tick were more commonly attached dorsally, and the Lone Star tick ventrally (tail and perianal region in cats).

**General findings**

Several new findings were generated by this study. First, the primary ticks parasitizing the dogs were the brown dog tick, the Lone Star tick and the American dog tick, composing 95% of submissions. For the cats, the Lone Star tick, the American dog tick and the black-legged tick accounted for 80% of samples.

Although some 40% of the ticks removed from dogs and cats in this study were adults—primarily females—nearly half were larvae and 16% were nymphs. Larvae and nymphs constituted the majority of submissions of Lone Star ticks from dogs and cats; in dogs, larvae and nymphs constituted the majority of brown dog tick submissions. This finding confirms that immature stages of some common tick species are significant players in tick parasitism of pets. It also suggests the importance of tick control, as these small stages can be overlooked easily.

The study also revealed an expanding geographic distribution of certain tick species, such as the Gulf Coast tick (*A. maculatum*) and the Asian longhorned tick (*H. longicornis*), and a year-round presence of feeding ticks in this country.

While most pets in this study had outdoor access, a small portion were reported to rarely or never go outside, suggesting that ticks hitch rides indoors on clothing and other pets.

Investigators also concluded that cats may be underrepresented as hosts for ticks: While they outnumber dogs as pets in the U.S.,
cats accounted for only 20% of tick submissions in this study. However, the data in this study were generated by veterinary visits, which are fewer overall for cats than dogs.

**REFERENCES**

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NEWS | Infectious disease

Vaccine aims to nip FIP in the bud

Researchers from Colorado State University want to stop feline enteric coronavirus before it has a chance to mutate into feline infectious peritonitis.

By Sarah Mouton Dowdy

A new contender may soon be entering the ring in the fight against feline infectious peritonitis (FIP). Morris Animal Foundation–funded researchers from Colorado State University (CSU) are developing an oral vaccine designed to beat the disease to the punch by targeting feline enteric coronavirus (FECV)—the highly contagious and common virus that can mutate randomly into FIP.

“The vaccine attempts that have taken place in the past have focused against FIP, but that’s really not the natural situation,” said Gregg Dean, DVM, PhD, head of the Department of Microbiology, Immunology and Pathology in CSU’s College of Veterinary Medicine and Biomedical Sciences, in an interview with dvm360. “We know that the enteric coronavirus replicates at an amazing rate, doing millions and millions of experiments. Given this opportunity, there’s a chance that it will mutate into the FIP-causing virus—so this is happening inside the cat more than it’s being transmitted between cats. If we could control that replication, we could hopefully prevent the emergence of the mutant.”

Going with the gut

As a first step in understanding what a vaccine would need to do to stimulate a protective immune response against FECV, Dr. Dean and his team studied cats that were naturally infected with the disease, specifically looking at their mucosal immune responses. “The enteric virus is quite limited in where it replicates and that is in the intestinal tract as far as we know,” he explained. “So that’s where the immune response is really critical to understand.”

The vaccine’s design reflects this insight. It will be administered orally and includes the bacterium Lactobacillus acidophilus, a probiotic found in several foods and in the gastrointestinal tract of many animals. “The role of the probiotic is critical,” said Dr. Dean. “Some probiotics stimulate the immune system naturally, and by combining antigens from the feline coronavirus with the natural immune-stimulating activity of the probiotic, we hope to induce a protective and durable immune response.”

He explained that the probiotic’s effect is amplified by the fact that it is live and replicating. “It’s also producing the antigen—in our case, feline coronavirus. We’ll take advantage of the bacteria.”

Dr. Dean and his team plan to begin the first efficacy trial of the FECV vaccine this fall. “We’ll deliver the vaccine to cats in a colony environment that has naturally circulating enteric coronavirus. We’ll take new kittens, vaccinate them, and then we’ll see whether they become infected with FECV,” he said. “Nearly every cat, and probably every cat in this colony, gets infected.”

Disease detection

In the meantime, Dr. Dean is leading another study funded by Morris Animal Foundation with a different but related goal: to develop a new diagnostic test for FIP that is accessible, inexpensive and fast. “As we’re moving closer to real, viable treatment possibilities for FIP, having an accurate diagnostic test is going to be an important part of that decision-making process,” he explained. “And an early diagnosis will be important as far as how effective any treatment would be.”

Instead of focusing on the cat’s immune response or looking for the virus itself, Dr. Dean and his team are examining specific biomarkers that are unique to FIP infection. They’ve identified 18 proteins that appear to be common in cats with FIP thus far and are in the process of validating them. If successful, the test would require only a blood sample from the patient. “We still have quite a bit of work to do, but it’s a top priority for us,” he said.

Sarah Mouton Dowdy, a former associate content specialist for dvm360.com, is a freelance writer and editor in Kansas City, Missouri.

EDITOR’S NOTE:

There has been no known transmission of feline enteric coronavirus from domestic cats to humans.
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Addison’s disease, or hypoadrenocorticism, is a rare, life-threatening illness in dogs that is notoriously difficult to recognize. But veterinarians at the University of California, Davis School of Veterinary Medicine have announced the development of an algorithm to detect Addison’s disease accurately and more effectively.

Veterinarians teamed up with an electrical and computer engineer to develop the algorithm, which is powered by artificial intelligence (AI), and have reported that the new screening tool has an accuracy rate greater than 98%.

“We set out to create an alert system that uses information from routine screening tests,” Krystle Reagan, DVM, PhD, DACVIM (SAIM), an internist small animal internist with the UC Davis veterinary hospital and leader on research study, said in an article on the UC Davis School of Veterinary Medicine website. “The alert should be able to inform veterinarians when Addison’s disease is likely, and prompt further investigation.”

Often the first tests ordered when a sick dog visits a veterinarian are routine blood tests. The veterinary team used this routine blood work to train their AI program to detect complex patterns from more than 1,000 dogs previously treated at UC Davis. Once the tool analyzes the routine blood tests, it will alert veterinarians when Addison’s disease is a possibility.

The veterinarian can then take further action and give the canine patient an adrenocorticotropic hormone stimulation test— the gold standard to confirm Addison’s disease.

“We see dogs with Addison’s disease come through the clinic, and they’ve been misdiagnosed for two to three years,” Dr. Reagan continued. “Once Addison’s disease is properly detected, though, it is generally easy to treat with an excellent prognosis for the patient.”

Addison’s disease also affects many humans, which, the veterinary team noted, could be the next step in developing this tool. Dr. Reagan is currently collaborating with physicians and human health researchers on a translational component of the tool to help people with this disease.

The AI program may also surpass just Addison’s disease. UC Davis notes this program has potential to optimize detection of other veterinary diseases, including leptospirosis—a disease in which early diagnosis is crucial and current tests do not work well early in the infection.

According to the article, the Addison’s disease screening tool will be commercially available by the end of 2020.

“Veterinarians need a safety net to prevent dogs with Addison’s from falling through the cracks,” Dr. Reagan said. “This AI program is now that safety net. It has the potential to revolutionize the detection of Addison’s and save many dogs’ lives.”

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Pain management scholarship still open for technicians

By Kerry Lengyel

The new WSAVA initiative has already awarded one veterinarian with scholarship funds, pain management training and the title of the first key opinion leader of veterinary pain management, but the technician scholarship is still up for grabs.

To help raise standards and increase the confidence and competence of veterinary professionals with regard to pain management in animals, the Global Pain Council (GPC) of the World Small Animal Veterinary Association (WSAVA) has launched the “Teach the Teachers” program, the main goal of which is to create a “global network of key opinion leaders in pain management” who are motivated to share their knowledge with other professionals.

“Our Teach the Teachers’ program is an exciting new initiative which we hope will lay the foundations of a global network of veterinarians and veterinary technicians with specific expertise in pain management and the passion and knowledge to educate their colleagues,” says GPC Chair Duncan Lascelles, BSc, BVSc, PhD, FRCVS, CertVA, DSA(St), DECVS, DACVSc.

Most notably, this new program includes two scholarship competitions, one for veterinarians and another for veterinary technicians who have a demonstrated interest in pain management.

Veterinarian scholarship

The winner of the veterinarian scholarship is Nathanael Herry Lutevele, DVM, a graduate of the Sokoine University of Agriculture in Tanzania. Dr. Nathanael Herry Lutevele Dr. Lutevele is a member of the Tanzania Small Animal Veterinary Organization (TASAVO) and strives with other members to help improve the health and welfare of small companion animals in Tanzania.

Post-appraisal experience:

In addition to the aforementioned clinical signs that were reported in pre-appraisal clinical trials, there have been reports of pruritus, urticaria, erythema, ataxia, fever, and rare reports of death. There have also been rare reports of seizures in dogs (see WARNINGS).

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Idexx reports negative COVID-19 results for thousands of canine and feline samples

Idexx has tested thousands of dogs and cats, and all came up negative for the coronavirus strain that causes COVID-19.

Despite two reports of dogs in Hong Kong testing positive for COVID-19, national and international health organizations continue to assure pet owners that dogs and cats cannot contract or transmit the disease. Now, global veterinary diagnostics firm Idexx Laboratories offers further proof to back that statement.

Idexx announced in mid-March that the company has evaluated “thousands of canine and feline specimens during validation of a new veterinary test system for the COVID-19 virus” and “has seen no positive results in pets to date of SARS-CoV-2, the coronavirus strain responsible for the coronavirus disease 2019 (COVID-19) respiratory outbreak in humans,” according to a company press release.

The specimens used to develop the test were obtained from specimens submitted to Idexx Reference Laboratories for polymerase chain reaction testing. Details about the Idexx SARS-CoV-2 (COVID-19) RealPCR Test can be found on the Idexx website.

These new test results support expert recommendations against testing pets for the COVID-19 virus. Pet owners whose dog or cat is demonstrating respiratory clinical signs are advised to contact their veterinarian to test for more common respiratory pathogens.

“Should leading health authorities determine it is clinically relevant to test pets for the COVID-19 virus, Idexx will be ready to make [its test] available,” says Jay Mazelsky, president and CEO of Idexx Laboratories, in the release. “Pets are important members of our family, and we want to keep them healthy and safe. We will continue to monitor COVID-19 and pet health across our global Idexx Reference Laboratories network as this situation evolves.”

AVMA, WSAVA: veterinary practices are ‘essential businesses’

Both associations have urged lawmakers to classify veterinary practices as ‘essential’ because, they say, not doing so could negatively impact both animal welfare and the wellbeing of pet owners.

Erica Tricarico, Senior Editor

To help mitigate the spread of COVID-19, local governments everywhere are asking—and in some areas ordering—non-essential businesses to close temporarily, including some veterinary clinics. But doing so, according to the World Small Animal Veterinary Association (WSAVA) and American Veterinary Medical Association (AVMA), could jeopardize the welfare of countless animals and their owners.

As WSAVA President Shane Ryan, BVSc (Hons), MVS, CVA, GradDipAnimChiro, MChiroSc, MRCVS, explains in a press release, veterinary professionals not only provide essential care to animals but they also “ensure animal health and welfare, and support the human-companion animal bond by protecting these deep and important relationships.”

Christopher Shapley, DVM, CVA, veterinary acupuncturist and herbal medicine specialist at Brick Town Veterinary Hospital in Brick Township, New Jersey, agrees. The human-animal bond is more critical than ever, he told dvm360, especially with so many people in self-isolation.

“Veterinary practices must remain open to not only ease the suffering of the sick but to reduce the stress of pet owners so they can safely and soundly tend to their own needs,” Dr. Shapley says.

Some states, including Maryland, Michigan, Connecticut and Pennsylvania, have categorized veterinary practices as essential. In its call for authorities to classify veterinary practices as “essential businesses,” the AVMA stated in a press release that “veterinary teams provide essential animal care, play a critical role in protecting the health of animals that enter the food supply, and serve as trusted members of the local community in disaster situations.”


This includes “those employed in veterinary health; manufacturing and distribution of animal medical materials, animal vaccines, animal drugs, feed ingredients, feed, and bedding, etc.; transportation of live animals, animal medical materials; transportation of deceased animals for disposal; raising of animals for food; animal production operations; slaughter and packing plants, renderers, and associated regulatory and government workforce.”

Although Brick Town Veterinary Hospital remains open to the community, Dr. Shapley says it’s far from business as usual.

“Social distancing in practice, treating only sick patients and performing only emergency surgeries are the ‘new normal’ during this pandemic,” he says. “Veterinarians must stay vigilant and continue to serve the community with their own safety in mind.”
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- **DEMONSTRATED SAFE FOR PUPPIES & DOGS** 8 weeks and older weighing at least 2.8 lbs

Discover simple protection every best friend deserves at SimparicaTrioDVM.com.

**IMPORTANT SAFETY INFORMATION:** Use with caution in dogs with a history of seizures. Simparica Trio contains sarolaner, a member of the isoxazoline class, which has been associated with neurologic adverse reactions including tremors, ataxia, and seizures in dogs with or without a history of neurologic disorders. The safe use of Simparica Trio has not been evaluated in breeding, pregnant, or lactating dogs. The most frequently reported adverse reactions in clinical trials were vomiting and diarrhea. See Brief Summary of full Prescribing Information on page 26.

*Amblyomma americanum, Amblyomma maculatum, Dermacentor variabilis, Ixodes scapularis, and Rhipicephalus sanguineus.*
†Toxocara canis, Toxascaris leonina, Ancylostoma caninum, and Uncinaria stenocephala.

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FOR ORAL USE IN DOGS ONLY

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

INDICATIONS
SIMPARICA TRIO prevents heartworm disease caused by Dirofilaria immitis, kills adult
flies (Stenochaeodes felis) and is indicated for the treatment and prevention of flea
infestations, the treatment and control of tick infestations with Amblyomma americanum
(june star tick), Amblyomma maculatum (Gulf Coast tick), Dermacentor variabilis
(American dog tick), Ixodes scapularis (black-legged tick), and Rhipicephalus sanguineus
(brown dog tick), and the treatment and control of roundworm (immature adult and adult
Toxocara canis and adult Toxascaris leonina) and adult hookworm (Ancylostoma caninum
and Uncinaria stenocephala) infections for one month in dogs and puppies 8 weeks of
age and older, and weighing 2.8 pounds or greater.

DOSEAGE AND ADMINISTRATION
SIMPARICA TRIO is given orally once a month, at the recommended minimum dose of
0.54 mg/lb (1.2 mg/kg) sarolaner, 0.011 mg/lb (24 µg/kg) moxidectin, and 2.27 mg/lb
(5 mg/kg) pyrantel (as pamoate salt).

SIMPARICA TRIO can be offered to the dog with or without food.
Care should be taken to ensure that the dog consumes the complete dose and that part
of the dose is not lost or refused. If a dose is missed, give SIMPARICA TRIO immediately and
resume monthly dosing.

Heartworm Prevention:
SIMPARICA TRIO should be administered at monthly intervals year-round or at least
within one month of the animal’s first seasonal exposure to mosquitoes and continuing
until at least 1 month after the dog’s last seasonal exposure. If a dose is missed, give
SIMPARICA TRIO immediately and resume monthly dosing. When replacing a monthly
heartworm preventive product, SIMPARICA TRIO should be given within one month of
the last dose of the former medication.

Flea Treatment and Prevention:
Treatment with SIMPARICA TRIO may begin at any time of the year. SIMPARICA TRIO
should be administered year-round at monthly intervals or started at least one month
before fleas become active.

To minimize the likelihood of flea re-infestation, it is important to treat all dogs and cats
within a household with a flea control product.

Tick Treatment and Control:
Treatment with SIMPARICA TRIO can begin at any time of the year. SIMPARICA TRIO
should be administered year-round at monthly intervals or started at least one month
before ticks become active.

Intestinal Nematode Treatment and Control:
For the treatment of roundworm (immature adult and adult Toxocara canis and adult
Toxascaris leonina) and adult hookworm (Ancylostoma caninum and Uncinaria
stenocephala) infections, SIMPARICA TRIO should be administered once as a single dose.
Monthly use of SIMPARICA TRIO will control any subsequent infections.

CONTRAINDICATIONS
There are no known contraindications for the use of SIMPARICA TRIO.

WARNINGS
Not for use in humans. Keep this and all drugs out of reach of children.
Keep SIMPARICA TRIO in a secure location out of reach of dogs, cats and other animals to
prevent accidental ingestion or overdose.

PRECAUTIONS
Sarolaner, one of the ingredients in SIMPARICA TRIO, 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
neuromuscular disorders.

Prior to administration of SIMPARICA TRIO, dogs should be tested for existing heartworm
infections. Infected dogs should be treated with an adulticide to remove adult heartworms.
SIMPARICA TRIO is not effective against adult D. immitis.

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

ADVERSE REACTIONS
In a field safety and effectiveness study, SIMPARICA TRIO was administered to dogs for
the prevention of heartworm disease. The study included a total of 410 dogs treated once
monthly for 11 treatments (272 treated with SIMPARICA TRIO and 138 treated with an
active control). Over the 330-day study period, all observations of potential adverse
reactions were recorded. The most frequent reactions reported in the SIMPARICA TRIO
group are presented in the following table.

Table 1. Dogs with Adverse Reactions

<table>
<thead>
<tr>
<th>Clinical Sign</th>
<th>SIMPARICA TRIO n = 272</th>
<th>Active Control n = 138</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vomiting</td>
<td>14.3%</td>
<td>10.9%</td>
</tr>
<tr>
<td>Diarrhea</td>
<td>13.2%</td>
<td>8.0%</td>
</tr>
<tr>
<td>Lethargy</td>
<td>8.5%</td>
<td>6.5%</td>
</tr>
<tr>
<td>Anorexia</td>
<td>5.1%</td>
<td>5.8%</td>
</tr>
<tr>
<td>Polyuria</td>
<td>3.7%</td>
<td>3.6%</td>
</tr>
<tr>
<td>Hyperactivity</td>
<td>2.2%</td>
<td>0.7%</td>
</tr>
<tr>
<td>Polydipsia</td>
<td>2.2%</td>
<td>2.9%</td>
</tr>
</tbody>
</table>

In a second field safety and effectiveness study, SIMPARICA TRIO was administered to 278
dogs with fleas. Adverse reactions in dogs treated with SIMPARICA TRIO included diarrhea.
In a third field safety and effectiveness study, SIMPARICA TRIO was administered to 120
dogs with roundworms. Adverse reactions in dogs treated with SIMPARICA TRIO included
vomiting.

For a copy of the Safety Data Sheet or to report adverse reactions, call Zoetis Inc. at
1-888-963-8471. For additional information about adverse drug experience reporting for
animal drugs, contact FDA at 1-888-FDA-VETS or www.fda.gov/reportanimalae.

STORAGE CONDITIONS
Store at or below 30°C (86°F).

HOW SUPPLIED
SIMPARICA TRIO is available in six flavored tablet sizes (see DOSAGE AND ADMINISTRATION).
Each tablet size is available in packages of one, three, or six tablets.

Approved by FDA under NADA # 141-521

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COVID-19
> Continued from cover

12 months or so,” said Timothy Davis, a partner at national workplace law firm Constangy, Brooks, Smith & Prophete. He and his colleague, William Principe, led a COVID-19–focused employee law webinar hosted by the Veterinary Hospital Managers Association on March 24.

“You can, and probably should, expect some level of impact of spiking up and down [of cases] over the next 12 months,” he said. “And how that impacts your business will be something that you are going to have to monitor as it goes along.”

Adapting your practice

At this stage, veterinary practices must enact new means of conducting business, particularly if the hospital resides in a state with indefinite shelter-in-place orders. To continue providing exceptional patient care while protecting staff, Davis outlined some of the measures hospitals have instituted in recent weeks:

- Restrict business to urgent or emergency cases only.
- Limit the number of staff in the practice at one time.
- Reduce practice hours.
- Ask clients to drop off pets for examination rather than entering the facility.
- Create special appointment times, and perhaps even entry points, for high-risk clients.
- Enhance cleaning and sterilization protocols.
- Offer telemedicine appointments.
- When possible, instruct staff to work from home.
- Provide letters for staff confirming they work for an essential business in case they are stopped en route to the hospital.

Even with all of the recommended precautions in place, practices should plan for when an employee becomes infected or comes into contact with someone infected with COVID-19. “Someday you are going to get the call,” Davis warned.

In addition to new laws specific to COVID-19, practice owners should be familiar with and adhere to all existing federal and state employment laws. This includes the Family Medical Leave Act (FMLA), Americans With Disabilities Act (ADA) and Fair Labor Standards Act.

Families First Coronavirus Response Act

The Families First Coronavirus Response Act was signed into law on March 18 and became effective April 2. All businesses with fewer than 500 employees are covered and must comply with its mandates. Businesses will be 100% reimbursed by the federal government for all accrued costs via not paying payroll taxes. “If the amount you pay exceeds that, you will receive a direct check from the government,” Davis explained. There are two elements to the law that have slightly different requirements:

- **Paid FMLA leave**: Provides 12 weeks of job-protected leave for employees who have been on payroll for at least 30 days. There is a 10-day unpaid waiting period followed by 10 weeks paid. The pay rate during this leave is no less than two-thirds of the usual pay for normally scheduled hours. This applies to both full- and part-time employees with a per-employee cap of $200 per day and $10,000 total. The only qualifying event for this type of leave is for an employee to be unable to work or telework because they must care for a child under age 18 if the child’s school or place of care is closed.
- **Emergency paid sick leave**: All employees on payroll are eligible for this leave and there is no 30-day employment requirement. Under this law, employees receive 80 hours of paid sick time at their regular rate of pay if they need time off for their own illness. If they need to care for others, they will receive two-thirds of their regular pay rate. The pay cap for this aspect of the law is $511 per day for personal illness, up to $5110 in total, and $200 per day up to $2000 total to care for others. The law sunsets at the end of 2020 and cannot be carried over into the following year.

The qualifying events for emergency paid sick leave are much broader. Employees can file for this leave if they are:

- subject to a federal, state or local quarantine order related to COVID-19
- advised by a healthcare provider to self-quarantine due to COVID-19
- experiencing COVID-19 symptoms and seek a medical diagnosis
- caring for an individual who is subject to quarantine or has been advised by a health care provider to self-quarantine due to COVID-19 concerns
- caring for their child whose school or place of care is closed.

CARES ACT

At the time of the webinar, the Coronavirus Aid, Relief, and Economic Security (CARES) ACT had not been passed by Congress. However, Davis urged attendees to monitor the progress of the bill closely. “If it is passed, there is a substantial likelihood that you will have a significant portion of your payroll covered by the federal government during these times.”

The proposed law would provide employers with a cash stimulus and prevent layoffs. “They are doing this through the Small Business Administration process where if you keep employees on board there is a mathematical formula you would calculate based on your costs,” Davis said. “That formula would take into account your payroll costs, health insurance costs, and your mortgage or rent costs.”

Businesses can apply for loans of up to $10 million to cover costs during this crisis. That loan would be 100% forgivable. “It would essentially be a direct grant of money from the federal government to you,” he said.

The law is being designed with the understanding that all businesses, albeit some more than others, are going to experience financial hardships as a result of the pandemic. Davis encouraged attendees to watch for legislative approval and to contact their business accountants and lawyers for guidance on how to best take advantage of the law once it is enacted.

OSHA Guidelines

As cases of COVID-19 became widespread, many employers turned to the Occupational Safety and Health Administration (OSHA) for guidance on how to proceed. “The reality is, this remains primarily a public health concern and OSHA does not have the internal expertise to play a very significant role,” explained Principe.

No current OSHA standard addresses airborne diseases and viruses. However, on March 9 the agency issued a guide for preparing workplaces for COVID-19. The document does not create any new legal obligations but instead provides employers with an understanding of their business’s perceived risk level and steps for determining appropriate control measures.

According to Principe, veterinary hospitals would fall into the category of being medium to low risk in terms of coming into direct contact with people who may be infected. As such, practices should follow guidelines that advise sick employees to stay home, provide resources for proper hygiene (tissues, hand soap, disinfectant wipes, etc.) and use appropriate personal protective equipment to prevent exposure.
Mission: Build an institution

A longstanding community practice needs a facility that reflects its high standards of care—and fulfilling that mission earned the practice highest honors in the 2019 dvm360 Hospital Design Competition.

By Sarah A. Moser

That was when Kenneth Skinner, DVM, one of the three practice owners, decided that the 5,000-square-foot facility with six exam rooms needed to be updated to match the hospital’s standards of care.

“It became my mission to have a building that reflected our policies and high standards,” Dr. Skinner says. “I wanted a practice that looked like a university or an institution, not a house or a strip mall practice. We are very professional, dress professionally, act professionally and needed a building to match.”

Thus began his four-year journey to building Prescott Animal Hospital as it now stands, a 14,885-square-foot, 13-exam-room hospital that screams professional in every way. This attention to detail earned the hospital top honors in the 2020 dvm360 Hospital Design Competition—a Hospital of the Year award for practices larger than 8,000 square feet.

Design dreams

Having not been renovated since 1977, Prescott Animal Hospital was feeling a bit outdated. It was beyond time for a change, and the doctors had outgrown the space at least 10 years earlier.

“We live by this mantra: We are a full-service hospital offering clients top-notch customer service and exceptional veterinary care for their fur babies,” says Dr. Skinner, who spearheaded the entire project. “As the 2014 AAHA Hospital of the Year, I wanted a facility that lived up to that honor and promise.” The first design goal? “We wanted the space to be fear-free, cat friendly and improve the client experience,” he says.

The second design goal was to bring more natural light inside and allow an outside view from most places in the hospital. “I describe our old building as like being in a Las Vegas casino,” says Dr. Skinner. “You never knew if it was day or night.” This led Dr. Skinner to choose skylights, large exterior windows throughout, and even a large portion of the interior walls to be made partly or completely of glass to allow team members to see throughout the hospital spaces without having to enter and interrupt staff and patients.

All of the animal spaces also have exterior and interior windows, allowing for natural light and the ability for staff to monitor patients. Dr. Skinner says the windows and the open plan increase productivity and decrease noise as well as staff and patient stress. “I really like to be able to scan the entire treatment, lab, ICU, and surgery areas from the doctor workstations in the fishbowl,” he says.

The third concept Dr. Skinner had in mind was to make the building look prestigious and hospital-like, somewhat scholarly and modern. “I know it may be a big step for a small cowboy town, but I wanted the building to show our pride in the community and reflect our commitment to be the most advanced full-service hospital in Northern Arizona,” he says. Some hospitals want their space to look cozy and homelike to show their warmth and care for people and pets. Dr. Skinner says he thinks the professionalism of his staff shows warmth more than any throw pillow or comfy couch could ever do.

The final concept integrated into the plan was to accommodate the zoo work that Dr. Skinner and his team do. He visits one of three zoos each week, and about once a month has a large animal brought into the hospital for care. This led to them installing a tiger...
The hospital’s exterior looks more like a human hospital or even a university than it does a cozy animal hospital. A brick exterior, abundant windows, crisp red and blue accents, and professional signage set the stage for what’s inside.

▲ The spacious pack and prep area is one of Dr. Skinner’s favorite spots in the hospital, an area he says is often forgotten. He made the most of this space, providing an abundance of cabinets; a large, flat counter for folding items; a scale and a large sink; and windows to the operating room as well as to the outdoors.

The hospital boasts 13 exam rooms, some of which are feline only, that are in use by five doctors at all times. Dr. Skinner says they could use even more exam rooms, even after jumping from six at the old hospital to 13 now. They prefer to do as much as possible in the exam rooms, from check-in to checkout, and everything in between, rather than keeping clients waiting in the lobby.

Each department of the large hospital has its own space. Dental staff, exam room staff, and surgery staff all have dedicated space to do charting, take calls, and confer with one another. Dr. Skinner says that helps with communication in such a large space—dedicated employees for each hospital function stay in their own space rather than running all over the facility caring for all the tasks.

A two-table dental suite gives dedicated dental staff their own space to work. Additional workspaces for dental team members are located nearby. Large glass windows and doors keep them visually connected throughout the day.

The spacious pack and prep area is one of Dr. Skinner’s favorite spots in the hospital, an area he says is often forgotten. He made the most of this space, providing an abundance of cabinets; a large, flat counter for folding items; a scale and a large sink; and windows to the operating room as well as to the outdoors.
bathes the isolation vestibule (top) and ward (middle), which offers direct access to an isolation play yard (bottom).

Neutral colors and stainless steel lend the space the professional feel that Dr. Skinner wanted.

No longer does isolation have to bring with it connotations of dark, dingy cubbies in the back of a hospital. Here, sunlight bathes the isolation vestibule (top) and ward (middle), which offers direct access to an isolation play yard (bottom).

Neutral colors and stainless steel lend the space the professional feel that Dr. Skinner wanted.

The exotics entrance accommodates crates holding lions, tigers and occasionally bears from three local zoos for sedation and treatment about once a month. The large space also doubles as a service entry for delivery of pallets of dog food and other large items.

Another often forgotten space that Dr. Skinner honed in on is the laundry and food prep area. The industrial washers and dryers can run 75 pounds of laundry at a time. Rather than being stuck in a cramped corner, staff members have plenty of space to move around and spacious counters at which to work.

Entrance to bring large zoo animal crates into the building and creating a secure space for sedation. This area features wider hallways and double doors to more easily move large crates throughout the treatment and surgery areas.

Tending to the forgotten spaces
While the hospital may be big and prestigious, Dr. Skinner’s favorite parts of the building are what he calls the forgotten spaces.

“My favorites are the useful spaces like our giant pack and prep area, the laundry room and our central receiving room,” he says. “It’s the spaces that maximize our storage and efficiency that I like the best.”

He says the central receiving area, which doubles as the tiger entrance, allows for delivery of pallets of dog food straight into the building, instead of leaving them outside and having to haul the items into the building by hand. Also, the conference room and janitors’ closets make him happy.

“The operating room and exam rooms are nice, but every practice has them,” says Dr. Skinner. “The forgotten spaces are what make our hospital great, improving efficiency and comfort.”

Dr. Skinner credits working with a veterinary-specific architect for making the design of the hospital so great, including designing these forgotten spaces to be so beneficial. In 2007, Prescott Animal Hospital built an equine hospital on a separate piece of land, without using a veterinary architect. While the practice worked out fine, Dr. Skinner says he learned then that he needed someone well versed in veterinary medicine to guide him through the flow of a hospital.

“Not only that, but a veterinary architect is able to ease the construction process as an advisor, knowing things to look for that we might miss,” he says. “They know what things need to be there that you might have forgotten, they understand the equipment you use, the washing machines you need, and so on. Working with a professional who you know and trust and can work with on an everyday basis is super critical.”

Sarah A. Moser is a freelance writer in Lenexa, Kans.
Questions to ask as you enter discussions with potential partners.

3

**NO. 01**
Is it the right culture fit for your team?

As you begin considering your options for selling your pet hospital business, it’s important to find a partner aligned with your values, respectful of the individuality of what you’ve built, and equipped to grow your business, while your team and culture remain intact.

Ask around to find out which buyers have the best reputation for caring for pets and the people who love them.

**NO. 02**
Are there flexible deal structures?

Because selling your pet hospital is such a personal decision, you’ll want to understand what types of options are available, and to what level they can tailor the terms to meet your needs.

**ASK IF THE BUYER CAN:**
- Make 100% cash offers with no finance contingency
- Offer Joint Venture partnerships for growth and flexibility
- Buy the real estate outright or lease from you

**NO. 03**
How comprehensive are the support services?

As you contemplate transitioning your business, you’ll want to know every aspect is covered. Seek out a partner with a dedicated team seasoned in marketing (including digital advertising and social media strategy), web development and hosting, client satisfaction surveys, IT, HR, accounting, taxes, legal, call centers and more.

Let’s talk. Connect with us at 888.767.7755 and info@nva.com or visit us at NVA.com.

NVA has over 800 partnerships in the US, Canada, Australia and New Zealand. Our passionate, visionary local pet resort and hospital leaders embody NVA’s unique entrepreneurial spirit.
Avoid real estate hiccups when buying a clinic

As if making the life-altering decision to buy a veterinary practice isn’t daunting enough, there can arise hidden obstacles and unexpected worries for potential owners.

Problems involving the real estate where the clinic operates can set the hopeful purchaser’s head spinning at any point in the transaction. Most commonly they seem to happen at the worst time possible—when bank commitments are set to expire, when the buyer’s resignation notice period is about to start and other nifty times like that.

We counsel practice-buying clients to do their level best to predict issues that might pop up as a sale transaction progresses. But there are limits to a person’s imagination and experience.

Because some snags are virtually impossible to foresee, it’s important for both the buyer and the seller—as well as their legal representatives—to monitor closely everything that is happening as the property sale moves from letter of intent through the close of escrow. And realty troubles can pop up even in practice sales that do not involve a real estate purchase. When the clinic being sold is located in a shopping center or when the seller is only willing to part with the practice but not the building, lease terms can get sticky during negotiations and occasionally even scuttle the sale of the practice itself.

We have found that if the parties, especially buyers, can look past the mere terms of the real estate lease or purchase contract and investigate potential trouble areas as they may arise, they will likely be able to predict clinic cash flow accurately, close the sale earlier and see through a smoother transition than would be the case if issues are confronted on a crisis-by-crisis basis.

Premises costs as a financing hindrance

Often, when potential practice buyers look into the cash flow of an interesting clinic, they merely accept the rent or mortgage service costs as an immutable reality. These buyers look at the business’ income and expenses—but not occupancy costs—with an eye toward coming up with a realistic price to offer a seller. But looking only at the cost of inventory, number of transactions and personnel expenses to the exclusion of the real estate’s current and future carrying costs can be a big mistake for these would-be owners.

Instead of ignoring the “occupancy overhead” of a potential practice acquisition, it makes far more sense to look at real estate cost and to evaluate that parameter in a non-emotional way. A property’s price, upkeep (or common area maintenance), depreciation, neighborhood quality and “highest use” characteristics are essential things to be aware of. These need to be considered objectively as they exist, and their future predicted to the extent possible. Remember that taxes, assessment, insurance and value acceleration (or deterioration) are hard and fast realities that can impact business profits far into the future.

Real-world examples are instructional

But anticipating neighborhood growth or the risk of tax increases that might result from lousy municipal management are only part of the reality Rubik’s Cube.

Regular readers of this column know that I am a big believer in learning from the mistakes and oversights I’ve made myself and seen lots of others make over the years. In veterinary real estate, there are plenty of both, so here are a few of the scenarios that have worked their way across my desk:

Lease goblins

• Corporate consolidator gets blindsided. About six months ago, one of the largest veterinary-capital-driven “roll-ups” ran into an 11th-hour snag that nearly collapsed the acquisition. Literally hours before a closing at which the practice seller was to sign a long-term lease on his building and take home a seven-figure check, he inadvertently mentioned that he only owned the clinic building. The land underneath was leased property, and nobody involved had arranged to include the landowner in the negotiations. Clearly a potential deal killer.

• Awesome location, rent increases eclipse practice growth. A young veterinarian invested substantial capital obtaining a professional appraisal of a veterinary practice in a super-popular tourist area in a state with outstanding population growth. The bank evaluated the business financially and agreed to the loan, contingent on the buyer obtaining a 15-year lease on the practice building. Uh-oh! Turns out the landlord was waiting for the existing lease expiration 2 years hence so that they could raise the rent by double digits. The bank could no longer justify the loan based on historical profit figures once the new anticipated rent was factored in.

Building-purchase goblins

• Sale near closing, buyers reveal demo plan. A trio of entrepreneurial veterinarians we worked with recently had identified a great practice in a growing commercial area. The land and building titles were clear, and practice finances added up pretty well, too. The bank signed the initial commitment and the closing was scheduled.Oops! During a meeting with the bank, one of the partners mentioned that they “weren’t concerned” about some roof leaks identified by the bank’s inspector because they planned to tear the building down in six months and replace it. Deal on indefinite hold while the bank re-evaluates the borrowers’ ability to finance a new building once the original building’s demolition slashes the property’s value as collateral.

• Veterinarian discovers he doesn’t want to be a landlord. One of our very good associate clients started hunting for a profitable practice to buy and found a thriving clinic in a nice building, both of which were fairly priced. One problem: The building’s taxes, insurance, mortgage and upkeep costs were only affordable if the new owner-DVM was willing to manage the upstairs two-bedroom apartment and the CPA office in back, both of which were part of the facility. And a bonus: All the electric and gas to the entire building was handled through single meters in the veterinary clinic. I asked my client if he had any experience being a landlord (i.e. backed-up toilets, repainting commercial space and long, unanticipated vacancies). I didn’t mean to be a naysayer, but I know that landlording just is not everyone’s cup of tea. Our client decided to pass on what would otherwise have been a no-brainer purchase.

Problem properties can be profitable—for clever doctors

My final suggestion is for you “outside-the-box” thinkers not to be discouraged by my litany of unanticipated real estate debacles. “Problem” properties associated with solid practices can prove to be good opportunities—with some creative footprint. But be sure to listen to other, more experienced property owners and veterinarian-tenants and take their stories to heart.

There are numerous “overlooked” routes to making what might at first appear to be a lousy practice buy into a diamond in the rough. I will be presenting some creative solutions to real estate problems in an upcoming column. And if you can, please join me in September at the Southwest Veterinary Symposium in Fort Worth where I will be discussing veterinary real estate in much greater detail.

Dr. Christopher Allen is president of Associates in Veterinary Law PC, which provides legal and consulting services to veterinarians. Call 607-754-1510 or email info@veterinarylaw.com.
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To be a leader, be a leader

You may not have the title of “boss” or “manager” at your veterinary practice, but that doesn’t mean you can’t be a leader. Here’s how to prepare yourself for a leadership role.

I have read, written and presented many times about the characteristics of leaders. As with most subjective skills, “I know it when I see it.” Most people have a general understanding of what leadership looks and feels like. But aside from that rare individual who just seems to have been born to lead, most leaders become leaders as a result of circumstance and hard work. Leaders don’t spring from the oven fully baked like a gingerbread boy.

So, what steps can we take to become leaders? How will you be ready when the opportunity presents?

I recently read an article about some of the proactive steps we can take to become a leader. That led me to a number of other leadership articles offered by prominent business leaders. It struck me that the guidance in all of these articles can be summed up in one sentence: if you want to become a leader, start acting like one.

Let’s review some of the steps we can take to step into leaders’ ruby slippers as prepared as possible.

It’s not about you

The first realization is that leadership is not about you. Calling yourself a leader or bossing people around is not leadership. Aristotle said, “We do what we are; excellence is not an act but a habit.” Being a leader means thinking about the needs of your team before your own—helping other people maximize their potential, sharing credit and shouldering blame. If you act like a leader, you are one.

Learn by observing

Observe—and emulate—senior leadership in business, government or any place where success involves teamwork and leadership. Experts in leadership transition and development say it is never too soon to start preparing to be a leader. Find role models and mentors. Build relationships. It’s not who you know that matters, it’s who knows you. Motivational speaker Denis Waitley said, “If you are not networking, you are not working.”

Act like a leader

Don’t wait until your position requires you to assume leadership. Instead, act like a leader even when it isn’t expected of you. How do leaders act? How do they behave? How do they conduct and carry themselves around others? How do they act when they think no one is watching? How do they speak, laugh, participate in conversations? What questions do they ask of others? What do they focus on every day? Are they respectful of others?

Learn to set your sights on long-term strategies rather than short-term goals, and to emphasize strategy over execution. Ask “why” something should be done, not how to do it, and focus on doing the right thing.

Commit to teamwork

Senior leaders are committed to teamwork. There are no winners, no losers, no territoriality. Remember, just because your naysayer says you are in a position to lead doesn’t mean people are lining up to follow you, and just because you are not officially a leader doesn’t mean you do not influence others. A leader is someone others want to follow based on trust and respect.

Act authentically.

Be yourself. It makes it easier for others to connect with you. Act with confidence, but don’t be cocky. Be willing to make and own mistakes. Take risks with the understanding that while the goal is success, the possibility of failure remains.

Winston Churchill, generally considered one of history’s great leaders, said, “Success is not final, failure is not fatal; it is the courage to continue that counts.” Leaders carry on.

Dr. Mike Paul is the former executive director of the Companion Animal Parasite Council and a former president of the American Animal Hospital Association. He is currently the principal of MAGPIE Veterinary Consulting. He is retired from practice and lives in Anguilla, British West Indies.
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REVOLUTION PLUS is an easy-to-apply, quick-drying, small-volume, monthly topical solution that protects against fleas (Ctenocephalides felis), ticks (Black-legged or deer tick [Ixodes scapularis], Gulf Coast tick [Amblyomma maculatum] and American dog tick [Dermacentor variabilis]), ear mites (Otodectes cynotis), roundworms (Toxocara cati), hookworms (Ancylostoma tubaeforme), and heartworms (Dirofilaria immitis) for cats and kittens as young as eight weeks of age and weighing 2.8 pounds or greater.

*REVOLUTION PLUS broadens the scope of protection for cats and kittens against fleas, ticks, ear mites, roundworms, hookworms, and heartworms.

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Discount care or full disclosure?  
Providing optimal care while respecting your veterinary clients’ financial limitations can be challenging, but it can be done.

Dr. Sean Lee owns a large practice in a northeastern city. Recently, he locked horns with one of his associates over treatment approaches.

The cases
The first case involved a 7-year-old retriever mix with sudden lameness in the left rear leg. The dog was in mild distress, bearing weight on three legs and toe-touching on the affected leg. The associate advised the owner that a proper workup would involve an exam, x-rays, radiology consultation, pain management, screening blood work and possible surgery. The pet owner loved his dog but told the veterinarian he did not have the money for the suggested services. The veterinarian examined the leg, felt some instability and told the owner that the injury was most likely caused by an anterior cruciate ligament (ACL) tear but that the diagnosis could not be confirmed without the proposed diagnostic plan. When the owner asked what he could do for his dog with limited funds, the veterinarian told him to minimize the dog’s activity for 8 weeks. He also prescribed pain medications that do not require bloodwork clearance and told the very appreciative owner that the dog should do fine.

The second case that attracted Dr. Lee’s attention was that of a 4-year-old female boxer that was presented with sudden onset of urinary accidents in the house. The dog had a similar episode two years earlier that was cleared up with a course of antibiotics. During this visit, the associate recommended a urinalysis, bladder x-ray to rule out any stones and, owing to the dog’s history, a culture and sensitivity if bacteria were detected. The client explained that her funds were limited and opted for the urinalysis and requested an antibiotic. The associate strongly recommended the workup to prevent what could develop into a more serious and complex urinary tract issue, but he told her he understood her budgetary constraints and agreed to prescribe only an antibiotic at this time, as the canine was not required for bloodwork clearance and told the very appreciative owner that the dog should do fine.

The meeting
Dr. Lee scheduled a meeting with his associate about these two cases. He felt the doctor was not assertive enough in encouraging the client to work up these two patients as initially proposed. Dr. Lee said that the doctor’s shortcut and expedient treatment decisions were akin to putting a Band-Aid on an infected wound. These patients were ultimately going to return with complications that could have been avoided with the proper diagnostics.

The younger doctor respectfully disagreed. He understood the importance of the bottom line, he told Dr. Lee, but his goal was to assist his patients and their owners with honesty and transparency. In the first case, he said, he was reasonably sure from the physical exam that the dog had an ACL tear and felt that honoring the client’s desire for a conservative, inexpensive approach was very reasonable. In the second case, a urinalysis followed by antibiotics would resolve the presenting signs in 80% of cases. Once again, he believed that respecting the client’s wishes and pocketbook was a reasonable decision.

Dr. Lee told the associate that he believed veterinarians should practice the best medicine possible at all times, adding, “Don’t worry about the clients’ pocketbook, because they will worry about that enough for both of you.” His young associate understood that veterinary practice is a combination of medicine and business. However, when the priorities between medicine and business become unbalanced, the patient, client, and practice all end up suffering.

Each agreed to respect the other’s input more in the future, but neither was very happy at the end of the meeting.

Do you believe in Dr. Lee’s “medicine at all costs” approach, or do you agree with his young associate that treatment should be tailored to each client’s wishes and finances? Let us know your thoughts at dvm360news@mnmgroupl.com.

Dr. Rosenberg’s response
Veterinary medicine cannot depend on third-party insurance to pay its fees. On the other hand, prescribing the most idealized treatment plan can be a financial burden for some pet owners. It is our job as responsible clinicians to offer all available treatment options, recommend the treatment of choice and allow the pet owner to make an informed decision. This decision should not be subject to pressure, guilt or judgment from the doctor or staff.

Practice owners are often influenced a bit too much by the bottom line and, conversely, associates may have no interest in the clinic profit margin. I believe that a veterinarian who is truly interested in the patient’s welfare, but considers the client’s ability to care for the animal properly, can walk the financial tightrope laid out in this dilemma. First, veterinarians should advocate for the treatment protocol and diagnostics they believe are in the best interest of the patient. Second, all financial assistance options should be made available to the pet owner after an estimate is given. Finally, when financial restrictions are severe, treatment protocols can be modified to fit the client’s pocketbook, but not to the extent that the animal’s health and welfare are placed at risk.

No one ever said practicing veterinary medicine was easy. I’ve always followed a simple motto: “When in doubt, help them out.”

Dr. Rosenberg is director of the Voorhees Veterinary Center in Voorhees, New Jersey. Although many of the scenarios Dr. Rosenberg describes in his column are based on real-life events, the veterinary practices, doctors and employees described are fictional.
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Your accounting system may be hiding opportunity

Do you know where to look for efficiencies and new growth possibilities for your veterinary practice?

Standardize accounting

Track accurately

Reveal insights

Identify opportunities

Create change

With a shifting veterinary landscape, practices need to be ready to embrace change and transform it into opportunity. That requires flexibility, innovation and creative thinking. It also requires something that may seem rather mundane: financial practicality and attention to detail.

Get the financial picture

Improving profitability necessitates having a clear vision of your financial picture. Knowing where you are positions you to envision the future clearly and build toward growth. That means being brave enough to know exactly where you stand financially and visionary enough to use that knowledge to transform how you work.

This is where your accounting system comes in. Your chart of accounts isn’t just a basic utility to track bills and payments. It can be much more. Used to its full potential, it’s a microscope that can help you identify opportunities for greater efficiency and economic sustainability. It’s a powerful tool that can help protect—and grow—your business.

To unlock the possibilities, you need first to be using the standard chart of accounts for veterinary practices. It’s called the American Animal Hospital Association/Veterinary Management Group (AAHA/VMG) Chart of Accounts, and it’s endorsed as the industry standard by the AVMA and the Veterinary Hospital Managers Association, among other organizations. It’s available free of charge to all practices, and using it opens up a world of useful information.

What are the benefits?

The standard chart of accounts applies best-practice accounting standards for classifying revenue, expense and balance sheet accounts in your practice. Using it lets you better organize your finances and collect data you need to strengthen your operation. The benefits to your practice are powerful and wide-ranging:

• Measure your clinic against industry benchmarks.
• See where you excel and find opportunities to improve.
• Shed light on both income and expenses.

• Match specific revenue items with their associated expenses, and ensure they align correctly.
• Make budgeting easier.
• Simplify training of bookkeeping staff.
• Provide deeper and more detailed financial data to show the practice’s economic health to potential buyers.

A real-world example

What can you do with this new information? One practice that implemented the standard accounts chart used it to compare costs and revenue for therapeutic pet food. What they found was astonishing: The practice was actually paying more for therapeutic diets than it was collecting in revenue for those products. Seeing the costs and associated revenue together allowed the hospital to identify the problem, track down the underlying cause and implement a fix.

Without seeing the detail in the standard chart of accounts, the practice didn’t even know it had a problem. This really happened, and it’s just one example of the kind of insight you can gain from implementing best-practice accounting.

Where to begin?

If you’re not currently using the AAHA/VMG Chart of Accounts, it’s relatively easy to make the switch. You can do it gradually or all at once, depending what seems right for your practice. You also can hire help. Your bookkeeping firm can typically do it for you in just a few days for a few hundred dollars.

A recent issue of JAVMA included a special report that can help you better understand and implement the standard...
AVMA EYE ON ECONOMICS | Matthew Salois, PhD

chart of accounts. The report was developed jointly by AVMA and AAHA to help veterinary practices reap the rewards of standardization. It’s full of practical information, including:

- Standard definitions
- Step-by-step implementation plan
- Roles and responsibilities of team members
- Change management advice
- Case studies from hospitals using the chart of accounts

Once the system is in place
Knowledge is power, and standardized accounting reveals critical information that you can use to track business performance and make strategic decisions. Start by matching up your new accounting data with your practice’s key performance indicators. Whatever you’ve identified as your most important metrics, your accounting system can help benchmark current performance, track changes over time and monitor the effectiveness of new initiatives.

Focusing on financials can even identify opportunities to improve patient care. If your hospital is performing more surgeries, for example, you might also expect to be conducting more postoperative follow-up exams. If revenue for those exams isn’t tracking with your numbers for surgeries, that could be an opportunity to work with your veterinary team to increase the number of clients coming in for that all-important postsurgical checkup.

Another example: If you see average transaction amounts for exams fees falling, you can dig into the detail provided by the standard accounting chart to see if there’s a common thread. Are more medications being dispensed without exams? Are you seeing more ear infection cases without cytology? These can be opportunities to provide a higher level of patient care.

Why does profitability matter?
Profitability and economic sustainability matter, not only for financial reasons but also because people and patients are counting on our practices to thrive.

Profit fuels innovation and opens doors to growth and opportunity. It makes it possible to keep the clinic doors open and supply exam rooms and labs with state-of-the-art equipment for top-notch patient care. Without profit and without building practice value, it’s impossible to continue helping patients.

Both clients and veterinary team members depend on our practices to support them in the long term, and economic sustainability is directly connected to patient care. However much your clients value you, if your practice doesn’t turn a healthy profit, it won’t be sustainable.

The industry standard chart of accounts is available at avma.org/accounting. 

Matthew Salois, PhD, is chief economist and director of the Veterinary Economics Division at the AVMA.

REFERENCE

To learn more, please visit www.CYTOPOINT.com
How to perform a caudal epidural in horses

Caudal epidural anesthesia allows for invasive procedures while the horse is sedated in standing position without pain or discomfort.

By Charlotte Barton, BVetMEd, MRCVS, and Cole B. Sandow, DVM, MS, DACVS-LA

In horses, administering a caudal epidural anesthetic into the sacrococcygeal or first intercoccygeal space provides regional analgesia to the tail and perineum, thus facilitating surgical procedures of the vagina, cervix, urethra, bladder or rectum, as well as in select cases correction of a prolapsed uterus; it is also helpful for managing dystocia.

A major benefit of performing caudal epidurals in horses is the ability to complete surgery and other invasive procedures with the patient standing; loss of sensory innervation without affecting motor control foregoes the need for and potential risks associated with general anesthesia.

In addition, the technique accommodates placement of a catheter in the caudal epidural space for repeated dosing of medications and long-term pain management in horses with specific hindlimb musculoskeletal issues or other conditions.

**Technique**

The horse should be restrained in stocks; judicious use of sedation is paramount. Caution should be taken not to sedate the horse too heavily, which may cause ataxia and impede the animal’s ability to stand squarely, thereby making it more challenging to insert the needle on the midline.

The landmark for needle placement is the first intercoccygeal or sacrococcygeal space, which can be located by raising and lowering the tail. The exact distance from the tail base to the caudal epidural space is 10 cm, but not removed from the skin, and redirected. Loss of anal sphincter tone is a common finding from the origin of the tail hairs. This area should be clipped and aseptically prepared.

An 18-ga, 1.5-inch needle should be inserted with the bevel facing cranially on the midline and perpendicular to the surface of the skin for a more accurate trajectory to the space; it should not be inserted perpendicular to the floor (Figure 1). Once the needle is through the skin, the hub can be filled with sterile saline or the anesthetic solution (Figure 2). As the needle is advanced in the correct location, it will puncture the arcuate ligament, thus creating a popping sensation for the practitioner; fluid within the hub will then be aspirated into the epidural space via negative pressure (Figure 3). This procedure, known as the hanging drop technique, confirms accurate needle placement and accommodates using minimal pressure for injection of the local anesthetic. If the needle hits bone, it should be withdrawn approximately 0.5 cm, but not removed from the skin, and redirected. Loss of anal sphincter tone is a common finding when caudal epidural anesthesia is achieved.

Commonly used anesthetics are xylazine and lidocaine or 2% mepivacaine. Xylazine has the benefit of analgesia without ataxia, while detomidine is a profound analgesic effect but can cause undesirable ataxia. Using a combination of 2% mepivacaine (1-2 ml) and xylazine (50-100 mg) diluted to a total volume of 7 to 10 ml using sterile water or sterile saline has been successful in many surgical cases.

Combining the two drugs can also produce longer analgesia with only mild ataxia, as compared with using either agent alone. Morphine can also be combined with an alpha-2 agonist for prolonged analgesia in select hindlimb musculoskeletal disorders.

**Risks and possible complications**

Horses should be checked to ensure that sensory innervation has returned to the hindlimbs before they are moved out of the stocks. Turning horses out in a small paddock for a few hours after the procedure may be prudent, rather than possibly risking being cast if they are returned to their stall.

Contraindications to use of the caudal epidural technique include neurologic or musculoskeletal disease, or local inflammation surrounding the injection site. A caudal epidural can provide analgesia while keeping motor function intact with the use of appropriate doses.

In some cases, motor blockade may occur from cranial diffusion of alpha-2 agonists or anesthetic agents; however, this is associated with the use of doses above recommended values and with high volumes of solution. Studies have shown that cranial diffusion of the solution up to 6 to 10 vertebral spaces can occur when doses between 10 to 20 ml are used, with the consequential risk for motor nerve paralysis. Therefore, the total volume of solution should be less than 10 ml. In horses that have had previous caudal epidurals, a lower total volume (< 10 ml) should be used, as previous injections can make the space smaller, allowing for more cranial migration of the anesthetic solution.
Of note, although rare, some combinations of local anesthetics and alpha-2 agonists have reportedly caused severe ataxia or recumbency, even when used at recommended doses. Side effects can be reduced by good patient selection and the use of appropriate doses. Inadequate analgesia can result from incorrect injection technique or abnormal anatomy (e.g., presence of fibrous lesions from previous epidurals), which may result in unilateral effects. Infection can be minimized by thorough sterile preparation of the injection site and aseptic technique.

REFERENCES


Dr. Barton graduated from the Royal Veterinary College in London and is currently completing a surgery internship at Hagyard Equine Medical Institute in Lexington, Kentucky. In addition to equine surgery, she has an interest in neurology and lameness diagnosis. Dr. Sandow is a board-certified veterinary surgeon at Hagyard Equine Medical Institute. He has an interest in orthopedics, lameness and emergency celiotomy as well as dystocia.

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Figure 1. Needle inserted on the midline, perpendicular to the surface of the skin. The hub of the needle is filled with anesthetic solution.

Figure 2. With the hanging drop technique, the hub of the needle is filled with anesthetic solution and the desired needle position is confirmed.

Figure 3. The needle is slowly advanced until the anesthetic solution is aspirated into the caudal epidural space, confirming accurate placement. Then the remaining anesthetic solution is injected.
The ABCs of veterinary dentistry: V is for ventilation monitoring

Monitoring ventilation is critical in dogs and cats undergoing dental procedures.

By Jan Bellows, DVM, DAVDC, DABVP (Canine & Feline), FAVD

Basic ventilation and ventilator nomenclature

Means of delivering ventilation:
- **Spontaneous ventilation** is patient initiated and controlled.
- **Manual ventilation**, also called bagging, is human controlled.
- **Controlled ventilation** is machine initiated and coordinated.

To adjust ventilator settings properly, it is important to understand ventilator nomenclature:
- **Intermittent positive-pressure ventilation** (IPPV) is artificial inspiration applied to the airway; IPPV can be manual or mechanical.
- **Respiratory rate (RR) or breaths/min** involves the number of breaths per minute.
- **Tidal volume (TV or Vt)** is the volume of air moved in one full respiratory cycle (inspiration and expiration) or one breath. It is calculated at 10 to 15 ml/kg (range goes up to 20 ml/kg) and based on lean body weight. End-tidal carbon dioxide (EtCO₂) is essential in determining the proper TV and should remain between 35 and 45 mm Hg.
- **Minute volume (MV) or minute ventilation (Vm)** is the total gases exchanged over one minute. It is the product of RR x TV, and in small animal patients should be roughly 150 to 250 ml/kg/min.
- **Peak inspiratory pressure (PIP)**, the highest level of pressure applied to the lungs during inhalation, increases with any airway resistance. Increased secretions, bronchospasm, biting down on ventilation tubing, and decreased lung compliance may increase the PIP. Normal PIP is 12 to 15 cm H₂O in dogs and 10 to 15 cm H₂O in cats; it should not exceed 20 cm H₂O in most cases. Larger animals often require higher PIP. The EtCO₂ and partial pressure of carbon dioxide (PaCO₂) will help guide this.
- **Positive end-expiratory pressure (PEEP)** is the pressure in the lung (alveoli) at the end of expiration. PEEP prevents alveolar collapse and keeps terminal airways partially inflated to increase gas exchange. Peripheral capillary oxygen saturation (SpO₂) can be used to determine effectiveness.
- **Inspiratory-expiratory ratio (I:E ratio)** is the time spent in inspiration compared with the time spent in expiration. An I:E ratio of 1:2 (1 second of inspiration, 2 seconds of expiration) is typical, but 1:2.5, 1:3 and even 1:4 can be used. If the I:E ratio is too short (1:1), there may be circulatory issues; thoracic pressure needs to drop (like it does during spontaneous exhalation) to allow for refilling of cardiac structures. A small I:E ratio (0.5:1) may be appropriate for small patients with small lung volumes because their lungs take less time to fill. If the I:E ratio is large (2:2), a larger TV can be achieved at the same PIP because there is more time for the lungs to fill. This can cause impaired thoracic blood flow or barotrauma. A long I:E ratio (i.e. 1:3, 1:4) can be used in an attempt to increase EtCO₂ in a hypocapnic patient.
Ventilation is the process of gas exchange in and out of the lungs (i.e. bringing in oxygen and flushing out carbon dioxide). The goal of assisted ventilation is to provide adequate respiratory support, which improves oxygenation and stabilizes the plane of anesthesia.

What does ventilation have to do with veterinary dentistry? Whereas in human dentistry only local anesthesia is used for most procedures, veterinary dental procedures necessarily involve general anesthesia. Paying close attention to respiration, oxygenation and carbon dioxide levels increases the safety of our anesthetic procedures and patient wellbeing.

Respiratory rate
Inhalant and injectable anesthetics, including opioids and alpha, agonists, can lead to ventilatory suppression. In the absence of capnography, respiration can be observed subjectively by watching the anesthesia bag, the patient’s chest wall and condensation in the endotracheal tube, as well as by auscultation of breath sounds.

Many patient monitoring systems default respiration readings to impedance respiration, using the indirect method of deriving respiration from the up-and-down movement of the patient’s chest via the electrocardiogram leads. This indirect method is neither accurate nor reliable. Apnea monitors with loud alarms are also helpful in alerting the veterinary team of respiratory arrest.

An elevated respiratory rate may indicate progression from a moderate to light plane of anesthesia. Digital monitoring of respiratory rate and other signs of arousal during dental procedures can help avoid bite trauma to staff, radiography sensors or plates, and even monitoring equipment (Figure 1).

Pulse oximetry
The pulse oximeter noninvasively calculates oxygen saturation of hemoglobin using light absorption in tissue. A probe from the oximeter emits red and infrared lights, which are detected by a photodetector that is placed across an arterial bed.

Oxygen saturation in an anesthetized patient should be maintained between 95% and 100%, particularly if the patient is breathing 100% oxygen. Saturation readings of 95% or less indicate hypotension, insufficient oxygen flow, cardiac disease, pulmonary disease, vasoconstriction or shock. A patient with an abnormal reading may have an underlying problem that should be determined and corrected. The most common causes are prolonged attachment in the same area, hypotension and vasoconstriction due to temperature or drugs.

Pulse oximetry readings may be unreliable if the animal shows excessive movement, poor perfusion or pigment in the area the sensor is placed. Excessive hair between the sensor and the mucous membranes can also prevent accurate readings in animals. One of the most effective placements of the peripheral capillary oxygen saturation probe is on the tongue. Dental procedures by their nature involve movement and instruments in the mouth. Extraoral areas for probe placement include the prepuce, vulva, ear, toe webbing, digits, tail and rectum (the latter may be unreliable because of interference from fecal matter).

End-tidal carbon dioxide
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monitoring. End-tidal carbon dioxide (EtCO₂) is the concentration of carbon dioxide in the exhaled breath during exhalation. EtCO₂ monitoring through capnography is often called the “anesthesia disaster early warning system.”

Vitaliy important, it is the only parameter that thoroughly reflects a patient’s ventilatory status and can signal problems within two breaths. Interpreting the capnograph waveforms (capnograms) can also demonstrate the quality of the patient’s breathing. The device used to measure carbon dioxide should be a key consideration when choosing equipment to monitor veterinary patients during dental procedures. When selecting a mainstream device, make sure that the probe is solid state (no moving internal parts) to endure the rigorous environment of a busy veterinary practice. When using a sidestream device, pay close attention to the sample rate. Sample rates of 50 mm/min or less are recommended for small dogs and cats (Figure 2). If carbon dioxide monitoring is not currently in your practice’s budget, check whether your current monitor is equipped to upgrade later.

The absolute carbon dioxide value is not as important to embrace as the capnograph waveform, which graphically demonstrates carbon dioxide levels during one inspiration and expiration cycle (see Capnogram Parameters). A normal waveform should have a baseline of zero during inspiration (i.e. inspiratory baseline). This is followed by an expiratory upstroke that contains initially little or no carbon dioxide and moves upward until it levels out at a plateau. Carbon dioxide concentration continues to increase until it reaches its maximum just before the onset of inhalation (i.e. inspiratory downstroke). The height, frequency, shape, rhythm and baseline position of the waveform should be analyzed to ensure proper ventilation.

### Capnogram Parameters

**Height (normal 35-45 mm Hg):**
- Tall = high EtCO₂ (hypercapnia)
- Small = low EtCO₂ (hypocapnia)

**Rate (length depicts time):**
- Many waveforms = tachynea
- Few waveforms = bradypnea

**Rhythm:**
- Breathing pattern should be regular
- May increase or decrease over time in spontaneously breathing patients

**Baseline:**
- Represents inspired carbon dioxide and should be zero
- Acceptable inspiratory values should be near zero

**Shape of the wave:**
- Wave should be square and consistent
waveform should be monitored closely during anesthesia. Carbon dioxide concentration in the sample is reflected by the wave height. Changes in the standard waveform should alert the anesthetist to a problem with the patient, the airway or the anesthetic circuit. Normal readings are in the range of 35 to 45 mm Hg.

Hypercapnia, a result of hypoventilation, is when EtCO₂ exceeds 50 mm Hg. Hypercapnia can lead to vasodilatation, a decrease in systemic vascular resistance and, subsequently, a reduction in blood pressure. Increased carbon dioxide readings may also occur because of faulty check valves, exhausted soda lime, mild-to-moderate patient airway obstruction and hypoventilation.

Hypocapnia, a result of hyperventilation, is when the EtCO₂ is less than 30 mm Hg. Hypocapnia is uncommon in anesthetized animals but may occur as a result of hypothermia, esophageal intubation, extubation, disconnection from the breathing circuit, obstruction of the endotracheal tube or impending cardiopulmonary arrest.

### Anesthesia ventilators

Because dental procedures commonly take hours, the patient’s head-down positioning can lead to poor ventilation secondary to abdominal contents pushing on the diaphragm. The ventilator delivers a predetermined respiratory rate, volume and pressure during the entire procedure. Monitoring EtCO₂ is essential if mechanical ventilation is used.

Mechanical ventilation is more efficient than spontaneous breathing at delivering even doses of inhalants and less time-consuming than manual ventilation. Some practices use anesthesia ventilators on all patients undergoing dental care, while others use them only when indicated due to possible effects on cardiac output.

Of note, there are drawbacks to mechanical ventilation, and each case should be evaluated individually. Positive-pressure ventilation may impede venous return and negatively affect blood pressure. There is also a risk for accidental overinflation of the lungs and barotrauma from inappropriate ventilator settings.

“Bucking the ventilator,” characterized by the patient attempting to breathe around or against the ventilator, may indicate a light level of anesthesia or high EtCO₂. Check the patient first to assess anesthetic depth and correct as needed to deepen the level. If the carbon dioxide level is too high, adjust the ventilator settings to increase the volume or pressure being delivered to the patient. Monitor closely as depth can change quickly.

It is not always recommended that patients be ventilated to a specific volume; instead, ventilate to a predetermined pressure and EtCO₂. Turn the volume on the ventilator to the lowest setting. Set breaths/min to the desired frequency and increase the volume in small increments until the pressure on the manometer is reaching the desired pressure with each delivered breath. Turn on the ventilator, fill the bellows if necessary (Figures 3 and 4) and set the controls in the following manner:

- Set a reasonable respiratory rate based on patient size (typically, between 10 and 15 breaths/min).
- Adjust the inspiratory time to reflect an I:E ratio close to 1:2. Physiologically, this is the most normal.
- Once you are ready to connect an anesthetized patient, fill the bellows (if needed) by increasing the flow rate rather than using the oxygen flush valve. The flush valve will dilute out the anesthetic gas concentration and may cause your patient to become light or wake up. Turn the flow rate down to the rate you intend to use.
- Turn on the ventilator and watch the pressure manometer and EtCO₂ readings. Make sure pressure does not exceed desired positive airway pressure and keep the EtCO₂ setting between 35 and 45 mm Hg.

Having a thorough understanding of basic respiratory physiology is essential to grasp the importance of adequate ventilation and respiration in the anesthetized patient. Monitoring your patient during and after anesthesia is probably the most important consideration to create anesthesia success (Figure 5).
Our clients may be confused about the name of these deadly worms, and you might get a chuckle out of imagining little worms with heaters warming the insides of a dog, but our clients just may be onto something with this mispronunciation. We now know that adding a bit of heat may be the key to diagnosing heartworm infections. Here’s why.

Traditional heartworm tests rely on the tests’ ability to detect soluble heartworm antigen in the patient’s blood. However, some of our positive patients develop antigen-antibody complexes that block the test’s detection and cause false-negative results. This is especially problematic for patients with low worm burdens that already would have had low levels of circulating heartworm antigen. So, what can we do about it?

If we add some heat to our heartworm test samples, we can break down the antigen-antibody complexes and be able to detect those sneaky ‘heartworms.’

When to add the heat
Veterinarians should consider adding some heat—for both dogs and cats—when clinical signs of heartworm disease are present but a heartworm test result is negative. This may occur in dogs with a history of using the “slow kill” method for heartworm treatment, when chronic inflammatory problems that stimulate the immune system significantly (e.g. pyoderma) are present, or in a pet from a highly heartworm endemic area that does not have a consistent prevention history and tests negative.

According to the American Heartworm Society, heat treatment can be accomplished easily in your hospital in five easy steps:

- **Step 1:** Dilute the serum sample with an equal volume of 0.9% NaCl. Put the diluted serum in a glass collection tube.
- **Step 2:** Fill a 500-ml glass beaker with about 250 ml of tap water.
- **Step 3:** Microwave the beaker to the point of boiling (about two minutes in a 1,000-watt oven).
- **Step 4:** Remove the heated water from the microwave and place the tube(s) with diluted sample into the heated water for 10 minutes. (Be sure to remove the rubber stopper before heating; some warping of the tube is expected.)
- **Step 5:** Repeat the antigen test.

A frequent dvm360.com contributor, Dr. Michael Nappier is assistant professor of community practice in the Department of Small Animal Clinical Sciences at the Virginia-Maryland College of Veterinary Medicine in Blacksburg, Virginia.

REFERENCE
What’s new, what’s tried-and-true: an update on small animal seizure management

Veterinary neurologist Dr. Michelle Carnes discusses updated terminology and effective management of epileptic dogs and cats.

By Carla Johnson, DVM

Is there anything new veterinarians need to know about small animal seizure management these days? Why yes, there is. Michelle Carnes, MS, DVM, DACVIM, a founding member of the Veterinary Neurosurgical Society, delivered an update at the Fetch dvm360 conference in San Diego during a session sponsored by PRN Pharmacal.

First off, Dr. Carnes said, let’s talk terminology. In 2015, the International Epilepsy Task Force reclassified seizures based on cause in companion animals and also consolidated terminology. The changes were intended to provide a common language for the classification of human and companion animal seizures, to “unmuddle” the common terminology used and to streamline communications about epilepsy and seizures, both in research publications and clinical settings. Prior to this, a common language for terminology regarding seizures in veterinary medicine had not been officially defined.

While approaches to classification may have changed, treatment approaches largely remain the same. According to Dr. Carnes, the tried-and-true medications are still phenobarbital and potassium bromide, although some newer medications also should be considered.

Dr. Carnes walked attendees through how to tell whether a patient is truly having a seizure, classifying the seizure by etiology and phenotype, and deciding how to treat the patient or whether to refer.

Is it a seizure or not?

It seems obvious, but first and foremost, Dr. Carnes said, we need to be sure an animal is actually experiencing seizures. Not all “paroxysmal abnormal events” in pets fit the criteria. But smartphones give us a huge diagnostic advantage. Dr. Carnes encouraged veterinary teams to advise pet owners, when they call for an appointment, to bring a video of the episode to the exam.

Still, videos aren’t foolproof, as some non-epileptic conditions can mimic seizures. Idiopathic head-bobbing (or head tremors) is a condition seen in young dogs, mostly pit bulls, Doberman pinchers, English bulldogs and similar breeds. These dogs have a “yes” or “no” orientation to their head-bobbing that usually ceases with a distraction, such as food or a walk. The animals are alert during these episodes, but the events can be scary for clients. Many dogs outgrow this condition, and typically it’s a benign process.

What’s the cause of the seizure?

There are now only three etiologic classes of seizure agreed upon by the International Epilepsy Task Force:

- **Reactive seizures** are due to metabolic, systemic or other nonprimary brain disease.
- **Structural seizures** are due to primary brain disease (e.g., degenerative disease, brain tumor, stroke).
- **Idiopathic epilepsy** is subdivided into proven-genetic (breed-related), suspected-genetic, and epilepsy of unknown origin.

It can also be challenging to distinguish “head-shaking seizures” from aggressive head-shaking for other reasons. If the head-shaking is a form of epilepsy, the dog will typically not be able to be roused or distracted from it. True head-shaking seizures can be very violent and are considered focal motor seizures.

What type of seizure is my patient having?

Again, there are now only three phenotypic terms used to describe the type of epileptic seizure a pet is having:

- **Generalized seizures** are what we called grand mal seizures in the past. These can be tonic, clonic or both (tonic-clonic). They are due to seizure activity involving both cerebral hemispheres, and they almost always produce a loss of consciousness.
- **Myoclonic seizures** are still considered a generalized seizure disorder, but animals maintain consciousness. Episodes often start in response to a trigger, usually light or sound. Animals can experience facial tremors, head-twitching or the motion of “jerking back abruptly” in response to a trigger, and they can go in and out of the response.

Wirehaired dachshunds are...
Treatment failures, general therapy guidelines and considerations for cats

If a drug fails, consider that you may have an incorrect diagnosis. Instead of epilepsy, the patient may have a primary brain disease that’s progressing, or it’s not experiencing seizures after all. Alternately, the owner may not be complying with the treatment plan, the animal might be developing a drug tolerance or there may be a drug interaction with another nonepileptic medication. Look up any drug interactions that could be decreasing the efficacy of your primary medication.

Dr. Carnes pointed out that she prefers to maximize the dose of the primary drug before changing to a different medication or adding a second. If you need a second drug, consider how sedated your patient is. For example, if you’re using phenobarbital and the animal is not too sedated, Dr. Carnes would recommend potassium bromide. If the patient is significantly sedated, she would add levetiracetam instead.

Never use a “tiger tap” tube for measuring serum blood concentrations of either phenobarbital or potassium bromide, as the gel can absorb drugs and will artificially lower your results, Dr. Carnes said. Always use red-top tubes to collect samples for drug concentration submissions.

We have all heard about the dog that seizures only when it goes to the veterinarian. These patients can be treated. First try trazadone given prior to the visit. If this is ineffective, Dr. Carnes recommends pulse therapy with either extended-release (60 to 60 mg/kg by mouth twice daily) or immediate-release (40 to 60 mg/kg by mouth every eight hours) levetiracetam. Have the patient start the day before the appointment, treat the day of and the day after, and then stop. Levetiracetam is fast-acting with fast elimination.

For cats with epilepsy, phenobarbital is still the go-to drug. Never use potassium bromide in cats as it causes pneumonitis. Levetiracetam can be used, but it requires dosing three times daily, and this is sometimes difficult for owners. Compounded extended-release levetiracetam is not readily available, and the commercially available 500-mg extended-release tablets are large and cannot be cut. Liquid levetiracetam is available but, again, it has to be given three times daily. Zonisamide can be used in cats; it’s longer-lasting in this species and can be given as a once-a-day drug, however, some cats may require twice-daily dosing.

Goals of seizure management

The primary goal of management is a good quality of life: to balance the effects of the seizures and the side effects of the medications with the pet’s wellbeing. For most patients, this means less than one seizure every three months, no clusters, no status events, minimal side effects from medications, minimal changes in bloodwork (especially in liver enzyme activities), affordable therapy, and a protocol that’s compatible with the owner’s willingness or ability to comply.

Anti-epileptic drugs

Drug choices are based on access, personal preference, cost and what the veterinarian thinks is best for a particular patient and client. Dr. Carnes reviewed the specifics of each of the commonly used drugs today. Phenobarbital is the old “tried-and-true” drug. It’s often what Dr. Carnes starts with and her primary therapy in cats. As a monotherapy in dogs, it has 82% efficacy in reducing seizure frequency by half, which is the standard goal for drug studies. Phenobarbital works at gamma-aminobutyric acid (GABA) receptors and takes 10 to 14 days to reach steady state using a maintenance dose. An oral or injectable loading dose of 15 to 20 mg/kg, divided into up to four doses over a two- to 24-hour period (based on how soon you need it to work), is recommended for many dogs initially.

Always check phenobarbital blood concentrations and serum chemistry two weeks after starting the drug or any changes in dosing, and then three months later, as you may see blood levels drop due to increased liver metabolism. You expect linear pharmacokinetics with phenobarbital, so if you increase the dose by 25%, you expect a 25% increase in serum concentrations. Dr. Carnes’ target phenobarbital range is 20 to 30 µg/ml, and
Potassium bromide follows linear pharmacokinetics like phenobarbital. Once you have reached a maintenance concentration, if the patient’s seizures are well controlled, you can check concentrations yearly. Dividing the loading dose into several times a day helps prevent gastric irritation from the salt component, while in maintenance dosing this is just a once-daily drug. A sudden change in salt intake (saltwater, diet changes) can drop concentrations abruptly and cause a seizure, but this is uncommon. Side effects include sedation, ataxia, gastrointestinal upset and, rarely, pancreatitis.

**Leveriracetam** has a very short half-life of approximately four hours in dogs and cats. It is variably effective as a monotherapy. Some studies have shown no reduction in seizures, others up to a 52% reduction. Dr. Carnes does not often use it as a first choice for monotherapy; rather, she reported great responses using levetiracetam as an add-on therapy. The dose is 20 to 60 mg/kg three times daily, unless you have the extended-release tablets. These extended-release tablets cannot be broken for use in smaller dogs, though, and they come only in 500- and 750-mg sizes. There is no need to check blood concentrations and minimal liver metabolism; side effects are uncommon but may include mild lethargy. No loading dose is necessary for this drug. An injectable formulation is also available.

**Zonisamide** is a sulfonamide drug that can be used as a monotherapy or an add-on therapy. Studies have shown a 60% efficacy as a monotherapy and a 70% reduction in seizures as an add-on therapy. It appears to be more useful with focal seizures than with severe, generalized seizures. You actually need to use a higher dose if the patient is already on phenobarbital. The dose is 5 to 10 mg/kg twice daily as a monotherapy or 10 mg/kg twice daily as an add-on to phenobarbital therapy. No therapeutic range has been established in dogs or cats, but checking blood concentrations may benefit some patients.

Do not use zonisamide if a patient is already sensitive to sulfa drugs. Side effects include sedation, decreased appetite and, rarely, bone marrow suppression. A CBC and serum chemistry profile are recommended prior to and a few weeks after starting therapy. Some animals will develop a tolerance to zonisamide, and it should never be stopped abruptly, as seizures will likely recur. Because of the available formulations, this drug is good for smaller dogs.

**Imepitoin** is a drug for noise aversion but is being used for seizure management in other countries. It is not currently available in the United States. It has a comparable efficacy to phenobarbital, and side effects are similar to phenobarbital but not as severe. Imepitoin can be used in cats.

**Cannabidiol (CBD)** is getting a lot of attention as a therapy for seizures in animals. One study using it as an add-on drug in seven epileptic dogs showed a 33% reduction in the number of seizures, but these patients were not classified as responders when compared with placebo.2 Dogs in the CBD group also had a significant increase in serum alkaline phosphatase activity.3 At this time there are currently no extensive studies in dogs; however, research is ongoing.

Since CBD is not regulated by the FDA (or any other regulatory agency), there is likely to be a wide variation in purity and other additives in the numerous formulations that are commercially available. In general, the oral bioavailability of CBD tablets is poor, while the transmucosal oil does reach high plasma concentrations when administered correctly. Dr. Carnes said. CBD is a potent inhibitor of cytochrome P450 and has a long half-life in dogs, so it could potentially cause problems with drug interactions or liver metabolism. Otherwise, CBD seems to have a pretty good safety profile.

The popular thinking regarding the use of CBD in epileptic pets originates from the treatment of human seizures with Epidiolex, now reclassified as a schedule 5 drug, in children with severe intractable forms of epilepsy called Dravet syndrome and Lennox-Gastaut syndrome.

“This drug is extremely expensive,” Dr. Carnes said. It is not affordable, or easily available, for veterinary patients at this time, even if it was found to be effective. For a 50-lb dog, a twice-daily dose of 5 mg/kg would cost $450 per month. Dr. Carnes is not against CBD for use in the future for seizures, but at this time her conclusion is that CBD is “expensive, unregulated, and the purity is not [adequate]” for use in dogs for epilepsy.

Dr. Carnes also cautions that the regulatory environment surrounding CBD makes it risky for veterinarians to recommend the use of these products. According to a statement released by the AVMA in February 2019, we are at risk for both professional liability and civil litigation if there are adverse effects during the use of these products, or even if they do not work while there are other proven therapies available.

Seizure management is a variable process that can be complex and sometimes frustrating. As the language becomes more universal, as more advanced imaging becomes available, and as more information is gathered, the guidelines may become more specific. Drug choices may expand as well. The Journal of Veterinary Internal Medicine is now free on the internet, and you can check out the 2015 ACVIM consensus statement on seizure management for more specifics.4

Dr. Carla Johnson practices emergency medicine at Berkeley Dog and Cat Hospital in Berkeley, California, and works as a general practitioner at Los Gatos Dog and Cat Hospital in Los Gatos, California.

### REFERENCES


Here are the CE opportunities coming in the next few months

**April 2-5**
Fetch Dvm360 Conference
Baltimore, MD
(800) 255-6864 ext. 6
techdvm360.com

**April 17-19**
American Academy of Veterinary Acupuncture Annual Meeting
Memphis, TN
(931) 438-0238 | aava.org

**April 25-26**
Emergency/Critical Care: A Review of Toxicology, Anesthesia, and Infectious Disease
San Antonio, TX
lonestarvetacademy.com

**April 25-26**
San Diego VMA Spring Conference: Endocrinology for the General Practitioner
San Diego, CA
(619) 640-9583 | sdcvma.org

**May 15-17**
Patient in Practice
May 15-17
vhma.org/events
(518) 433-8911 ext. 2

**May 17-20**
NAVIC Institute
Orlando, FL | (352) 375-5672
navc.com/institute

**May 29-31**
Anesthesia & Pain Management in Practice
Austin, TX
info@ivseminars.com
(800) 487-5650

**June 6-7**
Veterinary Dental Technician CE Conference
Extravaganza and Lab
Atlanta, GA
(888) 966-2882
veterinarydentistry.net/navta-atlanta-jun-2020-extravaganza

**June 11-13**
ACVIM Forum
Baltimore, MD
(303) 231-9933
acvim.org/ACVIM-Forum

**June 12-13**
France Vet: The Veterinary Rendezvous Incontournable
Paris, France
(33) (1) 79 90 03 95
francevetshow.com

**June 17**
VHMA Regional Workshop
Seattle, WA
(518) 433-8911 ext. 2
vhma.org/events

**July 10-12**
Manage Common Problems: Feline Techniques: How I
$v$manage-common-problems

**July 11-13**
Neurologic Program
Is It an Orthopedic or Neurologic Problem
Hawaii
info@ivseminars.com
(800) 487-5650
ivseminars.com/seminars/is-it-an-orthopedic-or-neurologic-problem

**July 31-August 4**
AVMA Convention
San Diego, CA
(800) 248-2862
avma.org/events/avma-convention

**August 6**
VMC’s Financial Boot Camp Seminar
Richmond, VA
vmc-inc.com
(303)-674-8169
vmc@vmc-inc.com

**August 14-16**
2nd Biennial VETgirl U Veterinary Conference
Chicago, IL
vetgirlonthenu.com/vergirl-u-conference

**August 25-26**
Digital Veterinary Summit 2020
Boston, MA
events@kisacoresearch.com
digitalveterinarysummitusa.com

**August 28-31**
Fetch dvm360 Conference
Kansas City, MO
(913) 871-3900
fetchdvm360.com

**August 29-September 3**
Exoticon
Denver, CO
(352) 375-5672 | exoticon.org

**September 18-19**
Sports Horse Medicine & Orthopedics: A 2-Day Practical Course
vetpd.com
(844) 870-6097
vetpd.com/courses/courses/course-details/sports-horse-medicine-and-orthopedics-a-2-day-practical-course-sept-2020-usa

**October 15-18**
ABVP Symposium
Chicago, IL
(800) 497-3583
abvp.com/symposium

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The office desk chair

How long should a veterinarian’s office desk chair last? That depends less on the quality of the chair and more on the pace of your work.

I have been thinking about the chair that sits behind the desk in my office. That might seem like an odd thing to ponder, but just today I sat down in my chair and one of the arms kind of sprung off to the left in a weird manner. I couldn’t believe it. It seemed like we just bought the chair the other day. I called in the office manager, showed her the faling of the chair and asked her when we got the “cheap thing.” She thought for a minute and replied, “Two years ago.”

What? Two years? Man, they don’t make stuff like they used to. I couldn’t believe how flimsy this thing was. And I remembered that we had paid way more money for it than any chair should be worth. In fact, I had told the office manager that I wanted a chair that was comfortable but durable. She is wonderful and came up with this one. She ordered it and it took me about two days to put it together.

After she left the room, I sat down in 2-year-old, now-rickety chair and began an eye-opening discussion with myself. I realized that I’ve had just three desk chairs over the past 25 years. That’s right…three.

The first one came with the clinic when I bought it. It was already pretty old when I got here. It was nice enough but didn’t lean back at all. Now that I think about it, that chair really wasn’t comfortable at all. It didn’t roll, its arms were way too low and it made all kinds of terrible noise, like it was going to break, when you sat in it. Maybe it was already a pile of junk when I took over the practice. But with all that was wrong with it, that chair lasted 17 years.

The next one came along, and it was really nice: great comfort, rolled and leaned back, adjustable arm height, shock-absorbing seat that softly descended when you plopped down on it and a look of dignity that the previous one just couldn’t pull off. That chair lasted about six years before it broke and needed to be replaced. I had put that one together also, and it seemed to be about the same quality as the one I was currently sitting in that only lasted two years. Hmmmmm…

But two years? There just had to be something wrong with this chair or it would have lasted longer than that. Then I began thinking about how much time I spent sitting in each of them. For that first 17 years, I was here mostly as the only veterinarian. I never sat down. I was a skinny rascal, too. All that running around trying to fix animals was a constant aerobic endeavor. I really didn’t know how comfortable the first chair was because I seldom sat down. Who cared what it looked like if you never even saw it?

The second chair came along at about the time I started getting more veterinarians in the practice. I suddenly wasn’t the only doctor in the building, and I was discovering that the new veterinarians were actually better and smarter than me. This gave me a little more time to sit behind that ancient metal desk and do some management things that I had always needed to do but never had time. Of course, with more sitting came more belly fat.

My mentor, Dr. Charles Deyhle from Clarendon, Texas, came and did some relief work for me one time, and his final words to me before he left were, “Big Doctor, your prosperity has masked your inefficiency.” As I sat in the desk chair pondering those words, I decided that I was going to fix that problem and sitting behind a desk was going to be necessary.

Now, I have sat behind a desk so much that my fat self wears out a chair in two short years. The issue is not a poor-quality chair; it is a desk-sitting old veterinarian who has surrounded himself with young, skinny veterinarians who are learning, without even knowing it, how important it is to never sit down for 17 years. Only then, after all that living and experience, will going through desk chairs so fast have any value.

You are probably thinking about how getting old and fat is a poor excuse for being lazy. You are most likely correct. I am working on getting skinny again, and I am working on trying to understand how a desk chair tells so much about a career and the phases that we all have to go through.

“I am working on trying to understand how a desk chair tells so much about a career and the phases that we all have to go through.”

—Bo Brock, DVM

I kind of feel like I have somehow earned the right to wear out a desk chair every two years. Maybe that sentiment shows a bit of hubris, but it gives me a little comfort knowing that I put in the years and learned so much from both failure and success.

As I look back on what all has happened in 30 years of practicing veterinary medicine, I realize I couldn’t physically do all the things I did when I sat in that first chair. I also realize I am so blessed to have a hard-working group of veterinarians coming in behind me who allow me to wear out chairs.

Dr. Brock owns Brock Veterinary Clinic in Lamesa, Texas. His latest book is Crowded in the Middle of Nowhere: Tales of Humor and Healing from Rural America.
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