Simparica Trio is the first monthly chewable that delivers the comprehensive protection you recommend—

- Proven protection against **HEARTWORM DISEASE**
- Kills **5 SPECIES OF TICKS***, AND FLEAS
- Highly effective against **ROUNDWORMS & HOOKWORMS†**
- 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](http://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 17.

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

All trademarks are the property of Zoetis Services LLC or a related company or a licensor unless otherwise noted. ©2020 Zoetis Services LLC. All rights reserved. STR-00136
Getting hurt is not in your job description

Among the many adjectives that might describe working in a veterinary practice, ‘dangerous’ is likely not among the first that come to mind. But maybe it should be.

By Amanda Carrozza

It would be difficult to find a veterinary professional who can’t share an anecdote about a mishap that resulted in a minor workplace injury. When your patients are sick, anxious or unaware of their strength, it can be difficult to predict what they might do.

According to a 2016 report, veterinarians have one of the top 10 most dangerous jobs in the country—ahead of construction workers and police officers.¹ Workers’ compensation claims data from 2015 to 2018, compiled by HUB International (the insurance broker for the AVMA Professional Liability Insurance Trust [PLIT]), reveal that the average annual cost of workers’ compensation claims among veterinary professionals is $8.8 million, with an average claim cost of $2,700.

COVID-19: Protecting pets and people

The coronavirus pandemic has generated more questions than answers so far, but a recent webinar outlines what we do know, including infectivity in animals, and what precautions pet owners and practices should be taking.

By Karen Todd-Jenkins, VMD

See page 28

Gastroenterology: When things go wrong in the feline pancreas

Oncology: Managing cutaneous mast cell tumors

Therapeutics: Is laser therapy effective? A novice's findings

Anesthesiology: An education in inhalation anesthetics

See page 26

See page 22

Equine news: Trainers, veterinarians indicted in horse racing drug scandal

See page 28
A million thanks.

Actually, over 220 million—that’s how many times NexGard® (afoxolaner) has been prescribed.¹

The only flea & tick control product indicated for the prevention of Borrelia burgdorferi infections as a direct result of killing black-legged ticks.

Gentle protection in a bite-sized monthly dose.

Proven safety for puppies as young as 8 weeks, weighing 4 pounds or more.

The savory beef-flavored chew that makes compliance a treat.

NexGard® Chewables

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

¹ Data on file at Boehringer Ingelheim.
CAUTION: Federal (USA) law restricts this drug to use by or on the order of a licensed veterinarian.

Description:
NexGard® (atoxolaner) is available in four sizes (small, medium, large, and extra-large) for oral administration to dogs and puppies according to their weight. Each chewable is formulated to provide a minimum afoxolaner dosage of 1.14 mg/lb (2.5 mg/kg). Afoxolaner has the chemical name N-[1-(3-Chlorophenyl)- 2-methyl-4-pyrazolin-5-yl]methanimine hydrochloride.

Mode of Action:
Afoxolaner is a synthetic pyrazoline that is selectively toxic to insects and acarines, and is not toxic to mammals. Afoxolaner is orally active and is rapidly absorbed through the gastrointestinal tract. Once absorbed, afoxolaner is extensively distributed to tissue and body fluids and is concentrated in the salivary glands and skin. At recommended dosing levels, afoxolaner accumulates in the salivary glands and skin and is then transferred to the saliva. Afoxolaner is excreted via the urine and saliva. Following a single dose, afoxolaner is detectable in saliva within 30 minutes and measurable in saliva for up to 24 hours.

Indications:
NexGard kills adult fleas and is indicated for the treatment and prevention of flea infestations (Ctenocephalides felis) and the treatment and control of Lice (Dermatobia hominis) in dogs. NexGard is also indicated for the prevention of Dermacentor variabilis infection in dogs and puppies weighing 4 to 18 lbs and >93% effectiveness at 48 hours post-infestation for 30 days. At 72 hours post-infestation, NexGard demonstrated >95% effectiveness against Dermacentor variabilis, 100% effectiveness against Dermacentor occidentalis, 97% effectiveness against Rhipicephalus sanguineus, 85% effectiveness against Rhipicephalus sanguineus, and 72% effectiveness against Amblyomma americanum. NexGard was effective at preventing flea infestation for 12 weeks.

Effectiveness:
In a well-controlled laboratory study, NexGard began to kill fleas four hours after initial administration and demonstrated 100% effectiveness at 24 hours. In a separate well-controlled laboratory study, NexGard killed and prevented the reinfestation of adult fleas 24 hours post-infection for 30 days, and >92% effectiveness at 72 hours post-infection through 36 days. In another well-controlled laboratory study, NexGard killed and prevented the reinfestation of adult fleas 24 hours post-infection for 30 days, and >94% effectiveness at 72 hours post-infection through 36 days. In two separate, well-controlled laboratory studies, NexGard was effective at preventing adult flea infestation for 12 weeks.

Dosing Schedule:
After receiving the first dose and on the same day after receiving the second dose of NexGard.

Efficacy:
NexGard can be administered with or without food. Care should be taken that the dog consumes the complete dose, and treated animals should be observed for a few minutes to ensure that part of the dose is not lost or refused. If it is suspected that any of the dose has been lost or refused, it should be re-administered. If the dose is missed, administer NexGard and continue a monthly dosing schedule.

Treatment and Prevention:
Treatment with NexGard may begin at any time of the year. In areas where fleas are common, year-round, monthly treatment with NexGard should be continued the entire year without interruption. To minimize the likeliness of flea reinfestation, it is important to treat all animals within a household with an approved flea control product.

Post-Approval Experience:
There are no known contraindications for the use of NexGard.

Warnings:
No known adverse reactions associated with NexGard have been observed. However, it may cause anorexia during the study, and two of those dogs experienced an anorexia with the first dose but tended to decrease with subsequent doses in both groups. Five treated dogs experienced anorexia during the study, and two of those dogs experienced anorexia with the first dose but did not subsequently dose.

Adverse Reactions:
Adverse reactions associated with NexGard are most commonly gastrointestinal. The adverse reactions include vomiting and diarrhea. Treatment is not generally needed for mild cases. In cases of severe vomiting or diarrhea, or in cases where vomiting and diarrhea are severe or persist for more than 24 hours, it is recommended to consult a veterinarian.

Post-Approval Experience:
NexGard can be administered with or without food. Care should be taken that the dog consumes the complete dose, and treated animals should be observed for a few minutes to ensure that part of the dose is not lost or refused. If it is suspected that any of the dose has been lost or refused, it should be re-administered. If the dose is missed, administer NexGard and continue a monthly dosing schedule.

Treatment and Prevention:
Treatment with NexGard may begin at any time of the year. In areas where fleas are common, year-round, monthly treatment with NexGard should be continued the entire year without interruption. To minimize the likeliness of flea reinfestation, it is important to treat all animals within a household with an approved flea control product.

Post-Approval Experience:
There are no known contraindications for the use of NexGard.

Warnings:
No known adverse reactions associated with NexGard have been observed. However, it may cause anorexia during the study, and two of those dogs experienced an anorexia with the first dose but tended to decrease with subsequent doses in both groups. Five treated dogs experienced an anorexia during the study, and two of those dogs experienced an anorexia with the first dose but did not subsequently dose.

Adverse Reactions:
Adverse reactions associated with NexGard are most commonly gastrointestinal. The adverse reactions include vomiting and diarrhea. Treatment is not generally needed for mild cases. In cases of severe vomiting or diarrhea, or in cases where vomiting and diarrhea are severe or persist for more than 24 hours, it is recommended to consult a veterinarian.

Post-Approval Experience:
NexGard can be administered with or without food. Care should be taken that the dog consumes the complete dose, and treated animals should be observed for a few minutes to ensure that part of the dose is not lost or refused. If it is suspected that any of the dose has been lost or refused, it should be re-administered. If the dose is missed, administer NexGard and continue a monthly dosing schedule.

Treatment and Prevention:
Treatment with NexGard may begin at any time of the year. In areas where fleas are common, year-round, monthly treatment with NexGard should be continued the entire year without interruption. To minimize the likeliness of flea reinfestation, it is important to treat all animals within a household with an approved flea control product.

Post-Approval Experience:
There are no known contraindications for the use of NexGard.

Warnings:
No known adverse reactions associated with NexGard have been observed. However, it may cause anorexia during the study, and two of those dogs experienced an anorexia with the first dose but tended to decrease with subsequent doses in both groups. Five treated dogs experienced an anorexia during the study, and two of those dogs experienced an anorexia with the first dose but did not subsequently dose.

Adverse Reactions:
Adverse reactions associated with NexGard are most commonly gastrointestinal. The adverse reactions include vomiting and diarrhea. Treatment is not generally needed for mild cases. In cases of severe vomiting or diarrhea, or in cases where vomiting and diarrhea are severe or persist for more than 24 hours, it is recommended to consult a veterinarian.

Table 1: Dogs With Adverse Reactions.

<table>
<thead>
<tr>
<th>Weight (lbs)</th>
<th>Number of Dogs</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 to 11</td>
<td>12</td>
</tr>
<tr>
<td>12 to 25</td>
<td>18</td>
</tr>
<tr>
<td>26 to 50</td>
<td>9</td>
</tr>
<tr>
<td>51 to 65</td>
<td>2</td>
</tr>
</tbody>
</table>

Table 2: Dogs With Adverse Reactions.

<table>
<thead>
<tr>
<th>Weight (lbs)</th>
<th>Number of Dogs</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 to 11</td>
<td>12</td>
</tr>
<tr>
<td>12 to 25</td>
<td>18</td>
</tr>
<tr>
<td>26 to 50</td>
<td>9</td>
</tr>
<tr>
<td>51 to 65</td>
<td>2</td>
</tr>
</tbody>
</table>

Figure 1: Wellbeing is lowest among younger veterinarians.

<table>
<thead>
<tr>
<th>Age Group</th>
<th>% of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-34</td>
<td>30%</td>
</tr>
<tr>
<td>35-44</td>
<td>35%</td>
</tr>
<tr>
<td>45-54</td>
<td>25%</td>
</tr>
<tr>
<td>55-64</td>
<td>7%</td>
</tr>
<tr>
<td>65+</td>
<td>3%</td>
</tr>
</tbody>
</table>

Anorexia during the study, and two of those dogs experienced an anorexia with the first dose but tended to decrease with subsequent doses in both groups. Five treated dogs experienced an anorexia during the study, and two of those dogs experienced an anorexia with the first dose but did not subsequently dose.

Adverse Reactions:
Adverse reactions associated with NexGard are most commonly gastrointestinal. The adverse reactions include vomiting and diarrhea. Treatment is not generally needed for mild cases. In cases of severe vomiting or diarrhea, or in cases where vomiting and diarrhea are severe or persist for more than 24 hours, it is recommended to consult a veterinarian.

Post-Approval Experience:
NexGard can be administered with or without food. Care should be taken that the dog consumes the complete dose, and treated animals should be observed for a few minutes to ensure that part of the dose is not lost or refused. If it is suspected that any of the dose has been lost or refused, it should be re-administered. If the dose is missed, administer NexGard and continue a monthly dosing schedule.

Treatment and Prevention:
Treatment with NexGard may begin at any time of the year. In areas where fleas are common, year-round, monthly treatment with NexGard should be continued the entire year without interruption. To minimize the likeliness of flea reinfestation, it is important to treat all animals within a household with an approved flea control product.

Post-Approval Experience:
There are no known contraindications for the use of NexGard.

Warnings:
No known adverse reactions associated with NexGard have been observed. However, it may cause anorexia during the study, and two of those dogs experienced an anorexia with the first dose but tended to decrease with subsequent doses in both groups. Five treated dogs experienced an anorexia during the study, and two of those dogs experienced an anorexia with the first dose but did not subsequently dose.

Adverse Reactions:
Adverse reactions associated with NexGard are most commonly gastrointestinal. The adverse reactions include vomiting and diarrhea. Treatment is not generally needed for mild cases. In cases of severe vomiting or diarrhea, or in cases where vomiting and diarrhea are severe or persist for more than 24 hours, it is recommended to consult a veterinarian.

Post-Approval Experience:
NexGard can be administered with or without food. Care should be taken that the dog consumes the complete dose, and treated animals should be observed for a few minutes to ensure that part of the dose is not lost or refused. If it is suspected that any of the dose has been lost or refused, it should be re-administered. If the dose is missed, administer NexGard and continue a monthly dosing schedule.

Treatment and Prevention:
Treatment with NexGard may begin at any time of the year. In areas where fleas are common, year-round, monthly treatment with NexGard should be continued the entire year without interruption. To minimize the likeliness of flea reinfestation, it is important to treat all animals within a household with an approved flea control product.

Post-Approval Experience:
There are no known contraindications for the use of NexGard.

Warnings:
No known adverse reactions associated with NexGard have been observed. However, it may cause anorexia during the study, and two of those dogs experienced an anorexia with the first dose but tended to decrease with subsequent doses in both groups. Five treated dogs experienced an anorexia during the study, and two of those dogs experienced an anorexia with the first dose but did not subsequently dose.
COVID-19: Protecting pets and people

A recent webinar outlines what we know about COVID-19, and what precautions pet owners and practices should be taking.

CONTRIBUTORS

Letter of the law
30
» Financial effects of COVID-19 for veterinarians
  Christopher J. Allen, DVM, JD

Can we talk?
32
» No place for Caesars in veterinary medicine
  Michael Paul, DVM

The dilemma
36
» ‘Am I too old for a new pet?’
  Marc Rosenberg, VMD

AVMA eye on economics
34
» Business tips for the COVID-19 pandemic
  Matthew Salois, PhD

COMMUNITY

08
» From the CVO

10
» Chairman’s letter

54
» Continuing education calendar

52
» Products360

Stampede
58
» Game, set, match!
  Bo Brock, DVM
24 HOURS CAN MAKE ALL THE DIFFERENCE

Demonstrated clinical results in as little as \textbf{24 hours} in cats with diarrhea or constipation\textsuperscript{1}

Ask your Hill’s rep about digestive nutrition that’s

\textbf{A STEP AHEAD FOR THEIR BEST LIFE}

\textsuperscript{1}Hill’s data on file. Clinical study in cats with constipation or diarrhea. ©2020 Hill’s Pet Nutrition, Inc. ©™ Trademarks owned by Hill’s Pet Nutrition, Inc.
NEWS

COVID-19
17
» COVID-19 test for pets now available
» Multiple animals in U.S. test positive for SARS-CoV-2

18
» CSU veterinarians on front lines in the hunt for COVID-19 vaccine

19
» Pet health insurance respiratory claims remain flat

Business
20
» Data show strong pet owner interest in Walmart veterinary services

Parasitology
21
» AHS releases new heartworm incidence survey results

Equine medicine
22
» Trainers, veterinarians indicted for giving racehorses performance-enhancing drugs

Workplace safety
26
» Getting hurt is not in your job description

Practice operations
37
» Practice management software guide

Continuing education
54
» dvm360 launches online CE center

Parasitology
40
» Fighting fleas: An update on preventive options

Gastroenterology
42
» When things go wrong in the feline pancreas

Oncology
44
» Take 5: Key points for managing cutaneous mast cell tumors in dogs

Therapeutics
46
» Efficacy of laser therapy in veterinary medicine: thoughts from a novice

Anesthesiology
48
» Getting the vapors: An education in inhalation anesthetics

Hematology
51
» A low-tech approach to diagnosing anemia

COMMENTARY

12
» Leveraging big veterinary data to support our communities

14
» When a virus pulls the rug out from under graduation

HOSPITAL DESIGN

24
» A walk in the PARC

PHOTOGRAPH: JOHN EISELE/ELÉONORE H AND SASASTOCK/ADOBE STOCK

PHOTOGRAPH: DVM360/BETH CLARK/ADOBE STOCK/SHUTTERSTOCK/NOBLE/DOUG RUSSELL
TRESADERM® (thiabendazole, dexamethasone, neomycin sulfate solution) Dermatologic Solution CAUTION: Federal (U.S.A.) law restricts this drug to use by or on the order of a licensed veterinarian. DESCRIPTION: Dermatologic Solution TRESADERM contains the following active ingredients per mL: 40 mg thiabendazole, 1 mg dexamethasone, 3.2 mg neomycin (from neomycin sulfate). Inactive ingredients: glycerin, propylene glycol, purified water, hypophosphorous acid, calcium hypophosphite; about 8.5% ethyl alcohol and about 0.5% benzyl alcohol. INDICATIONS: Dermatologic Solution TRESADERM is indicated as an aid in the treatment of certain bacterial, mycotic, and inflammatory dermatoses and otitis externa in dogs and cats. Both acute and chronic forms of these skin disorders respond to treatment with TRESADERM. Many forms of dermatoses are caused by bacteria (briefly: Staphylococcus aureus, Proteus vulgaris and Pseudomonas aeruginosa). Moreover, these organisms often act as opportunistic or concurrent pathogens that may complicate already established mycotic skin disorders, or otitis externa caused by Chorioptes oculus. The principal etiologic agents of dermatomycoses in dogs and cats are species of the genera Microsporum and Trichophyton. The efficacy of neomycin as an antibacterial agent, with activity against both gram-negative and gram-positive pathogens, is well documented. Detailed studies in various laboratories have verified the significant activity thiabendazole displays against the important dermatophytes. Dexamethasone, a synthetic adrenocortical steroid, inhibits the reaction of connective tissue to injury and suppresses the classic inflammatory manifestations of skin disease. The formulation for TRESADERM combines these several activities in a complementary form for control of the discomfort and direct treatment of dermatosis and otitis externa produced by the aforementioned infectious agents. DOSAGE AND ADMINISTRATION: Prior to the administration of Dermatologic Solution TRESADERM, remove the ceruminous, purulent or foreign materials from the ear canal, as well as the crust which may be associated with dermatosis affecting other parts of the body. The design of the container nozzle safely allows partial insertion into the ear canal for ease of administration. The amount to apply and the frequency of treatment are dependent upon the severity and extent of the lesions. Five to 15 drops should be instilled in the ear twice daily. In treating dermatoses affecting other than the ear the surface of the lesions should be well moistened (2 to 4 drops per square inch) with Dermatologic Solution TRESADERM twice daily. The volume required will be dependent upon the size of the lesion. Application of TRESADERM should be limited to a period of not longer than one week. PRECAUTIONS: On rare occasions dogs may be sensitive to neomycin. In these animals, application of the drug will result in erythema of the treated area, which may last 24 to 48 hours. Also, evidence of transient discomfort has been noted in some dogs when the drug was applied to fissured or denuded areas. The expression of pain may last 2 to 5 minutes. Application of Dermatologic Solution TRESADERM should be limited to periods not longer than one week. While systemic side effects are not likely with topically applied corticosteroids, such a possibility should be considered if use of the solution is extensive and prolonged. If signs of salt and water retention or potassium excretion are noticed (increased thirst, weakness, lethargy, oliguria, gastrointestinal disturbances or tachycardia), treatment should be discontinued and appropriate measures taken to correct the electrolyte and fluid imbalance. Store in a refrigerator 36 - 46°F (2 - 8°C). WARNING: For topical use in dogs and cats. Avoid contact with eyes. Keep this and all drugs out of the reach of children. The Safety Data Sheet (SDS) contains more detailed occupational safety information. To report suspected adverse drug events, for technical assistance, or to obtain a copy of the Safety Data Sheet (SDS), contact Boehringer Ingelheim Animal Health USA Inc. at 1-888-637-4251. For additional information about adverse drug experience reporting for animal drugs, contact FDA at 1-888-FDA-VETS, or online at http://www.fda.gov/reportanimalae. IMPORTANT SAFETY INFORMATION: TRESADERM is for topical use only in dogs and cats. On rare occasions, application of the product may result in erythema or discomfort in the treated area. Discomfort in the treated area can last from 2 to 4 days. Approved for use on dogs and cats.

TRESADERM® (thiabendazole, dexamethasone, neomycin sulfate solution) helps treat otitis externa, as well as a number of localized skin conditions, such as:

- Flea Allergy Dermatitis
- Pyoderma
- Ringworm
- Hot Spots

TRUST TRIPLE ACTION TRESADERM

• Anti-fungal
• Anti-inflammatory
• Anti-bacterial

TRESADERM® is a registered trademark of Boehringer Ingelheim Animal Health USA Inc. ©2020 Boehringer Ingelheim Animal Health USA Inc., Duluth, GA. All rights reserved. US-PET-0079-2020.
NEWS | From the CVO

Coping with the COVID-19 quarantine

I’m sure many of you can relate, but the harsh reality of our new normal as veterinarians has officially sunk in for me. Passover and Easter celebrations were enjoyed virtually. Friday night happy hours are being conducted with friends and family around the world via 3 x 3 video squares.

Seeing our patients without their pet parents in the hospital and providing curbside service are part of the new normal. Advanced technology, including telemedicine and smart mobile apps, is being used every day to communicate with clients and team members. Waiting in line at the grocery store or your own doctors’ office now takes that much longer. And with summer fast approaching, many of our vacations and summer plans have already been canceled.

And you know what? I’m OK with it. And you want to know something else? So are you.

This is a very serious pandemic we are facing. It’s being referred to as “the great pause,” and will be remembered as a time of mourning loved ones lost to this vicious virus, understanding the importance of what social distancing meant and appreciating the fact that those big arguments and disputes were just not worth it.

One thing we can never get back in life is time. I think that is something more resounding now than ever. It seems like yesterday that I lost both my mom and dad just weeks apart from one another, and I remember them telling me, “Adam, don’t stress over the little things. It’s just not worth it. Oh, and by the way, we love you.”

That advice is absolutely right on point for us right now. Veterinarians and support staff are working tirelessly to help treat and save lives so that the special human-animal bond can be maintained and protected. Veterinary students have had to adjust completely to a new way of learning with little to no notification. But don’t stress over the little things, everyone. Appreciate the fact that we have our family, our friends and this incredible profession to cry to, laugh with and lean on through the dark times. Oh, and by the way, you are loved so much.

I like to think of COVID-19 as a time to cognitively reframe our mindset, and I invite you all to do the same if you haven’t already. Instead of feeling “stuck at home,” be thankful you are “safe” at home and with your pets to snuggle with. Instead of feeling so “restricted and confined,” feel “grateful” for all you have. You’re not missing out on the things you enjoy. Instead, you have a greater appreciation for those things! We are all worried about our health but know that we are doing all that we can to stay healthy.

I know this message won’t make COVID-19 go away. However, I do hope you find comfort in knowing we are all in this together and by changing our coping and cognitive mindset, we can continue to be the best person and veterinary health care professional we can during these times. We got this. Stay safe, stay connected and stay pawsome.

—Adam Christman, DVM, MBA
Chief Veterinary Officer

NEWS | Chairman’s Letter

Arming you with information and education during the pandemic

Response efforts to the COVID-19 pandemic have kicked into high gear over the past several weeks. Never before have we seen the worldwide health care community come together as it has in the search for potential treatments and vaccines. In the face of COVID-19, veterinarians continue to be on the front lines of One Health, not only continuing to deliver the best care to their animal patients but also working to help humans affected by this devastating virus. See page 18 for a look at the efforts of veterinary schools around the country.

Regardless of how the pandemic unfolds over the next several months, one thing is certain: COVID-19 will have a ripple effect for a long time to come.

One of those effects, as outlined in a commentary by Companion Animal Parasite Council CEO Dr. Chris Carpenter (page 12), is the public’s heightened awareness of the intimate relationship between animal and human health, and the elevated role veterinary teams play in safeguarding the health of both pets and people. By the nature of your work, veterinarians play a critical role in protecting the health of animals and humans—along with the environment—in a One Health approach to medicine in our world.

This issue features several other COVID-19 topics as well, including the first cases of SARS-CoV-2 infection in pets in the United States and the PCR test that is now available to veterinarians to detect the novel coronavirus in pets that are experiencing clinical signs and have been in contact with people who have suspected or confirmed COVID-19.

We also share heartfelt comments from our Chief Veterinary Officer Adam Christman, DVM, MBA (see above) and veterinary student Danny Sack (page 14) on how they are coping during COVID-19. Also this month, columnist Dr. Christopher Allen focuses on the likely financial implications of the virus for veterinary practices and associates (page 30).

At dvm360®, we aim to deliver the most timely and relevant news and information to help you better serve your patients all the time, including during this unprecedented crisis. That’s why our parent company (MJH Life Sciences) has launched a 24-hour online news network for health care professionals to bring you live updates and interviews with leading experts in all areas of medicine. The program is a great opportunity to dig into cross-specialty feedback for multidisciplinary approaches to treatments and guidelines. Visit dvm360.com to tune in at any time.

We’re also making it easier for you to keep up with your continuing education in these challenging times, with a new on-demand CE center at connect.dvm360.com/cecenter/spring2020/register (page 54). We hope you’ll tune in.

Thank you for reading.

—Mike Hennessy Sr.
Chairman and Founder,
MJH Life Sciences™
WE ARE HERE TO SUPPORT YOU

As an essential supplier of critical medical supplies, Zoetis continues to manufacture and maintain sufficient product inventory of diagnostic equipment and supplies to support our customers. Should you need assistance please contact your local Zoetis representative or call our customer service line.

Reach out, see how we can help.
zoetisUS.com/dx  800 963 8471
The immense student debt facing veterinarians was addressed by Peter Eyre, DVM&S, BVMS, BSc, PhD, professor and dean emeritus at Virginia-Maryland College of Veterinary Medicine, Virginia Tech, in a letter that appeared in the February 2020 issue of dvm360 (“The time to act on student debt is now”). Some readers agreed with Dr. Eyre’s suggestions; others didn’t. Here are two of those letters.

I APPRECIATE AND AGREE with the perspective of my colleague Dr. Eyre, who expresses an urgent need to address the student debt crisis. As a 2013 graduate who has witnessed first-hand the reasons for it and one who has worked diligently to address it, I disagree that shortening prerequisites is a plan for success. There will be some short-term relief from this option, but it won’t be long lasting. Veterinary institutions continue to increase tuition at rates of up to 8% annually and hope to fill the gap by lowering the required credentials of the future members of our profession. There is already a lot to learn in veterinary school; it seems we agree shortening that isn’t possible. It is equally important that our professionals are well-rounded experts. There is value to the undergraduate education. If we are going to shorten the prerequisite requirements, where are the cuts coming from?

The cost of doing so is too high, but the U.S. produces highly trained, skilled veterinarians. Emulating international programs that expedite the degree risks degrading the qualifications of our professionals. To what avail? If we shorten the length of time it takes to obtain a veterinary degree that currently results in $174,000 of debt over 8 years, we are going to look back and lament the fact that the accumulated debt of our veterinary students is $261,000 over 6 years by the end of the decade. Within 5 years of making the adjustment, students are going to have the same amounts of debt they presently do and their degree will be literally worth less. We already have young veterinarians who are depressed and killing themselves because they feel trapped in this profession. We risk making it worse by depriving them of the ability to obtain undergraduate degrees that diversify their skillsets and enable them to make a living outside of veterinary medicine if they so choose.

I really respect the offer to downsize administrative costs. I recommend this to be the first, but not the final, step in our immediate plan. Administrative bloat in our academic institutions is a primary factor in the rising cost of veterinary education, and it does nothing to improve the academic standard. Veterinary students are adults, as are the instructors who teach them, and I believe both could do better without the oppression of under-worked administrators drawing hugely expensive salaries on the backs of students and taxpayers. Other suggestions I might add follow.

AVMA Council on Education (COE)—accredited colleges should be required to convert themselves to self-lending institutions. New scholarships and endowments can make that happen along with the appropriate use of state funding. Self-lending institutions will have a vested interest in making sure their students are successful, get jobs and can afford to pay back their loans. If the product of the university fails, the university producing it should face the same fate.

Academic administrators also need to take a stand against the “university tax.” Veterinary students at many institutions across this country are subsidizing the cost of undergraduate students. I paid more to The Ohio State University as a veterinary student not utilizing the university’s services than I did when I was an animal sciences undergraduate major who was using those services. This is wrong and a prolific problem.

We need to recognize the inherent conflict of interest that exists in a system that calls on academic administrators who always seem to ask us for more money to determine the best path forward in fixing our debt problems. Last I checked, if we want to fix predatory lending practices we don’t call the CEO of the nation’s largest banks to ask how to accomplish the task. Veterinary students are given as much money as they need to live and earn their degree. I’m not an economist and don’t have all of the information on state funding, but it doesn’t seem entirely clear to me that there is a drastic reduction in state support to public institutions. It does appear that the funding isn’t increasing at the rate the institutions would prefer. That is not going to change, so it’s time we make a model that doesn’t rely on tax dollars to educate students.

Veterinary institutions are highly respected referral practices and should function as such. They need to charge appropriately for the services they provide. If doing so results in decreased caseloads, it seems apparent the lackluster demand in that region likely doesn’t warrant producing veterinary students with that skillset. More likely, there are private institutions doing it better. Those private institutions need more veterinarians. Academic institutions should collaborate with these providers to train students. There is no reason why veterinary students need to be learning to use magnetic resonance imaging at the veterinary school for a financial loss if there is a successful, profitable practice in the same region with the necessary equipment on hand. The academic clinicians can work in these private institutions to achieve desired levels of income, and also teach students within the university setting and take advantage of some of the lucrative benefits the public sector provides.

A new education model is going to be required to produce a qualified veterinarian. An outdated educational model that requires too much administrative oversight is the issue, not a lack of funding, and make no mistake—students who pay the same for less education are still bearing the brunt of the burden. It is time we take this problem seriously and work as a profession to actually fix it. I encourage the AVMA, COE and our academic institutions to facilitate involvement of private practitioners with experience in building successful businesses to lead the charge.

Matthew Weeman, DVM, MS
Bayside Bovine Veterinary Services LLC
Centreville, MD

DR EYRE MAKES GREAT POINTS and is right on target with what needs to be done to reduce student debt. As a veterinary community, we need to get something going to get the process started—the sooner the better. Much has been written lately about the problem of student debt, but action is the next step. I know it will be largely up to individual veterinary schools to institute change, but I hope they don’t wait until it’s an urgent matter to deal with when we’ve known for so long of the problem and potential solutions. I am going to bring this topic to my local veterinary group and contact my state VMA to encourage action from everyone. Thanks, Dr. Eyre, for your well-written article.

Eric Bostrom, DVM
Rockledge Animal Clinic
Rockledge, FL

NEWS | Reader feedback
Get a 360-degree educational experience that focuses on every aspect of your life.

Attend the only industry conference that offers more than 350 industry-leading educational sessions, plus inspires personal growth and wellness while connecting you with other influential veterinary professionals at the same time.

Register today for our Early Bird rate!
fetchdvm360.com/KC
Leveraging big veterinary data to support our communities

The CEO of the Companion Animal Parasite Council explains how COVID-19 elevates the role of veterinary teams in safeguarding the health of both pets and people.

By Chris Carpenter, DVM, MBA

Millions of Americans check COVID-19 maps daily to track the virus in their local community. Maps that offer the most current, local data to track disease risk across the country are a powerful tool—and one that veterinarians have relied on for almost a decade.

For nearly 10 years, the Companion Animal Parasite Council (CAPC) has shared timely local disease data—county by county across the nation—via prevalence maps. Through our unique partnership with major veterinary laboratories, CAPC has developed expertise in using "big data" to provide information on disease prevalence to veterinarians, pet owners and other medical professionals. More importantly, CAPC has leveraged these data to become the leader in forecasting diseases that threaten both pets and people.

Because most people now understand that the SARS-CoV-2 virus had an animal origin, the COVID-19 outbreak has made the public acutely aware of the close relationship between animal and human health. This relationship amplifies the critical role of veterinarians in protecting the health of animals and humans—along with the environment—in a One Health approach to medicine in our world.

This heightened emphasis of One Health and disease monitoring has prompted CAPC to share what we’ve learned over the past decade and forecast what information and services veterinarians will need from this point forward. Here are three things every practice needs to understand.

Local and timely are key

How many cases of COVID-19 were diagnosed in St. Johns County, Florida today? You don’t know? Well, everyone in St. Johns County knows. Why? Because local data are important to them. They also want the latest data—not information from a month ago.

This is the same need CAPC has seen with its prevalence and forecast maps. People want local and timely information. Moving forward, veterinary teams will need to be the experts on disease prevalence in their communities, particularly when it comes to zoonotic diseases.

Throughout the past decade, CAPC has validated this need again and again in both published and nonpublished research. In a nationwide survey conducted in 2014, for example, 90% of pet owners told us they wanted their veterinarian to share parasite prevalence numbers for their county. And when a group of over 400 hospitals in the Northeast U.S. shared local data on Lyme disease prevalence, they saw a 58% jump in hospital visits over the next 90 days.

People don’t want the “overall trend,” the “national average” or last year’s data. They want to know what is happening in their community right now. To be regarded as the local expert and an essential service in the community, veterinary teams need to stay current on disease activity in their area and, more importantly, make sure they are sharing that information continually both in practice and on social media.

Travel has changed everything

As a member of the CAPC statistical team once said, “The data is always right, you just have to know what it is telling you.” Consider what happened when CAPC began looking closely at local testing trends on a monthly basis. Specifically, CAPC was looking at the monthly increase in percent positive cases of heartworm for counties across the U.S.

When we examined results for months spanning multiple years, we saw that counties in Colorado consistently ranked high for monthly jumps in percent positive cases. These data—and the monthly prevalence numbers we were seeing for a state that isn’t considered endemic for heartworm disease—were puzzling.

It was at this time that Jason Drake, DVM, DACVIM, found data quantifying the high numbers of shelter animals brought into the state every year. From 2014 to 2017, more than 114,000 dogs were imported into Colorado from more than 130 animal shelters and rescue organizations. This was about 9.5% of the total estimated 2017 Colorado canine population of nearly 1.2 million dogs. More importantly, Dr. Drake found that the majority of these dogs were shipped to Colorado from states with higher heartworm prevalence.

Animal transportation now plays a significant role in the movement of disease across our country. Whether shelter animals are being transported across state lines or pet owners are vacationing with their pets, travel changes everything. As Dr. Drake concluded, “Veterinarians in Colorado should no longer base heartworm testing and prevention recommendations on only historic heartworm risks and prevalence.”

It’s because travel is so disruptive that countries and states sealed their borders, canceled flights and are monitoring people coming into their area during this COVID-19 outbreak. Moving forward, veterinarians need to remember this. When they see
positive test results for diseases not usually seen in their community, they should not immediately dismiss the results as erroneous or ignore them because they don’t meet with accepted paradigms. Instead, they should ask why and try to understand what the data are saying. Chances are that transportation of pets has caused an ecosystem disruption in your community.

The interconnectivity of human and animal disease: One Health

The COVID-19 outbreak has made people acutely aware of the relationship between animal and human health. Through the past decade, the scientific team at CAPC has been able to examine this relationship as it pertains to Lyme disease.

In 2019, CAPC researchers quantified the association between canine seroprevalence for the disease-causing bacterium Borrelia burgdorferi and the human incidence of Lyme disease, the most prevalent tickborne disease in the U.S.2 Thanks to man’s best friend, people and their health care providers can now assess their risk for Lyme disease.

This work confirmed not only the importance of a One Health perspective, but also the critical role veterinary hospitals play in public health. Because dogs are tested annually for exposure to the pathogen that causes Lyme disease, CAPC researchers were able to study more than seven years of nationwide canine diagnostic data, representing more than 400 million data points. By combining sophisticated statistical modeling with these invaluable canine data, CAPC researchers were able to leverage the work of veterinary hospitals across the nation to benefit human medicine.

It is this One Health perspective that led CAPC leadership to move forward with PetDiseaseAlerts.org, a new resource for pet owners. This website was designed to forecast and alert pet owners and veterinary teams alike to outbreaks in their communities.

This month, we have launched our first disease alert maps for leptospirosis at petdiseasealerts.org/alerts-map/#/. This resource gives veterinarians yet another way to confirm their status as a local expert and essential service provider to their community. Users can sign up to receive alerts via text or email (petdiseasealerts.org/alert-subscriptions#/register/).

The way forward for veterinary hospital teams

Recent events have highlighted the strong relationship between human and animal health, and the rapid disruption that can occur when diseases change geographies through travel and transportation.

The recent popularity of disease tracking maps has reaffirmed the public’s desire to stay informed and updated on the activity in their communities in a timely matter. Moving forward, veterinary teams must embrace and emphasize their role as zoonotic disease experts and One Health champions. Through the prevalence maps at CAPCvet.org and the forecast and alert maps at PetDiseaseAlerts.org, veterinary teams can quickly and easily access the information they need to keep their communities informed and protected.

Dr. Carpenter is CEO of the Companion Animal Parasite Council (CAPC), an independent not-for-profit foundation comprised of parasitologists, veterinarians, medical, public health and other professionals that provides information for the optimal control of internal and external parasites that threaten the health of pets and people.

REFERENCES

When a virus pulls the rug out from under graduation

In case you were wondering what it’s like being a veterinary student on the brink of graduation during the COVID-19 outbreak, I can tell you this: It sucks.

By Danny Sack

E very veterinarian has their own origin story, whether your first word as a baby was “hyperadrenocorticism” or you made a last-minute, self-boating decision to go through four more years of schooling following undergrad. One constant is that we are not unfamiliar with sacrifice. We chose an underpaid, underappreciated, often misunderstood, amazing, rewarding, pure profession because, above all else, we love to help those who cannot help themselves.

Instead of graduating from college and going out into the workforce to pay off our sizeable debt, we veterinary students decided it’s best to double down and let that mound grow into the Mount Everest of debt because “hey, we’re doing what we love.” Those years in undergrad were no cake walk either; you took the hardest science classes available because veterinary schools required it to even apply, let alone get in. To do that you needed more than just a stellar GPA; you did externships, research, volunteer work, extracurriculars … anything to make your application stand out. You did it and made all the hard work worth it, because you, my overachieving friend, the Mount Everest was still there—finally some tangible reward, pure profession.

Your journey finally is starting to make sense. Just one more obstacle to overcome: the dreaded North American Veterinary Licensing Exam—six hours of mind-numbing questions you swear you will never have to answer again in your life. No one leaves that test feeling like they’ve passed. The months go by and you finally get your email: You passed! Nothing can stop you now! No more tests, no more stress. Your clinical rotation has been going smoothly and you’re enjoying your first taste of what you’ve been working toward for the past eight years.

You hear murmurs of a terrible virus outbreak overseas, but you don’t have time for distractions … until it is no longer just a distraction. You hear about the first U.S. case, then the first outbreak. At this point, foresight tells you that the last few months of your final year will be affected (clearly foresight was being modest). Over the next few days the situation evolves from cancellation of international externships or research, to transition to online classes for underclassmen, to outright cancellation of clinical rotations “until further notice.”

You did this for three years, each year flying by faster than the last, until you finally got to clinics. You were given your white coat, thereby inducting you into the profession to which you have dedicated your life. Your journey finally is starting to make sense. Just one more obstacle to overcome: the dreaded North American Veterinary Licensing Exam—six hours of mind-numbing questions you swear you will never have to answer again in your life. No one leaves that test feeling like they’ve passed. The months go by and you finally get your email: You passed! Nothing can stop you now! No more tests, no more stress. Your clinical rotation has been going smoothly and you’re enjoying your first taste of what you’ve been working toward for the past eight years.

You hear murmurs of a terrible virus outbreak overseas, but you don’t have time for distractions … until it is no longer just a distraction. You hear about the first U.S. case, then the first outbreak. At this point, foresight tells you that the last few months of your final year will be affected (clearly foresight was being modest). Over the next few days the situation evolves from cancellation of international externships or research, to transition to online classes for underclassmen, to outright cancellation of clinical rotations “until further notice.”

Just like that

The hardest four years of your life are … over? Other than a few online classes, vet school has effectively come to an end. In-hospital labs and advanced clinical rotations are canceled, any shred of hands-on learning is done and any semblance of a graduation or hooding ceremony will be drastically different than you pictured, if it happens at all. A smart cookie you are indeed, because a week later you are notified that graduation is officially canceled! An anticlimactic, disappointing, frustrating ending to an educational marathon that you wouldn’t trade for the world.

I remember what it felt like coming back to school to clean out my locker. It had only been a few days since rotations had been canceled, but I felt immediately like I didn’t belong. The warm smiles that usually greeted me were no longer there, the busy halls typically filled with clinicians and technicians rushing to see patients or go to their next procedure were empty, and the faint smell of urine … well that was still there—finally something that hadn’t changed.

There were so many people I wanted to thank for molding me into the doctor I would become, to show my appreciation for the extra mile they went on a daily basis to help me, but I couldn’t. There would be no “Class of 2020” banner hung across the hall, no celebratory fourth-year breakfast, no idealized pep talks to the third years reflecting my newfound pearls of wisdom obtained from a whole one year of clinics, and no hooding ceremony where my closest friends and family could celebrate me achieving my lifelong dream.

It’s easy to ask why

Why did this have to be the year that everything got screwed up? Any of the other 20 years of school would’ve sufficed. It’s easy for us to feel sorry for ourselves. But if we wanted easy, we wouldn’t have chosen this field. If we wanted easy, we wouldn’t have decided to treat patients that can’t talk to us. If we wanted easy, we wouldn’t have joined a profession that pays its doctors a fraction of what MDs make, despite the same amount of schooling and student debt. Isn’t this just par for the 20-years-in-school course?

We got into this profession to help. In fact, we took an oath to do just that: “I solemnly swear to use my scientific knowledge and skills for the benefit of society … the promotion of public health and the advancement of medical knowledge.” These are not just words we recite during our graduation ceremony and then promptly forget. Rather, they are what defines our calling to this profession. Four years of schooling have given us the knowledge to educate our friends and family about the importance of quarantine and isolation, to disseminate accurate information to the public about the risk to their pets, and to debunk myths and promote healthy behavior in people.

A ceremony doesn’t authenticate our education, it doesn’t give merit to our words and it certainly does not validate our journey or experiences. We will beat this pandemic, and hopefully the world will learn a few lessons along the way: that we should stay home if we’re sick and feel accountable for the health of others, that global problems require global solutions (“cough” global warming, world hunger “cough”) and that it’s important to wash our hands! So, let’s do our part to make this world a better place. We are doctors after all, and our work has just begun. dvm360

Danny Sack is a DVM candidate at Cornell University College of Veterinary Medicine with a special interest in surgery and rehabilitation. He is set to graduate in 2020. Upon graduation he will begin a small animal rotating internship at the Animal Medical Center in New York City.
Simparica Trio is the first monthly chewable that delivers the comprehensive protection you recommend—

- Proven protection against **HEARTWORM DISEASE**
- Kills 5 SPECIES OF TICKS*, AND FLEAS
- Highly effective against **ROUNDWORMS & HOOKWORMS†**
- 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 17.

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

All trademarks are the property of Zoetis Services LLC or a related company or a licensor unless otherwise noted. ©2020 Zoetis Services LLC. All rights reserved. STR-00046B
Multiple animals in U.S. test positive for SARS-CoV-2

A number of animals have now tested positive for SARS-CoV-2, the virus that causes COVID-19, including the first cases in pet dogs and cats in the United States. All of the affected animals are expected to make full recoveries. Here are the details.

Pet cats

Two pet cats in different areas of New York State tested positive after showing mild signs of respiratory illness. Antech Diagnostics discovered the positive samples as part of its surveillance program and submitted them to the USDA. Confirmatory testing was conducted at the USDA’s National Veterinary Services Laboratories (NVSL).

Jennifer Ogeer, DVM, MSc, MBA, MA, vice president of medical affairs at Antech, told dvm360 that she doesn’t expect to see an increase in SARS-CoV-2—positive feline cases. Instead, she says, in most cases of cats with respiratory signs the illness will likely turn out to be a common viral or bacterial infection.

Zoo cats

In late March, the Wildlife Conservation Society (WCS), which manages New York’s Bronx Zoo, reported that a four-year-old Malayan tiger had tested positive for SARS-CoV-2. Several other large cats were also exhibiting mild respiratory signs at the time, but only one tiger was tested because collecting the required nasopharyngeal swab sample was challenging. All of the big cats are recovering and behaving normally.

Pet dog

The first canine case of SARS-CoV-2 infection is a pet pug named Winston who belongs to a Chapel Hill, North Carolina family that is participating in an ongoing disease surveillance study conducted by Duke University. As part of the study, each of the McLean family members, including a cat and two dogs, was tested. Although Winston was the only pet in the household to test positive, three of the four human members of the family did as well.

“To our knowledge, this is the first instance in which the virus has been detected in a dog,” Christopher Wildrick Woods, MD, principal study investigator, said in a statement. The amount of virus detected was quite low, Dr. Woods reported, “suggesting that [Winston] would not be a likely mechanism or vector of transmission of virus to either other animals or to humans in these households.”

No cause for panic

Health experts reiterate that animal cases are rare, and there is no evidence that pets can transmit the virus to people; thus routine pet testing is not recommended.

“No news of the virus in a dog is completely unsurprising but bound to freak people out,” said J. Scott Weese, DVM, DACVIM, an associate professor at the University of Guelph in Ontario, in response to the positive test. “But this report doesn’t change anything,” he added during a Facebook Live discussion hosted on April 29 by the Viticus Group, formerly known as Western Veterinary Conference. “We’ve been saying ... that this is a human infection but we can pass it on [to animals].”

Dr. Weese explained that it is important for pet owners to be aware that the animals that have tested positive likely contracted the virus from their human caretakers. “We know there is some degree of susceptibility,” Dr. Weese said. “We don’t know yet if it’s 0.1% or 1% or even 10% because very few animals have been tested.”

If a veterinary patient contracts the virus, it is not the dog that poses a risk to veterinary staff but rather the owner, Dr. Weese said. As long as veterinary hospitals continue to maintain the precautions in place as a response to the pandemic—curbside check-ins, wearing masks and gloves, etc.—this positive canine case is not cause for additional concern. “This dog is the first diagnosed dog in the United States but it is almost certainly not the first dog in the U.S. [to contract the virus],” he explained.

To calm clients’ fears, Dr. Weese said veterinary staff should encourage them to adhere to social distancing guidelines for their pets. “There is basically no chance your dog is going to bring COVID-19 into the household if you socially distance it,” he explained. “The risk is to the animal, not from the animal.” dvm360

COVID-19 test for pets now available

Idexx Laboratories, Inc. has made its SARS-CoV-2 (COVID-19) RealPCR Test for pets available to veterinarians “in response to customer demand and growing evidence that in rare cases pets living with COVID-19 positive humans can be at risk for SARS-CoV-2 infection.”

Over the past few months, the company has tested thousands of specimens from cats, dogs and horses with respiratory clinical signs, with none testing positive for the COVID-19 virus. The Idexx test for pets is not the same as that used in humans, so it should have no impact on human COVID-19 testing or test availability.

In agreement with medical experts, Idexx says that veterinarians who order the SARS-CoV-2 (COVID-19) RealPCR Test should first consult with a public health authority (e.g. their state public health veterinarian). Tests should be reserved for pets that meet the following criteria:

- The pet lives in a household with a human who has suspected or confirmed COVID-19.
- More common infections have been ruled out via testing by a veterinarian.
- The pet (especially cats and ferrets) is showing clinical signs consistent with COVID-19.

Knowledge about COVID-19 and its effects on animal and human health is evolving rapidly, but leading health authorities agree that virus transmission occurs primarily from person to person; thus there is no reason to test asymptomatic pets. The negative results from completed tests suggest that dogs and cats living with infected people are not likely to become infected themselves, except in rare and isolated cases.

For information about the test, visit idexx.com/covid19-pet-test. dvm360
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 fleas (*Ctenocephalides felis*) and is indicated for the treatment and prevention of flea infestations; the treatment and control of tick infestations with *Amblyomma americanum* (lone 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.

DOSAGE 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).

**Dosage Schedule**

<table>
<thead>
<tr>
<th>Body Weight (lbs)</th>
<th>Sarolaner per Tablet (mg)</th>
<th>Moxidectin per Tablet (mg)</th>
<th>Pyrantel per Tablet (mg)</th>
<th>Number of Tablets Administered</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.8 to 5.5</td>
<td>3</td>
<td>0.06</td>
<td>12.5</td>
<td>One</td>
</tr>
<tr>
<td>5.6 to 11.0</td>
<td>6</td>
<td>0.12</td>
<td>25</td>
<td>One</td>
</tr>
<tr>
<td>11.1 to 22.0</td>
<td>12</td>
<td>0.24</td>
<td>50</td>
<td>One</td>
</tr>
<tr>
<td>22.1 to 44.0</td>
<td>24</td>
<td>0.48</td>
<td>100</td>
<td>One</td>
</tr>
<tr>
<td>44.1 to 88.0</td>
<td>48</td>
<td>0.96</td>
<td>200</td>
<td>One</td>
</tr>
<tr>
<td>88.1 to 132.0</td>
<td>72</td>
<td>1.44</td>
<td>300</td>
<td>One</td>
</tr>
<tr>
<td>&gt;132.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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 ticks 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 neurologic 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</th>
<th>Active Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>n = 272</td>
<td>n = 138</td>
<td></td>
</tr>
<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 diarrhea and 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).

**HHow 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

Distributed by: Zoetis Inc.
Kalamazoo, MI 49007
September 2019
51000400A&P
CSU veterinarians on front lines in the hunt for COVID-19 vaccine

An engineered form of a common bacteria may be the key to creating a vaccine against the novel coronavirus.

By Don Vaughan

A fortuitous confluence of vaccine research at Colorado State University in Fort Collins could result in a vaccine for the novel coronavirus responsible for COVID-19. The key: a genetically modified form of *Lactobacillus acidophilus* that holds promise in preventing the virus from attaching itself to cells in the mucous membrane.

CSU researchers have been studying vaccine platforms for more than a decade, reports Gregg Dean, DVM, PhD, DACVP, professor and head of CSU’s Department of Microbiology, Immunology and Pathology. That work initially began with HIV-related vaccine studies, but was found to be useful for other viruses as well. “One that really stuck out was human rotavirus,” Dr. Dean says. “Globally, [rotavirus] causes a lot of morbidity and mortality and we felt we had a real opportunity to do something meaningful.”

‘An easy pivot’

At the same time, Dr. Dean and his team have been working toward a vaccine for feline coronavirus, with funding from Morris Animal Foundation. “With the emergence of COVID-19, we realized that this vaccine platform could be quickly applied to the human condition, so we began work on that,” Dr. Dean says.

It was an easy pivot, he adds, because the vaccine platform was well understood, and ongoing research had revealed interesting similarities between the human COVID-19 and feline coronavirus. “When we settled on the strategy for the feline virus, we looked at the human virus and the same features were there,” Dr. Dean notes. “So immediately we can identify the sequences that were similar in the human virus and basically substitute them for the sequences we had selected from the feline virus.”

Targeting the spike protein

Dr. Dean’s research team is concentrating on the spike protein that enables the coronavirus to attach itself to host cells. “That spike has a region on it that binds to the host target cell in a very specific way through a host receptor,” Dr. Dean explains. “It’s an amazingly complicated interaction because once the spike binds with the host cell, conformational changes take place. The shape of the spike protein changes, allowing it to bind even tighter to the host cell. But there are a couple of sites that functionally allow that shift in structure to take place, and we felt if we could block those sites and prevent those structural shifts, then we could inhibit that strong binding between the virus and the host cell.”

Two sites in the spike protein have been identified that are considered particularly important, and it is there that the vaccine strategy is focused. In addition, another protein also in the virus could expand the overall immune response against the virus.

“We felt it was important to be very targeted because there is a condition that can occur called immune enhancement,” Dr. Dean reports. “Sometimes an immune response can actually increase susceptibility to virus infection or make the disease more severe. That’s been the primary problem encountered with feline coronavirus vaccines, so it was something we obviously wanted to avoid in the human vaccine.”

*L. acidophilus* has been under study as a possible vaccine platform for nearly a decade. It was chosen for the CSU COVID-19 study because it is well understood, and its health benefits include a boost to the immune system.

“It’s important to note that we took the probiotic bacterium that everyone is familiar with and modified it into a drug using...
gene modification technology,” Dr. Dean says. “We have inserted critical virus sequences into the bacterium so that it interacts with our immune system and induces that immune response against the virus.”

The need for a vaccine to prevent COVID-19 is dire. Well over 230,000 people have died from the disease worldwide, and officials with the Centers for Disease Control and Prevention and the World Health Organization warn that coronavirus could become a seasonal health issue like influenza.

However, Dr. Dean reminds us that such work is extremely complicated, time-consuming and not always successful. “In the end, most vaccines fail,” he says. “It’s very difficult to develop a vaccine, especially against challenging pathogens like the coronavirus.”

At CSU, trials for a feline coronavirus vaccine are expected to begin in the fall, and work is proceeding as quickly as possible on a vaccine for COVID-19. “There are a couple of steps that take time and can’t be rushed,” Dr. Dean says. “But we hope to have a construct ready to test in animals very soon. If we see signs of success there, we will assess what the next steps should be.”

The CSU research team includes Allison Vilander, DVM, DACVP, assistant professor in the school’s Department of Microbiology, Immunology and Pathology, and Tony Schountz, PhD, associate professor and expert in zoonotic viruses. Collaborators at the North Carolina State University College of Veterinary Medicine are also contributing to the work.

Veterinarians and vaccine research

According to Dr. Dean, the role of veterinarians in vaccine research is critical. “Emerging pathogens are coming out of animal species and jumping into the human population,” he explains. “In many cases, veterinarians have been studying these diseases in animals for many years, and that is clearly the case with the feline coronavirus. We have gathered a lot of knowledge about [these diseases], and we clearly have a role in addressing the problem when they jump to humans. Many other veterinarians are involved in research. I know many of them are working very hard to direct their efforts at the current pandemic.”

At the community level, clients are increasingly asking their veterinarians about the risk of catching COVID-19, and that cats can shed the virus from an asymptomatic person with COVID-19 and the coronavirus from their pets, or vice versa. News of a tiger at the Bronx Zoo in New York testing positive for COVID-19 has brought the issue to even greater prominence. It is believed that the big cats at the zoo contracted the virus from an asymptomatic caretaker who also tested positive. “A picture is beginning to emerge that cats are, indeed, infectible by COVID-19, and that cats can shed the virus,” Dr. Dean says. “But what we don’t know is whether cats can infect other cats or can infect people. There are high-quality studies going on that should give us those answers.”

Don Vaughan is a freelance writer based in Raleigh, North Carolina. His work has appeared in Military Officer, Boys Life, Writers Digest, Mad and other publications.

**Pet health insurance**

**respiratory claims remain flat**

Seattle-based pet health insurer Trupanion continues to monitor insurance claims for cats and dogs related to respiratory illness. In our March issue, we reported that the company had noted “no unusual increases or changes in the frequency of illnesses in its pet health database over the past 45 days.” As of late April, the company reports to dvm360 that activity in this area remains relatively flat—even in hotspots like New York.

During a recent webinar from the COVID Council—a group of animal health advocacy groups that have joined forces to keep veterinarians informed about the global impact of the virus in the veterinary industry—Trupanion Chief Veterinary Officer Steve Weinrauch, BVMS, MRCVS, noted that “SARS-CoV-2 infections have been reported in very few animals worldwide, mostly in those that had known close contact with a person with COVID-19 and the current evidence is overwhelming that COVID-19 is primarily a people problem.”

The positive cats reported in New York (see page 16) fit with what was discussed in this webinar. “There is no evidence that this is a serious illness in pets, there is no evidence that pets can give this to people and the best advice is still to socially distance with your pet.”

The informative April 17 webinar can be viewed on Trupanion’s Facebook page: dvm360
Data show strong pet owner interest in Walmart veterinary services

New research shows that pet owners anticipate lower prices—as well as good quality care—in Walmart-based veterinary clinics. Here’s how to compete.

By Kimberly Ness

It’s easy to dismiss the idea that mass market veterinary services such as clinics within Walmart could really lure your clients away. Everybody knows Walmart is a discount store, after all, and you get what you pay for. The pet owners you serve care more about quality than that. And yet...

New survey results from an exclusive study by Diggo—a service that provides an unbiased view of what today’s pet owners think about veterinary care and their pets’ health—show that pet owners are not as discriminating as veterinarians think. And you may even have an insight from their current behavior that pet owners don’t see the distinctions you do among different sources of care.

In fact, Diggo research from 2019 shows that 22% of pet owners are getting veterinary care from more than one outlet. And pet owners using mass market options like Walmart say they chose that source for its good reputation and high-quality care, in addition to low pricing. While you may find the idea of a discount outlet offering high-quality care, well, ridiculous, pet owners don’t. And their perception is their reality.

The clients you see may also be getting veterinary care at a corporate practice, in their home from a mobile practitioner, at a discount vaccine clinic or from some other source. And they’re generally pleased with the service they get and the quality of care provided. Given this trend, we dug into the expectations of pet owners who list private practice as their primary source for veterinary care. Our hypothesis was that these pet owners would be the most likely group to understand the quality of care that private practices offer.

‘Save money, live better’

What we found was that close to half (47%) of pet owners who currently use a traditional private practice as their primary source for veterinary care say the price at Walmart will be lower compared with their current veterinarian, and 60% believe the quality of care will be the same. Only 29% expect the quality of care at Walmart-based clinics to be lower than at a traditional practice.

Given what you know, it’s frustrating that pet owners don’t understand the value of your services and the high-quality care you offer. Our research shows that pet owners are likely to think a veterinarian has the same level of education and provides the same level of care no matter where they work. Pet owners are clearly hoping Walmart-based clinics can deliver against the Walmart value proposition: good products at a cheaper price.

Veterinarians underestimate clients’ interest

We also asked pet owners which, if any, services they would consider obtaining from Walmart if their local supercenter offered a veterinary clinic. Then we asked veterinarians which services they thought pet owners would consider seeking from Walmart. The differences are striking.

A whopping 73% of pet owners said they would consider Walmart for at least one of the services Walmart-based veterinary practices offer. And it’s not just nail trims—although almost half of pet owners would consider a Walmart-based practice for that. A significant number of pet owners would also choose Walmart for medical services like wellness exams, rabies vaccines and ear infections.

Amplify your unique strengths

Here’s our point: You need to take this new competition seriously and think carefully about your team’s response. And there are some winning moves to make. Pet owners who have been with their veterinarian longer show more loyalty. So think about what you can do to build stronger bonds with clients faster.

How can you create more touch points with pet owners? What do your most loyal clients love about you? How could you do more of that with less loyal clients?

Pet owners also recognize your strong team as one of the assets of a private practice. What could you do to raise pet owners’ awareness of the special strengths your team members bring to the table?

Your approach to this incoming threat should be two-pronged: On the one hand, focus on retention by working hard at building and maintaining strong relationships with your clients and their pets. And on the other hand, recognize that even those pet owners who choose other outlets for basic veterinary care will still need you for more advanced diagnosis and treatments, so they’re still worth investing in. How can you stay on their radar, even if they choose to get basic preventive care somewhere else?
The American Heartworm Society (AHS) has announced the results of its 2019 Heartworm Incidence Survey, and its conclusions are clear: The “big picture” of heartworm disease in the United States hasn’t changed, and preventive pet care remains vital even amid the public health crisis facing the country.

AHS conducts its nationwide heartworm incidence survey every three years, using data from animals tested over the previous 12 months. Nearly 6,000 U.S. veterinary practices and shelters participated in the 2019 survey, amounting to more than 5.5 million heartworm tests. Those data were used to compile a new heartworm incidence map depicting the locations and prevalence of heartworm disease throughout the country in 2019.

No state was heartworm-free, according to the findings, but some stood out among the rest. The five states with the highest heartworm incidence in 2019—all of which have been in the top tier since the AHS began tracking data in 2001—were Mississippi, Louisiana, South Carolina, Arkansas and Alabama.

“When veterinarians compare the 2016 heartworm incidence map to the 2019 map, it’s clear that the big picture hasn’t changed,” AHS President Chris Duke, DVM, says in an announcement on the AHS website. “The Southeast remains a hotbed for heartworm infection, but states in the Northeast, Midwest, and West have continued to see many cases as well.” Those states include Texas, Tennessee, Georgia, North Carolina and Oklahoma, which round out the top 10 states for the highest heartworm incidence.

The survey also polled veterinarians for their opinions on trends noted in the previous three years. Here’s what they found:

- 11% of veterinary practices and shelters surveyed reported no heartworm cases, compared with 13% three years ago.
- 26% of practices and shelters said they saw an upward trend in heartworm incidence, while 16% noted a downward trend and 57% saw no change.
- Those who reported an upward trend were most likely to cite “an influx of heartworm-positive patients into their practice area” and “poor compliance” as the causes.
- Those who noted a decrease in heartworm incidence cited “improved preventive compliance among users” and “more owners giving heartworm preventives.”
- 82% of survey respondents said they follow AHS guidelines on heartworm prevention, testing and treatment.

While the spread of COVID-19 has limited the ability of veterinary practices to conduct routine patient health screenings, the AHS stresses that this should not mean lapses in heartworm preventive administration.

“The need for heartworm prevention is more important than ever,” Dr. Duke says. “Prevention continues to be one of the most important recommendations veterinary practitioners can make for patient care, and avoiding gaps in year-round prevention is essential.”
Trainers, veterinarians indicted for giving racehorses performance-enhancing drugs

Charges have been filed against 27 individuals in the $100 billion global horse racing industry.

By Ed Kane, PhD

On March 10, the New York State Gaming Commission suspended the licenses of 11 individuals, including trainers and equine veterinarians, due to their improper use of the compound SGF-1000 RMR and other performance-enhancing drugs (PEDs) in horses under their care.

The indictment
This action came after federal prosecutors, headed by U.S. Attorney Geoffrey Berman (Southern District of New York [SDNY]), handed down indictments against Jason Servis and Jorge Navarro, among many others, for the obtainment, distribution and use of adulterated PEDs, specifically SGF-1000, as they attempted to improve the performance of racehorses over a period of several years.

According to the federal indictment, the charges “result from a widespread, corrupt scheme by racehorses trainers, veterinarians, distributors, and others to manufacture, distribute, and receive adulterated and misbranded PEDs and to secretly administer those PEDs to racehorses under scheme participants’ control. By evading PED prohibitions and deceiving regulators and horse racing authorities, among others, participants sought to improve race performance and obtain prizemoney from racetracks throughout the United States and other countries.”

The details
A total of 27 people in several states were charged and could receive lengthy prison sentences if convicted. Among them, in addition to trainers Servis and Navarro, who pled not guilty to the charges on April 2, are assistant trainers, pharmacists, veterinarians and drug distributors. Prosecutors claim that Navarro administered some of the PEDs himself, as well as directing the veterinarians he worked with to do so. His indictment includes the use of tens of thousands of dollars, sourced by Miami veterinarian Seth Fishman, DVM, who also allegedly provided a blood builder to Navarro. Gregory Skelton, DVM, owner of Skelton Equine Sports Medicine in Carmel, Indiana, was indicted for selling joint blocks and analgesics.

Trainer Nicholas Surick allegedly supplied Navarro with various PEDs and adulterated drugs, including erythropoietin (Epopgen) and “red acid,” an agent used to reduce joint inflammation. Kristian Rhein, DVM, and Alexander Chan, DVM, were also involved, the indictment notes, with the use of fake prescriptions and falsified veterinary bills. Also according to the indictment, Navarro’s PEDs of choice allegedly were “blood-building” drugs, including “monkey,” which boosts a horse’s red blood cell count to stimulate endurance and improve recovery. When combined with the intense physical exertion involved in horse racing, these drugs can overload a horse’s heart, which can lead to cardiac issues and/or death.

Others included in the indictment are Rick Dane Jr., DVM, Erica Garcia, DVM, and Louis Grasso, DVM, all of whom were found to be in violation for improperly administering various PEDs to racing horses between January 2018 and October 2019, as well as misbranding PEDs and shipping illegal drugs. Servis and Navarro were charged with using blood-doping agents to enhance “oxygenation of body tissues” to racehorses, a practice outlawed by racing rules.

One of the horses trained by John Servis is champion Maximum Security, although Servis and Navarro train numerous horses whose race outcomes could have been affected, including Navarro’s XY Jet, who died of an apparent heart attack in January possibly due to use of these drugs.

On June 5, 2019, New Jersey regulators tested Maximum Security prior to the Pegasus Stakes. Dr. Rhein noted that SGF-1000 could not be detected via testing. Servis allegedly asked Dr. Rhein to alter the horse’s veterinary records to show that it had been given dexamethasone instead. Orders were also issued against Scott Mangini, in charge of websites where PEDs could be purchased, and groom Conor Flynn, whose license to work was suspended for using and distributing PEDs.

In addition to the actions by New York State racing regulators, Keeneland (Lexington, KY) Race Course president and CEO Bill Thomason stated that “the administration of illegal medication and improper substances to our equine athletes is … simply unacceptable.” He also stated that the actions of the SDNY U.S. Attorney’s Office will help regulate Keeneland to ensure the health and safety of Kentucky racing horses. Servis, Navarro and several others had their licenses suspended from training, racing or being involved in racehorse sales in Kentucky.

If convicted, the conspirators could face hefty fines and long prison sentences.

What is SGF-1000?
According to the now-defunct website of Kentucky-based MediVet Equine—one of a handful of manufacturers of SGF-1000—the drug “works at the cellular level to promote rejuvenation and recovery from training, resulting in increased general health and wellness.”

The company also stated on its website that SGF-1000 “is an innovative formulation consisting of amino acids derived from ovine (sheep) placental extract. SGF-1000 is manufactured and purified through a patented low-temperature process that involves homogenization, fractionation and ultra-filtration of the ovine placental extract suspended in a sterile liquid.”

As for safety and administration, MediVet Equine stated “SGF 1000 RMR is administered as an IV injection of 10 ml (one vial) every 28 days during training.”

SGF-1000 is a dangerous drug when given to racehorses. What MediVet Equine failed to divulge is that this and other PEDs promoted by trainers Servis, Navarro and the veterinarians they worked with pose a danger to the health and safety of racehorses. The use of SGF-1000 and the other doping agents essentially amounted to abuse of racehorses, including concerns about overexertion leading to an increased risk for physical injury, including leg fractures, cardiac issues and, in some cases, death.
Plan your dream hospital with easy-to-implement solutions.

For the past 45 years, the HospitalDesign360™ conference has been the industry’s most comprehensive resource for all information related to building or remodeling a veterinary clinic. Led by innovative faculty, this three-day program is filled with high-impact, easy-to-implement solutions for improving your hospital. With tips on everything from floor plans to financials, you will learn how to build the veterinary hospital of your dreams. Receive a free one-on-one consultation with an architect of your choice, and participate in a Q&A session with a panel of experts — all conveniently taking place right before Fetch dvm360® in Kansas City, Missouri.

Register today for our Super Saver rate! fetchdvm360.com/HD360
A walk in
The PARC

Transparency, revolutionary care and staff development are the hallmarks of this stunning Texas practice, which was named a runner-up in the 2020 dvm360 Hospital Design Competition.

By Sarah A. Moser

While dining at a local restaurant that specializes in fresh, organic food, Steve Hotchkiss, DVM, had an epiphany that shaped plans for his long-awaited new veterinary facility. The restaurant featured an open-design kitchen in which the cooks can communicate easily with those in the dining area. Dr. Hotchkiss, owner of The PARC in Fort Worth, Texas, could see the kitchen staff cutting fresh vegetables just 10 feet away from where he sat.

“It was calming to know I could trust the food they were preparing for me, and people need that same trust with their veterinarian,” he says. “If there’s trust, the pet wins, the client wins and we win as a profession. I told my architect that I wanted the first ‘open kitchen’ in veterinary medicine. If people can’t watch it, I don’t want it.”

The open concept design led to the creation of a 25,037-square-foot practice built mostly of glass, allowing clients to see nearly all areas of the facility. Not only is the practice large and open, but it also boasts topnotch interior design. This exceptional focus earned The PARC a runner-up award in the 2020 dvm360 Hospital Design Competition. The competition judges praised The PARC for a thoughtful design that revolutionizes veterinary care. They said this hospital exhibits a huge “wow” factor in all areas of design.

Open-concept hospital
The PARC has been in operation since 1992, just under a different name and in a much, much smaller space. The initial 3,600-square-foot practice housed 10 doctors and 75 staff members at its peak, and was open 24 hours a day to stagger shifts. Good, available land was in short supply, but Dr. Hotchkiss knew a larger facility was on the horizon. It took more than five years to find the right land and secure permitting, zoning and financial details. In the end, he snaggled space just 90 seconds away from the original facility off a highway frontage road.

Next came the fun part—designing a facility to house his growing practice while being as transparent as possible, literally, with his clients. Dr. Hotchkiss was sure that an open-concept hospital was a perfect idea, but his colleagues weren’t quite on board.

“I got a lot of pushback from my peers,” he says. “I think there’s a lot of fear in knowing pet owners can see everything you do. But my core value is ‘clear is kind,’ meaning that if you don’t want a pet owner seeing you do something, you shouldn’t be doing it.”

He went forward with his plan, despite the pushback. Now clients can see from the entryway all the way to the back of the hospital, if they really look hard. Of course, some things, like surgical procedures, are a bit too intense for clients to watch. For that reason, Dr. Hotchkiss positioned surgery suites and more invasive treatment areas at the back of the hospital to give a little buffer between clients and staff.

Staff members at The PARC felt on display for the first few months, Dr. Hotchkiss says, then they got over the discomfort of having windows everywhere. “Some people don’t like being in front of people or get nervous doing a task in front of clients,” he says. “But I reminded them that people aren’t as interested in us as we think they are. And I told them that they’d get used to drawing blood and performing other tasks in front of people in no time, and it wouldn’t be a big deal. They adapted just fine.”

Of course, the comfort room, ICU, and surgery suites either have frosted glass or are positioned so far back in the hospital that a client would need binoculars to see that far, he says.

Space for staff
Dr. Hotchkiss believes that staff members who are well taken care of will take good care of clients and patients. That philosophy drove a big part of his facility design, making sure to create spaces that make staff members comfortable, relaxed and inspired.

“At our old facility, I would find staff members going out to their cars to get an emotional break from the day,” he says. “There was no place in the hospital to recover emotionally from the hard things we deal with on an hourly basis. We needed a space for staff members to recover and take a break from all the difficult things we face.”

At The PARC, staff members now enjoy a large kitchen and break area, lockers, beautiful bathrooms even a 1,320-square-foot balcony where they can eat lunch or take a break. This space also doubles as a place for clients to visit for “yappy hours,” goat yoga and other fun community activities.

A 65-seat classroom, equipped with the latest audio-visual and sound systems, a glass screen for projection and a whiteboard, serves to keep staff members up to date on continuing education in a comfortable space. “We want staff members to know we value them and want The PARC to be a place for them to learn and grow in their careers,” says Dr. Hotchkiss.

Building a brand
While the physical facility at The PARC is undeniably stunning, another factor stands out about this practice: the consistent branding in every possible area. Take one look at The PARC’s website, signage, artwork, color scheme—anything, really—and you will see that no detail is left untouched.

“Our marketing comes out of a core belief to hire professionals to create something visual and tangible,” says Dr. Hotchkiss. “I wanted clients to see, hear and experience all aspects of our brand, consistently.”

While some might rely on a “social media-savvy employee” to put their marketing together, Dr. Hotchkiss says a strong brand takes much more than that. “I hired a marketing agency to handle our branding,” he says. “If I wanted a surgery performed, I’d hire a surgeon—not just someone who has seen it done. It stands to reason, then, that for marketing I’d hire a professional. Invest the money, get what you pay for.”

The marketing professional designed a “story brand,” which Dr. Hotchkiss says is perfect for his hospital. “Brands are built on a story, and our hospital has its own story. At The PARC, we have stories between each person and their pet, between them and us, and between us as a staff.”

The PARC’s story focuses on the unconditional love of pets and how they maximize life for the people who love them. This is shown throughout the hospital with whimsical photos; fun and comforting colors; bright, open spaces and, of course, a clear view of everything that’s happening in the hospital, bringing it all back to that desire for transparency in how they treat pets and people.

Dr. Hotchkiss even uses their story branding to advertise on bus stop benches, in magazines, and throughout the city, and the company he hired to put it together has won some advertising awards for its work on The PARC.

“We want to tell a story that makes the client the hero for their pet,” says Dr. Hotchkiss. “We aren’t here to be the hero, but to guide the client to be their pet’s hero.”

Sarah A. Moser is a freelance writer in Lenexa, Kan.
It’s clear from the outset that The PARC is built on transparency. From outside, one can see directly into nearly all areas of the hospital. Metal art, crisp blue colors, bright lights and comfortable seating areas complete the look. The second-floor staff balcony is also visible from outside.

The waiting area features multiple comfortable seating areas with curved benches and plenty of space, never making clients and pets feel cooped up. A metal stairway leads up to a second-floor waiting area, often used by those waiting a bit longer for pets that are in surgery. The frosted glass trees on the front window are mimicked in the chair backs in the lobby. A rubber floor minimizes noise in the open space.

Each of the hospital’s 14 exam rooms features the same frosted glass tree design on the outside, which is mimicked on the chairs in the rooms. Lots of glass keeps patients and clients from feeling trapped, and gives them a view into what’s happening beyond.

The jewel box is the 40-foot-tall, glass-enclosed center treatment area. This central area is the highlight of the hospital, showcasing the work that happens in The PARC. Dr. Hotchkiss says this area was the original concept, and the rest of the hospital was built around it.

The PARC features three surgery suites, one specifically for orthopedics and one for neurology. The suites are filled with subtleties that make working there more comfortable and convenient, Dr. Hotchkiss says. For example, he had gas scavenging installed at either end of the table, allowing doctors to choose which way to orient. “It’s a little luxury that makes working here easier,” he says.

The Thrive Room is for staff training. “We believe the outcome of training should lead to you thriving in work and personal life,” says Dr. Hotchkiss. “Here, we bring in industry experts for talks on anything from medicine to procedures, best practices, communication skills and more.”

Dr. Hotchkiss says the treatment area was built with enough space that no one is waiting for a table, with workstations for staff plentiful. The treatment area features five technician workstations, plus one in every exam room.

The second-floor balcony space is a treat for staff members, allowing them a place to take a break from the pressures of the day. This space is also used for client parties, goat yoga, yappy hours and more.

The waiting area features multiple comfortable seating areas with curved benches and plenty of space, never making clients and pets feel cooped up. A metal stairway leads up to a second-floor waiting area, often used by those waiting a bit longer for pets that are in surgery. The frosted glass trees on the front window are mimicked in the chair backs in the lobby. A rubber floor minimizes noise in the open space.
Workplace safety
> Continued from cover

While you may consider an occasional bite or scratch “part of the job,” what percentage of injuries are avoidable? Is improper training, a stressful workload or negligence putting your safety at risk?

The most common veterinary workplace injuries

What is the leading cause of injuries in veterinary practice? You guessed it: the patients. A study published in the Journal of the American Veterinary Association (JAVMA) that combined findings from various sources, including a Minnesota veterinary hospital, found that 50% to 67% of veterinarians and 98% of veterinary technicians experience an animal-related injury at some point in their career.

Similarly, of the 3,200 annual workers’ compensation claims filed with AVMA PLIT’s primary insurance carrier, about 70% are related to contact with an animal, says Scott Simpson, a risk consultant at HUB International. “It is not surprising to veterinarians that this would be the number one hazard.”

Previous data from AVMA PLIT reported that veterinary technicians filed about 41% of claims, veterinary assistants 23% and veterinarians 9%. The remaining claims were filed by receptionists, groomers, kennel employees and others.

It’s not only aggressive animals that cause injuries, says Erin Spencer, Med, CVT, VTS (ECC), owner of Brown Dog Veterinary Training and Consulting Solutions and immediate past-president of the National Association of Veterinary Technicians in America. Mishaps often occur from a patient simply moving or being handled incorrectly. “I can think off the top of my head of at least three coworkers who have had large dogs come up and smack them right in the jaw. Some of them have certainly needed to seek care.”

Second to insurance claims filed about animal-inflicted injuries are accidents that fall under the category of strains and sprains. Although these types of injuries account for 8% of claims, they comprise 27% of what is paid through workers’ compensation. It’s just as important to consider the severity of an injury as it is the frequency, Simpson explains. “Maybe someone lifted a heavy dog and pulled their back or they were walking a dog that jerked and the person’s arm was pulled out of its shoulder. These injuries don’t happen as often, but when they do it costs a lot more than a bite or scratch.”

Rounding out the top three most common types of veterinary workplace claims are slip and falls. It’s also important to consider potential risks that might not be visible to the naked eye. “Some overlooked hazards include exposure to waste anesthetic gases and exotic chemicals such as ethylene oxide,” says Richard Best, PhD, director of Occupational Safety and Health Administration (OSHA) compliance for Stericycle. Ethylene oxide, which can be used to sterilize instruments, is a known carcinogen, he adds.

In addition to cancer-related links, a 2008 British Medical Journal study concluded that female veterinarians who are exposed to anesthetic gases and pesticides at work run twice the risk of miscarriage as veterinarians who are not exposed to these hazards.4 The study also found that women who performed more than five X-rays a week were almost 80% more likely to miscarry than those performing fewer procedures. A similar 2017 study in JAVMA highlighted potential hazards to female reproductive health.5 Beyond coming into contact with anesthetic gases, the report identified risks associated with exposure to radiation, antineoplastic drugs and reproductive hormones. To prevent medical complications as a result of exposure, the authors recommended establishing a safety-focused work culture starting in veterinary and veterinary technology schools.

Obtaining X-rays is one of the other areas where Spencer says repeated mistakes are being made. “When you come out of school you have absolutely learned radiation safety, but the implementation is what I see as the problem.” While Spencer believes safety in this area is getting better, she quickly recounts multiple instances from her time as a clinic manager where radiation monitoring badges came back high or a finger appeared in an X-ray.

“They know all the things they are supposed to do, but they had an animal that wasn’t going to lay still unless they leaned in a little closer,” she explains. “I think sometimes people also try to take shortcuts and forget [about the radiation] because you can’t see it.”

Protect yourself, your practice, your patients

Dr. Best notes that there is an increase in work-related injuries within the first two years working in veterinary practice. Statistics from the National Institute for Occupational Safety and Health also indicate that people under age 25 are nearly twice as likely to be sent to the hospital due to a work-related injury, implying that inexperience may lead to injury.

“For newer professionals, when the injury is a bite or scratch it could be likely that they were not looking for the body language of the patient or didn’t understand the body language well enough,” Spencer suggests. “And that comes with time.”

Simpson also pinpoints the unpredictability of veterinary hospitals as the primary reason for workplace injuries. But learning from trial and error is not a suitable safety strategy.

On a federal level, OSHA has a strict set of regulations designed specifically for the veterinary industry. This includes general safety guidelines—such as having a fire prevention plan—as well as rules specific to chemotherapy, chemical hazards, medication labeling and radiation. Under OSHA’s standards, new employees must be oriented properly on the safety procedures of the hospital and their specific position. It is recommended that employees receive additional training following a work-related injury or when a manager recognizes repeated displays of unsafe behaviors.

There is no denying that hospitals are incredibly busy and filled with unexpected emergencies and distractions, but Simpson stresses the importance of making safety a collaborative effort. For instance, practices might start pairing a novice employee with a more seasoned staff member who can demonstrate how to perform daily responsibilities safely.

Simpson suggests establishing a safety committee comprised of employees from various departments that meets regularly. “This is a great way to start a dialogue and ensure all employees feel they are involved in the process.”

Dr. Best recommends that veterinary hospitals adopt some of the practices that are required in human medicine. This is especially important when there is potential for exposure to bloodborne pathogens, which are not currently regulated in veterinary medicine. “For example, place sharps containers at the site where the sharp is generated or where the injection occurs so that the sharp can be disposed of immediately,” he says. Too often, veterinary staff may be recapping sharps or walking around with them in their pockets. “The sooner you get rid of it, the sooner it is no longer a hazard.”

 Easily accessible training tools are available through veterinary insurance providers, AVMA and the Centers for Disease Control and Prevention. These include comprehensive videos and online courses as well as safety checklists and injury reporting tools.

Idexx Laboratories’ ‘Lower the Dose’ initiative promotes simple steps veterinary staff can take to limit radiation exposure. Some of the recommendations include doubling the distance from the radiation source and using absorbent materials.

Spencer also touts the positive effects low-stress handling can have on promoting a safer environment. “We still have to educate our newer technicians on realistic limits and what they should expect to have help with. But as far as thethrashing animal, low-stress handling and making their experience a little better is key.” When necessary, she recommends considering sedation for a patient before an examination or treatment. Ultimately, there is no end to safety training. “No one has time to do all of the training that should be done,” Dr. Best says.

“But it is about finding the particular hazards in your work environment and tailoring training to those particular areas.”

References available online on dvm360.com
Health is not just one thing. It is everything.

Health is taking stock. It is remembering what’s important. Over the past few weeks, having taken the time to reflect, here’s what we’ve found. When health is suddenly precarious, we learn to what lengths we will go to preserve it. When maintaining our distance becomes necessary, we understand how fortunate we are to be so close with the veterinarian community. And when we have the companionship of a cat or dog, we are never really isolated.

my.royalcanin.com
The COVID-19 pandemic has many health care professionals, including veterinarians, scrambling for answers. Questions about maintaining the safety of pets, their clients and veterinary teams desperately need expert answers as we continue trying to fulfill our role as care providers while also protecting public health.

In a webinar sponsored by Idexx Laboratories, Jane Sykes, BVSc (Hons), PhD, MBA, DACVIM, chief medical officer of the William R. Pritchard Veterinary Teaching Hospital at the University of California, Davis School of Veterinary Medicine, gave a timely summary of what we know right now, and addressed vital questions about handling patients and advising pet owners.

What do we know about COVID-19 so far?

In humans, COVID-19 symptoms tend to appear after an incubation period of 2 to 14 days and include fever, myalgia, fatigue, shortness of breath, coughing, gastrointestinal signs, anosmia (impaired sense of smell) and ageusia (loss of taste). "Rarely, stroke-like neurologic signs and cardiac arrhythmias due to myocarditis have been described," Dr. Sykes added.

The likelihood of severe illness and death increases in the elderly, as well as in people with pre-existing conditions such as diabetes mellitus, chronic lung disease or cardiovascular disease. Transmission is primarily by respiratory droplets in the form of coughing. However, transmission in pre-symptomatic people has been reported.

The virus can be detected on plastic and stainless-steel surfaces for up to 3 days, and on cardboard surfaces for up to 24 hours. However, Dr. Sykes said that the amount of viable virus diminishes during those time periods, so the chances of the organism remaining infectious for the duration are reduced.

Frequent and proper hand washing is strongly urged to help prevent transmission. “Soap and water is recommended over the use of hand sanitizer when possible,” Dr. Sykes noted. Wearing a face covering can also limit pre-symptomatic and asymptomatic transmission.

Can animals become infected?

Clinical reports

There have been several well-reported cases of animals testing positive for SARS-CoV-2:
- In the first reported case, a 17-year-old Pomeranian whose owner was positive for COVID-19, tested ‘weak positive’ based on oral and nasal swabs. An antibody test was initially reported as negative but later reported as positive. Another dog and a cat from the same household tested negative. The Pomeranian was quarantined and remained asymptomatic but died two days after being released from quarantine. Although the owner declined a necropsy exam, clinicians suspected the dog died from complications of advanced age and pre-existing illness unrelated to COVID-19.
- Also in Hong Kong, a German shepherd that lived with a person diagnosed with COVID-19 tested positive and was quarantined. Another dog in the same household tested negative. Neither animal developed clinical signs, and the German shepherd later tested negative.
- In Belgium, samples of vomit and feces from a cat tested positive for SARS-CoV-2 after the cat developed vomiting, diarrhea and respiratory distress. The cat, whose owner had developed COVID-19 after traveling to Italy, was not examined by a veterinarian, and the owner submitted the test specimens, which has caused some to question the integrity of the diagnostic results. Dr. Sykes noted that the cat’s disease signs could have another underlying cause, and antibody testing has not been performed.
Laboratory studies are further investigating the two dogs and one cat previously seen by humans with COVID-19. So far, only 27 dogs and 15 cats have been quarantined, but did not develop clinical signs.

• A tiger at the Bronx Zoo tested positive after exhibiting mild respiratory signs. (Several other big cats that exhibited signs of respiratory illness were not tested at the time.) It is believed that the tiger was exposed to an asymptomatic zookeeper.
• More recently, the virus has been detected in two pet cats and a dog in the U.S., and a total of eight big cats at the Bronx Zoo have now tested positive.

With more than three million human cases reported worldwide, it is noteworthy that here have been relatively few reports of positive SARS-CoV-2 results in pets.

Dr. Sykes added that in Hong Kong, 27 dogs and 15 cats have been quarantined based on possible exposure to humans with COVID-19. So far, only the two dogs and one cat previously reported have tested positive.

Research findings
Laboratory studies are further investigating susceptibility in pets:
• Findings from a laboratory study in China suggest that cats and ferrets are more susceptible to experimental infection than dogs are. However, Dr. Sykes cautioned that because this was a laboratory study involving high-dose inoculations and young test animals, results may not reflect real-world conditions.
• In a pre-print (i.e. not yet peer reviewed) study from China, investigators examined neutralizing antibodies to SARS-CoV-2 in 141 pet and shelter cats in Wuhan. Researchers performed serologic testing on 39 cats before the outbreak began and 102 cats afterward. Fifteen cats (14.7%) that were tested after the outbreak began were seropositive using ELISA or virus neutralization. Investigators reported no cross-reactivity with feline coronavirus. However, all nasopharyngeal and anal swabs tested using polymerase chain reaction were negative. Exposure to COVID-19–positive humans was not established for all the cats. The researchers concluded that SARS-CoV-2 could infect cats during an outbreak in humans.

To summarize, although investigations are ongoing, available results suggest that clinical disease may occur in infected cats, but the occurrence in other species is undetermined. Further, evidence of differences in susceptibility among animal species is currently insufficient.

How should pet owners interact with their pets during the COVID-19 pandemic?
As always, household members should wash their hands frequently and properly. COVID-19–positive humans should minimize interactions with pets, as susceptibility in pets is not fully understood. When distancing from the pet is impossible, a face covering should be worn. Pets should be quarantined at home and monitored for disease signs.

People in the household who are not suspected of having COVID-19 should try to remain separated from the infected individual, and keep pets separated as well. Dr. Sykes advised, “It’s unlikely that other people [in the home] will become infected from the pet, but it’s still recommended that they minimize pet contact, wear a face covering and, if possible, eye protection.” For the most part, she warned, “It’s the human-to-human proximity that’s the problem, not the human-to-dog proximity.”

What’s the best advice for a pet owner whose pet has signs suggestive of COVID-19?
Dr. Sykes said it’s more likely that the pet is ill from something else. Pet owners who suspect COVID-19 in their pet should call their veterinarian. Some veterinary practices are offering telemedicine appointments or consultations. If the pet needs to physically go to the veterinarian’s office, someone who is not sick should bring the pet. It’s also important to alert the veterinarian if a COVID-19–positive person is in the home.

What precautions should veterinary practices take with patients and clients during this crisis?
In general, the client presence in the practice should be minimized as much as possible. Implementing car-side consultations while wearing face coverings and maintaining an appropriate distance is reasonable. Collars, leashes and other pet items should not enter the practice. Pet carriers should be wiped down and disinfected before being brought into the building.

What if the pet owner is from a known or suspected COVID-19–positive household?
People diagnosed with COVID-19 should be self-quarantining at home, so another person should bring the pet to the practice. A car-side consultation is a reasonable option, with exposed staff wearing appropriate personal protective equipment (gown, gloves, face shield or goggles, N95 face mask, etc.) while maintaining physical distance as much as possible.

Dr. Sykes suggested that once a pet is removed from a pet carrier or client, the animal is unlikely to be a source of transmission. However, she advised wiping the pet down with a disinfectant wipe, minimizing the number of staff members exposed to the pet and appropriately disinfecting the exam room.

If hospitalization is needed, isolating the pet and using appropriate protective equipment during handling is recommended. Clinic staff who are in high-risk groups should not interact with these pets or clients.

Is testing of pets recommended?
A PCR test for animals has recently become available to veterinarians (see page 17). However, routine testing of pets is not recommended at this time. Pets coming from COVID-19 households that are exhibiting suspicious clinical signs should be tested, and testing must be done in coordination with local public health officials, following U.S. Department of Agriculture guidelines.

PCR testing can be performed using swabs (nasal, rectal, oropharyngeal, hair coat). Convalescent serology may also be helpful. However, appropriate diagnostic evaluation of these pets is warranted to rule out other possible diagnoses, and protective equipment should be worn when handling these patients.

What’s the take-home?
• SARS-CoV-2 infection in domestic animals appears to be rare.
• There is currently no evidence that animals can transmit SARS-CoV-2 to humans, either through natural infection or fomite transmission. Thus far, pet fur has not been found to act as a fomite for SARS-CoV-2 transmission to humans. Human-to-human transmission is much more likely.
• Clinical disease may occur in infected cats, and SARS-CoV-2 has been detected in dogs, but the occurrence in other species is undetermined. Evidence of differences in susceptibility among animal species is currently insufficient.
• When communicating with owners, veterinary professionals are advised to stress the importance of the human-animal bond. Contact with pets is physiologically and emotionally beneficial when humans are experiencing stress, as with the current pandemic.
• When dealing with patients and clients, veterinary staff should use appropriate precautions, such as minimizing the presence of pet owners in the facility, disinfecting pet carriers and using appropriate protective equipment when interacting with pets, particularly those from a COVID-19–positive household.
My father was a veterinarian, having graduated from Cornell shortly after Hitler annexed Austria. He grew up not having much, and the unfolding situation in Europe didn’t offer hope that he would have much for the foreseeable future after veterinary school.

Fast forward to the fabulous 50s when my siblings and I were growing up: Dad worked hard, taught us by example and didn’t interfere much in the choices we made. But there were two subjects that my brother, sisters and I had to hear about every night at supper. First, we were never to assume that times would always be good. Second, we should always live well below our means.

Along came the economic crises
Armed with that advice, I began living my adult life. A mega-recession hit when I was an undergrad at Columbia and my classmates were routinely exiting the Ivy League and walking into a new league: the league of the unemployed.

The economy finally came back to health and everyone was spending until, on October 19, 1987, I returned home from my job at Buena Vista Veterinary Clinic to see Dan Rather break into the afternoon programming to announce that the stock market had crashed—dropped 30%—on that historic Monday. Suddenly, folks started being way more circumspect in handling their finances, and discretionary service businesses took a major hit. Buena Vista eventually closed.

The U.S. economy ultimately became jet-powered again, fueled by home mortgages being doled out like Halloween candy. But by the time Barack Obama took the oath of office, the bubble had burst again. The S&P 500 abruptly made its way from the mid-1500s toward the devil’s telephone exchange: 666.

The Great Recession was miserable. From my perspective as a veterinary legal and business consultant, I saw this:
- Veterinarians whose retirement savings had been decimated
- Homeowners unable to meet mortgage payments literally abandoning their pets
- Record home foreclosures
- Small business loans—including for veterinary clinics—going into default with capital equipment being repossessed
- The leading edge of the Baby Boom afraid to spend their diminished IRA money on their pets
- A precipitous reduction in traffic at my own veterinary practice

And today, that familiar economic tune is being released on a new label: pandemic.

Who among us is most at risk?
Every time I’ve watched so many people behave as if good times would never end, I am reminded of my father’s incisive supper-table advice about living a moderate lifestyle and the inevitability of hard economic times. In counseling veterinary associates and hospital owners, I make an effort to pass on those kernels of wisdom along with industry-specific anecdotes and actionable recommendations.

I would like to offer some observations about the economic calamity that is virtually certain to follow the eventual resolution of the COVID-19 debacle.

“Pro-sal” compensation may bite participants
In good economic times, production-based veterinarian compensation can be a win-win...
for corporate veterinary employers as well as employed doctors. Efficient, highly motivated associates can generate bonuses for themselves every fiscal quarter and sometimes even score an increase in base salary to boot.

But the opposite side of the coin can prove to be extremely rough. Corporate hospitals that pay their professional staff based on production are being hit with a prolonged stretch of gross revenue reductions related to COVID-19. It won’t take long before the associates recognize that “pro-sal” compensation has effectively transferred the risk of high labor cost and diminished revenue away from the hospital management and onto the professional staff.

A veterinary hospital can save some money by ordering fewer supplies and cutting lay staff hours, but the biggest expense is the doctors.

If the associates have contractually agreed to accept a relatively low base salary (in anticipation of earning perpetual pro-sal “bonuses”), they have effectively insulated their employer from much of the practice’s most burdensome costs: DVM pay, DVM FICA and DVM workers’ compensation insurance premiums. 

Specialists can be hit hardest

This is what I saw in 2008 and the years following, and I anticipate a replay post COVID.

When the Great Recession hit 12 years ago, I began receiving phone calls from specialists in every category seeking advice on possible renegotiation of their employment contracts. Many radiologists, neurologists, ophthalmologists and others had left residency and started earning—and generously spending—very respectable and hard-earned pro-sal–based paychecks.

Then came the credit default swap catastrophe. Pet owners began to hunker down and become considerably more careful about spending—especially about spending on anything other than absolute essentials. Specialist revenue began to drop, due to salary cuts and/or failure to meet pro-sal revenue targets. Plenty of these specialists were simply forced to re-evaluate their own spending. Some of those I spoke with were forced to sell their homes into a horrific and forced to sell their homes into a horrific and forced to sell their homes into a horrific and forced to sell their homes into a horrific and forced to sell their homes into a horrific and forced to sell their homes into a horrific and forced to sell their homes into a horrific spending. Some of those I spoke with were simply forced to re-evaluate their own spending. Unwise spending levels and failure to maintain a reserve cash cushion throughout practice upgrades and hospital expansion can prove to be serious mistakes when unanticipated economic challenges suddenly materialize. Owners’ credit—and access to capital—can be suddenly and severely damaged. The situation can be far worse if owners or partners have pledged loans with personal guarantees, something that became very common post-2008/9.

A final word

I waited until the end of this month’s column to mention a potential bright side of the downturn that may well follow this pandemic.

In the midst of the worry and self-assessment that are inevitably part of the COVID-19 catastrophe, remember this: For those who have budgeted carefully and have prepared effectively for an economic downturn, the inevitable financial struggles to come can potentially provide some outstanding opportunities. Competition for commercial tenants will probably rise. (This is already happening in New York City and its environs.) Prices for clinic ambulatory vehicles may well plunge. And banks will be seeking solid, creditworthy borrowers with excellent business balance sheets. And interest rates will be low.

For those DVMs who have lived within their means and never forgotten that tough times can occur without warning, the next 12 months may serve up opportunities that might have seemed unthinkable in even in January of this year.

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.
No place for Caesars in veterinary medicine

What we can all learn from rulers in ancient times about how to be good leaders—and good citizens—today.

Our world seems to have lost its way. Regardless of our political, spiritual, societal or moral perspective, there seems to be a trend in today’s society to look about and ask incredulously, “What is wrong with those people?” Well, guess what? We are all those people. Anyone who doesn’t look at the changes happening around us and shake their head is ignoring reality. Tolerance and understanding seem to have all but disappeared. The truth is, our planet doesn’t look at the changes those people who seem to have all but disappeared. The truth is, our planet, our nation and seemingly intent on their head is ignoring reality. Doesn’t look at the changes happening around us and shake our country and our society are appeared. The truth is, our planet, doesn’t look at the changes happening around us and shake our head is ignoring reality.

What makes a bad leader?

As philosopher and poet George Santayana said, “Those who do not remember the past are condemned to repeat it.” I recently came across two publications—one very recent and the other quite old—that I would like to share. Both are quite relevant and extremely timely in our society.

Improving awareness and understanding

Too often people look for self-evident support of what they believe—arguments instead of conversations, playing to a lower common denominator and seemingly intent on proving ourselves right and the other guy wrong. How often do we read or watch contrary positions? How many of us actually take the time to learn about our similarities to other societies rather than just our differences? Do we really seek cooperation or conflict? Do we want coexistence or victory or decimation? I am not so much advocating for any of the above. I just want people to become educated, informed and introspective, and to listen to messages—not just words—and choose good leaders while we still can.

The first publication, a blog by Georgetown University professor Josh Osgood titled “How to be a truly terrible leader,” outlines the paradox between what we say we do and what we actually do. Considering the bad leaders he discusses makes you question why some leaders are good and some bad. Does it boil down to power? Does power corrupt? It is hard to decipher this “chicken and egg” question. It is possible that power corrupts, but it’s also possible that some leaders have a natural inclination to pursue power because they are inherently corrupt.

Ancient Romans believed that power doesn’t corrupt so much as it allows preexisting instincts to blossom unchecked. The second publication, a book called Lives of the Caesars by Roman historian Suetonius, shows how unfettered power made these leaders free to follow their own passions no matter how destructive and reckless they were. These tendencies often surfaced immediately after they came to power.

Many of the issues our current political leaders face are remarkably similar to those of Roman emperors, with a number of similarities and parallels between the Roman emperors and modern oligarchs in both the United States and other countries. These leaders developed self-serving attitudes, broke their own rules, pursued their own interests and led with their own desires in mind. Sound familiar?

And not much has changed since the time of the Caesars. It turns out that like today’s public figures and politicians, the emperors had their own Jimmy Kimmel- and Steven Colbert—type critics to deal with, and making fun of these leaders was fair game. It seems even Julius Caesar’s vanity was tweaked by his baldness, for which he was often mocked. In fact, for much of his life he hid his baldness with a comb-over.

Lessons learned

Much like modern leaders, Roman emperors were capable of both good and harm. They built empires and monuments to their own grandiosity. They indulged themselves and their friends and neglected their responsibilities to their people. They were capable of great cruelty and seemed to relish humiliating others. Hmmmm…

The Roman emperors can certainly help us understand our own time. Unrestricted power is destructive and dangerous to the individual and social structure, and ultimately to the body being ruled. Avoid becoming a Caesar.

Dr. 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.

REFERENCES


Nationwide® is making **hiss-tery**.

For the first time ever, avian and exotic pets can get back up to 90% on veterinary exams and treatments—including preventive care.*

Since 2000, Nationwide has been the only U.S. pet insurer to offer coverage for birds, reptiles, and small mammals. Now avian and exotic pet owners can get the best pet insurance ever.

Learn more or call to request avian and exotic materials for your practice.

**EveryPetInsurance.com • 866-838-4874**

*Some exclusions may apply. Certain coverages may be subject to pre-existing exclusion. See policy documents for a complete list of exclusions. Plans may not be available in all states. Policy eligibility may vary.

Insurance terms, definitions, and explanations are intended for informational purposes only and do not in any way replace or modify the definitions and information contained in individual insurance contracts, policies, or declaration pages, which are controlling. Such terms and availability may vary by state and exclusions may apply. Underwritten by Veterinary Pet Insurance Company (CA), Columbus, OH, an A.M. Best A+ rated company (2018); National Casualty Company (all other states), Columbus, OH, an A.M. Best A+ rated company (2018); Agency of Record: DVM Insurance Agency. Nationwide, the Nationwide N and Eagle, and Nationwide is on your side are service marks of Nationwide Mutual Insurance Company. ©2019 Nationwide. 19VET7273
Weathering the storm: Business tips for the COVID-19 pandemic

Innovation, resiliency and smart strategies will see veterinary practices through this period of upheaval and uncertainty.

It’s clear that no practice, person or pet will be untouched by the COVID-19 pandemic. Both the veterinary profession and the broader economy will continue to be impacted for the foreseeable future.

The good news is there are ways you can help your business weather the economic storm and prepare for a brighter future. Although we can’t control the economy’s ups and downs, we can take actions to strengthen our individual veterinary practices.

Three C’s for business survival

A critical strategy for businesses in the COVID-19 economy boils down to three elements: cash flow, communication, and the CARES Act.

Cash flow: Bolster revenue

Cash flow is critical for a practice to stay in business, especially in times of economic downturn. Innovative strategies being used by practices to continue supporting patients and serving clients while maintaining social distancing in the current situation include:

- **Curbside care:** Clients remain in their car while a team member picks up pets and brings them inside.
- **Home delivery:** An online ordering and home delivery service provides continuity of food, medicine and other essentials your patients need.
- **Telemedicine:** Many options can be tailored to your individual practice and client base. See avma.org/telemedicine.
- **Payment and care options:** Alternative payment plans can help clients decide to seek veterinary care, as can being thoughtful in developing care plans for patients whose owners may struggle financially.

Look to cut expenses. Another important factor in maintaining business continuity is reducing costs. Which expenses can be cut easily with the least impact? You’ll need some key information to answer this question, including your financial break-even point and daily break-even revenue. Your accountant can help with this, as well as with understanding your fixed and variable costs.

Some strategies to consider:

- **Inventory control:** Work with your practice manager to determine optimal inventory levels. Use platforms like AVMA Direct Connect (avma.org/DirectConnect) to make purchasing as efficient as possible.
- **Know your options:** Define a few scenarios for revenue, with low, medium and severe outcomes. Figure out what each means for your ability to meet financial obligations. Discuss the options with your accountant.
- **Staffing decisions:** Layoffs should be a last resort. Look first at other options like reduced work hours, furloughs, and delayed pay raises or bonuses. Also look to leverage staff in new ways, outside their typical job duties.

Negotiate for deferred payments.

Another option for reducing short-term costs is to talk with vendors or your landlord about deferring payments. If you’re concerned about being able to meet financial obligations, you’ll want to reach out sooner rather than later. Review your
contracts first, and understand the language around payment terms. The AVMA has a resource at avma.org/coronavirus to help you understand contract obligations and terms like force majeure.

When you contact vendors or suppliers, have a candid conversation. Consider asking for an extension on invoices and payments due, and a waiver of late fees or interest penalties. Be flexible, and consider creative solutions. The vendor likely is being impacted by the economy in the same ways you are. Look for an opportunity that can benefit both parties.

**Tap into outside resources.** This isn’t a time to go it alone. Your accountant and tax advisor are important partners who can help you strategize both sides of the cash flow equation. Keep communication open with them. We also recommend leveraging the standard veterinary chart of accounts, the AAHA/VMG Chart of Accounts (avma.org/accounting), especially as you consider adding services or implementing new business models.

**Client communication supports business**

Having a strong line of communication with pet owners during and after the pandemic is critical. This is a time when small businesses, including veterinary practices, can support clients and strengthen relationships for the long term.

An ongoing communication program reminds clients not only that the veterinary clinic is open but that the health of their animals is important to the veterinary team. As you add new services and offerings, make sure clients are aware of the changes. Use social media, email, your website, text and other communication tools to share new options for care and payment.

Veterinarians who let clients know what’s happening and how the practice is protecting them as customers, keeping their animals healthy and watching out for their pocketbook will reinforce clients’ trust.

**CARES Act (and other relief programs)**

Congress has taken unprecedented steps to provide economic relief for both businesses and individuals. Speak with your tax advisor as soon as possible to understand the provisions and decide which options may be best for you. The relief measures include:
- New tax provisions
- Paid leave requirements and exemptions
- Small business loans
- Unemployment insurance
- Student loan relief
- Paid leave requirements and exemptions
- Unemployment insurance
- Student loan relief

Quick action is advisable, particularly for loan applications. Even if you’re not certain you’ll need a loan, it might be wise to err on the side of caution and apply in good faith. The economic situation is fluid and changing. Talk with potential lenders and start the application process sooner rather than later, and you’ll be in the best possible position to take advantage of programs that can help your business.

**Looking ahead**

While the social and economic disruptions we face now are significant, there’s much reason to be hopeful. Even before COVID-19, the veterinary landscape was changing with increasing momentum. The human-animal bond is stronger than ever, pet owners are turning to veterinarians for greater guidance and demands on food production are growing exponentially.

Veterinary professionals have been adapting to these changes with agility and innovation, and we continue to evolve to address COVID-19. Practices are implementing telemedicine and other solutions that meet the needs of patients and clients efficiently. As we move toward an eventual return to normalcy, we should be proud of a veterinary profession that is—and always has been—working to make sure pets, practices and people are in a better place together.

**Navigate COVID-19 with AVMA tools**

The AVMA is committed to supporting the profession through the COVID-19 pandemic, and we’ve developed a wide range of resources for all practices. These include tools to help with patient care, team safety, wellbeing, economics, understanding relief programs, and more. They’re all at avma.org/coronavirus and are being updated regularly to reflect the ever-changing situation.

Dr. Salois worked in private industry, government and academia before joining the AVMA in 2018 as director of veterinary economics. From 2016 to 2018, he served as director of global scientific affairs and policy at Elanco Animal Health, supervising a team of scientists in veterinary medicine, human medicine, animal welfare, economics and sustainability. Before joining Elanco, Dr. Salois was chief economist with the Florida Department of Citrus, where he led economic and market research activities to drive industry growth and profitability for citrus growers. He previously served as an assistant professor at the University of Reading in the U.K., and also has held positions with the University of Florida and University of Central Florida.
Dr. Marge Lee owns a successful small animal practice in South Florida. Many of her clients are older, part-time residents or “snow birds.” Recently, two of her long-time clients told her they wanted to get a new pet, but both were concerned about these newer pets outliving them.

Dr. Lee’s initial response was along these lines: “Oh don’t be silly, you’re going to live a long time together with your pets.” But after giving the idea some careful thought, she realized the answer isn’t that simple. Helping an elderly client make this decision calls for an in-depth discussion.

Helping elderly clients plan
Dr. Lee believes there is no reason to deny an elderly person the reward of living and joyously interacting with a companion pet. On the other hand, she understands that life’s realities must be factored into this decision. If a client feels there’s a possibility that they may not outlive their pet, the veterinarian should be able to offer both assistance and viable options for consideration.

Dr. Lee scheduled appointments with both clients to address their concerns. Here’s the advice she offered:

• Find out whether your children, or other family members or friends, would be willing to take on ownership of your pet after you’ve passed on. This requires serious and thoughtful discussion, and would benefit from a legal document outlining the agreement.

• Formalize a document earmarking a portion of your estate (if possible) to assist with upkeep and medical care for your pet.

• Ask your veterinarian to consider being named in this document as the final arbiter of medical decisions for the pet.

• If your pet has a chronic illness or behavioral issues, and would not do well in another household, you may need to make the difficult decision to elect humane euthanasia.

The happy client
The first client is an elderly woman who has two middle-aged house cats. She lives alone with her pets but is far from reclusive. This client felt Dr. Lee’s suggestions were very reasonable and helpful. She even asked Dr. Lee if she would consider being the final arbiter for her pet’s medical decisions.

The offended client
Dr. Lee’s second client is an elderly gentleman who currently owns a small terrier. He was quite offended that Dr. Lee, his pet’s long-time health care provider, would be so willing to recommend euthanasia. He also felt that if a friend or relative agreed to adopt his pet, there would be no need for a formal agreement.

Dr. Lee is disappointed that this client disagreed with her recommendations, but she did her best to respond in an honest, ethical manner.

Do you agree with Dr. Lee’s approach, or do you feel this type of counseling should be handled by other professionals? Email us and let us know at dvm360news@mmhgroup.com.

Dr. Rosenberg’s response
I feel very strongly that as veterinarians, we aren’t just animal caretakers. We’re also animal advocates. Our training and experience make us experts. When an animal is having an issue, whether it be medical, behavioral or one that requires some form of advocacy, it is our job to intervene.

Fortunately, Dr. Lee realized that clients inquiring about postmortem planning were not looking for comforting platitudes but rather sound directives. That is exactly what she offered them. The truth is, everyone won’t be happy after these types of conversations, but veterinarians should be prepared to provide valuable information when these inquiries arise.
Many veterinary hospitals utilize practice management software to help their business run more efficiently and profitably. Good software can help teams gather patient and client demographic information, schedule appointments, automate invoicing and accounting functions, keep patient medical records organized and up to date, track inventory, provide detailed reports about the function of the practice and much more.

Despite the abundance of available options, choosing the ideal software solution for your hospital can be daunting. It’s a choice that requires serious consideration of your particular practice needs.

If you’re in the market for new practice management software, we’ve got great news. We’ve spoken with many of the major players and reviewed the market landscape to compile a detailed chart about many of the products on today’s market, including their features, functionality, costs, support and more. Our list is not exhaustive, however, and many other software options are available.

**Think before you shop**
The information we’ve provided on the following pages can save hours of research and help you narrow down your practice’s options. But before you select a product, be sure to consider your many business needs and desires. Here are some questions to think about:

- What types of patient or client data would you like to capture?
- Does your practice send electronic appointment reminders and offer online scheduling? (Hint: You should.)
- Does your practice have more than one physical location?
- Do you need to have access to your data even when the practice is closed?
- Do you plan to expand or add services in the future?
- How much can you afford in upfront and monthly costs?
- Are you using any other apps or software products that must integrate into the management software?

**The bottom line**
Before you commit to a practice management software product, do your research and consult with colleagues to determine what they like and don’t like about their software. And be sure to include your entire team in whatever decision you make.
<table>
<thead>
<tr>
<th>Software</th>
<th>No. of practices using</th>
<th>Software cost</th>
<th>Features</th>
<th>Record migration?</th>
<th>Mobile functionality</th>
<th>Training</th>
<th>Technical support</th>
<th>Warranty</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIGalaxy and AIGenesis; AI VetPortal releasing July 2020 (Animal Intelligence Software; animalintelligence.com)</td>
<td>&gt;200</td>
<td>Varies based on in-clinic or cloud-based version</td>
<td>Customized, fully integrated paperless medical records with inventory, pharmacy, communications, reminders, scheduling, text messaging, email, invoicing and estimates; client referral tracking; optional boarding module; lab and QuickBooks integration; integrated treatment sheet/flow sheet; searchable client and patient data; telemedicine; integrations with multiple ancillary services; personalized referral letters and client handouts; interactive digital imaging with DICOM capability; integrated credit card processing; accounts receivable and billing; business reporting; inventory ordering, electronic drug log</td>
<td>Yes</td>
<td>Yes (cloud version)</td>
<td>Online; on site at extra cost</td>
<td>Phone, email, online chat and fax; 24/7 emergency support at no extra cost</td>
<td>No</td>
</tr>
<tr>
<td>AVImark (Covetrus; avimark.net)</td>
<td>&gt;10,000</td>
<td>Varies depending on configuration</td>
<td>Financial reporting; electronic medical records; reminders; embedded telemedicine; enhanced information searches; wellness plans; inventory management; integrations with online scheduling; bi-directional digital imaging and lab integrations; prescription management; dozens of vendor partners</td>
<td>Yes, $1,800-$2,600</td>
<td>No</td>
<td>On site, video, phone, webinar and more</td>
<td>Phone, live chat, online form</td>
<td>Yes</td>
</tr>
<tr>
<td>Cornerstone (Idexx; idexx.com)</td>
<td>Not reported</td>
<td>Starts at $399/mo</td>
<td>Core financial, medical, patient and client data; client communication capabilities with Pet Health Network Pro; compliance assessment tool; electronic whiteboard and electronic charting with SmartFlow Patient Workflow software; inventory management; advanced specialty, referral and emergency practice tools; reporting and performance measurement with more than 400 reports; appointment management; staff scheduling tools; integration with Anipanion and Vetstoria enables clients to book appointments and video consultations, and captures visit details</td>
<td>Yes, time and cost vary</td>
<td>Yes, via secure remote access</td>
<td>Built-in training, live user groups and educational events, webinars and online training; custom training available at additional cost</td>
<td>Online chat, phone Hardware warranties available</td>
<td></td>
</tr>
<tr>
<td>eVetPractice (Covetrus; evetpractice.com)</td>
<td>&gt;2,000</td>
<td>$254-$755 per month depending on selected tier and services</td>
<td>Customizable; integrates with common third-party products and services; embedded telemedicine, mobile friendly, online scheduling, prescription management; coordination with in-house lab systems, diagnostics and digital imaging</td>
<td>Yes, $1,800-$2,400</td>
<td>Yes</td>
<td>On site, video, phone, webinar and more</td>
<td>Phone, email, live chat</td>
<td>Yes</td>
</tr>
<tr>
<td>ezyVet (ezyvet.com)</td>
<td>1,300</td>
<td>Monthly subscription fee based on number of users, with discounted rates for each additional site, some upfront based on individual setup requirements</td>
<td>Financial data; medical record data; patient/client data; client reminders and communications; in-clinic communication; integration with other software and outside labs; reporting; customer portal; online scheduling; clinical summaries; syndicated/split billing; integrated payment processing; automatic updates; inventory management; wellness plans</td>
<td>Yes</td>
<td>Yes</td>
<td>On site and remote</td>
<td>24/7; email, phone, online articles</td>
<td>N/A</td>
</tr>
<tr>
<td>Hippo Manager (hippomanager.com)</td>
<td>600+</td>
<td>Monthly subscription ($119 per month per full time veterinarian); no additional charges for data storage, training and support, or for additional users (e.g. technicians, practice managers, receptionists)</td>
<td>Financial management (point of sale, payment processing, invoicing); medical records; in-software DICOM viewer; whiteboard; inventory management; appointment scheduler; patient reminders; reporting; two-way texting; email; integration with major lab, wellness, pharmacy and client communication tools</td>
<td>Yes, $1,750</td>
<td>Yes (optimized for tablets)</td>
<td>Weekly live webinars, online library of recorded training videos and reference guides, in-person training available for nominal cost</td>
<td>Unlimited online and phone support Monday-Friday, 8:00-8:00 EST; urgent and emergency calls answered 24/7</td>
<td>Guaranteed 99.95% uptime; data backups and data security included</td>
</tr>
<tr>
<td><strong>ImproMed</strong> (Covetrus; impromed.com)</td>
<td>&gt;3,000</td>
<td>Varies, based on configuration</td>
<td>Customizable; accounts receivable; embedded telemedicine; boarding; health certificates; client communications; bi-directional integration with labs and digital imaging; appointment scheduling and reminders; take-home instructions; travel sheets wellness plans; inventory management</td>
<td>Yes, $1,800–$2,400</td>
<td>Yes</td>
<td>On site, video, phone, webinar and more</td>
<td>Phone, live chat, online form</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Neo</strong> (Idexx; idexx.com)</td>
<td>Not reported</td>
<td>Starts at $149/mo</td>
<td>Cloud based; core financial, medical, patient and client data; two-way diagnostic integration; procedure templates; reminders; referrals; electronic whiteboard and electronic charting with SmartFlow Patient Workflow software; client communication tools; pet owner hub; scheduling; medical record history; reporting; inventory; accounts receivable; Integration with TeleVet and Vetstoria enables clients to book appointments and video consultations, and captures visit</td>
<td>Yes, time and cost vary</td>
<td>Yes</td>
<td>Built-in training, live educational events, webinars and online training; custom training available at additional cost</td>
<td>Online chat, phone</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>Onward Vet</strong> (onwardvet.com)</td>
<td>Hundreds</td>
<td>Monthly subscription starting $200/mo</td>
<td>Built-in treatment flowsheets for hospitalized patients; whiteboard; self-service client portal; electronic signatures for estimates and consent forms; two-way integration with In-house and outside labs; credit card integration; email/text reminders; inventory management; SOAP notes; invoices; estimates and exam templates; referral management; voice recognition for note taking</td>
<td>Yes, cost varies</td>
<td>Yes</td>
<td>Live online training, video training, training manual</td>
<td>Email and phone 24/7</td>
<td>99.75% uptime</td>
</tr>
<tr>
<td><strong>SmartFlow</strong> (Idexx; idexx.com)</td>
<td>Not reported</td>
<td>$150/mo</td>
<td>Provides whiteboard functionality to view patients’ treatments and statuses. Every detail of a patient’s visit, from check-in to discharge, is captured digitally in real time and automatically recorded in your practice management software, including all charges, treatments, and reports. Easily complete treatments using an iPad, as well as customer consent forms and anesthetic forms</td>
<td>Yes, time and cost vary</td>
<td>Yes</td>
<td>Built-in training, live educational events and webinars; live and remote custom training available at additional cost</td>
<td>Online chat, phone</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>VetBadger</strong> (vetbadger.com)</td>
<td>Not reported</td>
<td>Monthly subscription; cost based on number of employees</td>
<td>Integrated telemedicine, email/text, reminders; DICOM viewer; SOAP customization; enhanced estimate templates; team workflow management; customizable wellness plans; appointment management</td>
<td>Yes, time and cost vary based on source system</td>
<td>Yes, as a web application</td>
<td>Free private test drive; free unlimited training</td>
<td>Online, email and phone</td>
<td>Lifetime access to account data even after cancellation</td>
</tr>
<tr>
<td><strong>Vetter Software</strong> (vettersoftware.com)</td>
<td>1,300</td>
<td>Monthly subscription cost based on number of users ($99/mo for one user; $149/mo for up to three users; $249/mo for up to seven users; additional plans available for larger practices)</td>
<td>Scheduling; electronic medical record management; integrated labs; patient profiles and histories; inventory management, including integrated ordering, billing, reporting; client profiles and histories; email and text reminders; wellness plans; online scheduling; treatment board for hospitalized patients; boarding; contact profiles and histories (e.g. referrals and vendors)</td>
<td>Yes, cost varies (typically $2,500–$5,000 per account)</td>
<td>Yes</td>
<td>Free online training three times per week</td>
<td>24/7 email, phone, online</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>VetOfficeSuite</strong> (vetofficesuite.com)</td>
<td>Not reported</td>
<td>Monthly subscription cost based on number of clients in system; unlimited users and devices</td>
<td>Scheduling; inventory; reminders (text and email); electronic medical records; certificates that can be digitally signed and emailed; complete suite of reports; laboratory integration (Antech); daily backup and archive</td>
<td>Yes, cost varies</td>
<td>Yes</td>
<td>Online</td>
<td>Phone, webinar and remote login</td>
<td>N/A</td>
</tr>
</tbody>
</table>

DICOM = digital imaging and communications in medicine; SAOP = subjective, objective, assessment, plan.
Fighting fleas: An update on preventive options

A veterinary dermatologist outlines the latest in flea and tick control products—and how to choose what’s best for your patients.

By Judy Seltzer, B VetMed, MRCVS, DACVD

Flea allergy dermatitis is the most common cause of itching in dogs and cats. The actual problem, of course, is hypersensitivity to the flea saliva. Fleas can also cause iron deficiency and blood loss, and serve as intermediate hosts for tapeworms and vectors for several diseases.

The ideal flea control program involves eliminating the flea population on the pet, on all “in-contact” animals and in the environment. Ideally, all pets should be protected year-round because fleas can live indoors even in the winter.

If you ask 10 veterinarians which product(s) they recommend, you will likely get 10 different answers. And that’s fine, because many of the products available today are safe and effective, enabling veterinarians to recommend what’s best based on the individual animal’s lifestyle, environment and existing health conditions.

Here is a rundown of what’s out there.

Isoxazolines—the newest parasite control products

Isoxazolines are the newest on the market and extremely effective in treating and preventing fleas and ticks (see Table). They are absorbed systemically, so the fleas and ticks are killed only when they bite the animal. Isoxazolines work by selective inhibition of gamma-aminobutyric acid (GABA) and glutamate-gated chloride channels, resulting in hyper-excitation and death of fleas and ticks.

The onset of action for all isoxazoline products is between two and four hours. Nearly 100% of fleas are killed within 8 hours, and more than 90% of ticks are killed within 48 hours. These products are excellent for dogs that live in climates where fleas and ticks are more prevalent, and they are especially good for dogs that are bathed or go swimming frequently. A new oral product containing sarolaner, moxidectin and pyrantel (Simparica Trio—Zoetis) has recently been approved to provide protection against flea, ticks, roundworms, hookworms and heartworms.

The isoxazolines have also been used successfully off label for treatment of mites such as Sarcoptes scabiei, Demodex canis and Otodectes cynotis. If products are being used off label for one of these reasons, it should be explained to the owner.

Other oral products

Additional well-known oral flea control products include Capstar (nitenpyram—Elanco) and Comfortis (spinosad—Elanco), both of which have a 30-minute speed of kill for fleas but are ineffective against ticks. Capstar must be administered daily, but it is excellent for quick relief of severe infestations. Comfortis is administered monthly.

In pets with food allergies or GI disease, the flavoring in oral products (with the exception of Capstar, which is a tablet) could lead to flare-ups of skin or GI tract problems. All oral parasite preventive products should be used with caution in patients with these types of underlying disease.

Collars

Seresto collars (Bayer) are favored by many clients who live in highly tick-infested areas. These collars contain imidaclopid for flea control and flumetrazen for tick control and can last up to 8 months. The collar must fit the animal snugly to build a layer of protection that kills fleas, and repels and kills ticks. Animals can be bathed monthly with little effect on efficacy. This product is often used in conjunction with oral or topical products in pets whose owners who want extra protection against ticks.

Topicals

Topical parasite preventives have been around for many years, and new ones hit the market every few months. These products can contain a combination of insect growth regulators, adulticides and repellents. It is extremely important not to confuse canine and feline products because certain repellents (mainly permethrin) are known to be toxic to cats.

Revolution (selamectin—Zoetis) has long been a favorite of veterinary dermatologists because it is a topical (i.e. nonfluorored) monthly option for flea and heartworm prevention. This is important because many of our patients are in the process of completing strict diet trials or have confirmed food allergies. It can be used in young pets (6 weeks for dogs, 8 weeks for cats) and is absorbed systemically, so bathing the pet will not affect efficacy. Revolution is also labeled for treatment of O. cynotis and S. scabiei along with hookworms and roundworms. It is only labeled for one type of tick (Dermacentor variabilis), so patients that live in high tick areas should be protected with other products as well to ensure good coverage. A newer preventive, Revolution Plus (selamectin and sarolaner), has been released for cats. This product protects against fleas, roundworms, hookworms, ear mites, heartworm and three varieties of ticks (D. variabilis, Ixodes scapularis and Amblyomma maculatum.)

Other topical products that are commonly recommended by veterinarians include Frontline (Plus/Gold—Boehringer Ingelheim), Advantage (II/Multi—Bayer), K9 Advantix (Bayer), Vectra/Vectra 3D (Ceva) and Activyl (Merck). All control fleas, and some provide tick or heartworm prevention as well. This list is not exhaustive, and there are additional effective products on the market. It is not uncommon to use more than one product each month for extra protection.

Choosing the right product

Overall, there are so many effective flea control products available for our patients. One just needs to consider the needs of the patient, the client and the environment to determine the best product or combination of products for each pet.

---

**Table. Available isoxazoline products**

<table>
<thead>
<tr>
<th>Brand</th>
<th>Active ingredient</th>
<th>Species</th>
<th>Route of administration</th>
<th>Minimum age</th>
<th>Minimum weight</th>
<th>Dosing frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bravecto (Merck)</td>
<td>Fluralaner</td>
<td>Dog</td>
<td>Oral or topical</td>
<td>6 months</td>
<td>4.4 lb (2 kg)</td>
<td>12 weeks</td>
</tr>
<tr>
<td>Credelio (Elanco)</td>
<td>Lotilaner</td>
<td>Cat</td>
<td>Oral</td>
<td>6 months</td>
<td>2.6 lb (1.2 kg)</td>
<td>12 weeks</td>
</tr>
<tr>
<td>NexGord (Boehringer Ingelheim)</td>
<td>Afoxolaner</td>
<td>Dog</td>
<td>Oral</td>
<td>8 weeks</td>
<td>4.4 lb (2 kg)</td>
<td>1 month</td>
</tr>
<tr>
<td>Simparica (Zoetis)</td>
<td>Sarolaner</td>
<td>Dog</td>
<td>Oral</td>
<td>6 months</td>
<td>2.8 lb (1.3 kg)</td>
<td>1 month</td>
</tr>
</tbody>
</table>

---

*dm360*
Seresto®

Stock the alternative flea and tick protection pet owners love.

No Odor • No Greasy Mess • No Monthly Doses

©2019 Bayer, Shawnee Mission, Kansas 66201. Bayer and Seresto are registered trademarks of Bayer.
When things go wrong in the feline pancreas

Subtle, nonspecific clinical signs coupled with no identifiable trigger make pancreatic disease an elusive diagnosis.

By Joan Capuzzi, VMD

The pancreas is basically a bag of enzymes and hormones. The potent compounds it releases function as key activators needed for life. Sickness results when the pancreas becomes overzealous or, alternatively, slacks off.

The active pancreas

The pancreas has two functional compartments: The endocrine pancreas releases compounds into the bloodstream, and the exocrine pancreas delivers its products to target organs via ducts. The endocrine portion consists of alpha, beta and delta cells that produce glucagon, insulin and somatostatin, respectively. In cats, the main disease of the endocrine pancreas is diabetes mellitus, sometimes resulting from insufficient insulin production.

The larger component—the exocrine pancreas—consists of acinar cells that make and secrete enzyme precursors, orzymogens. When mixed with pancreatic proteases situated in the intestinal lumen, thesezymogens transform into digestive enzymes like amylase and lipase. The pancreas also secretes bicarbonate, which neutralizes stomach acid, antibacterial proteins, and intrinsic factor, which aids absorption of the vitamin cobalamin. Pancreatitis is the most frequently diagnosed condition involving the exocrine pancreas.

The endocrine and exocrine portions of the feline pancreas may conspire to produce disease,
explained Scott Owens, DVM, MS, DACVIM, an internist at MedVet Indianapolis, at the Fetch dvm360 conference in San Diego. For instance, diabetes mellitus—more an issue of insulin resistance than deficiency in cats—can be triggered by pancreatitis. Although this association is unconfirmed in cats, one study links about 40% of diabetes cases with pancreatitis.1-4

The hyperactive pancreas
Pancreatitis is the culmination of inappropriate activation ofzymogens within the pancreas that cause autodigestion.2 Here, pancreatic endothelial membranes become damaged, microvascular circulation gets disrupted, free radicals are dispersed, and local ischemia, abscesses, edema and fat saponification result.

In dogs, this toxic cascade can often be traced back to a fatty meal or a trashcan raid. Most affected dogs vomit, demonstrate overt abdominal pain and stop eating altogether. But in cats, the disease usually has no obvious cause and is often silent. “The signs are a lot less clear [in cats] than what we often associate with dogs,” Dr. Owens said. Often, the only clues are mild lethargy, reclusiveness, decreased appetite and possible weight loss. Fewer than half of these patients vomit, and only one in 10 has diarrhea.

Highly underdiagnosed in cats, pancreatitis is often acute-on-chronic once found. Necropsy studies have shown evidence of pancreatic inflammation in some 67% of cats, yet half of these had no history of associated clinical signs.

Dr. Owens shared the case of Gracie, a cat with a two-day history of lethargy and diarrhea. On presentation, Gracie was quiet, drooling and febrile (105.5°F). Blood work showed severe neutropenia (with left shift), thrombocytopenia, borderline-high bilirubin, and normal amylase and lipase. Dr. Owens’ differential diagnosis for Gracie was severe gastroenteritis, obstruction/intestinal perforation, pylonephritis, feline pleuropneumonia and pancreatitis. The cat tested negative for parvovirus, but the Spec fPL (Idexx) was elevated at 19.1 µg/L (normal, 0-3.5 µg/L). Ultrasound revealed an enlarged pancreas with a thickness of 2 cm and a slightly dilated pancreatic duct. The diagnosis: severe pancreatitis.

Gracie was treated with fluids and broad-spectrum antibiotics (due to severe neutropenia), buprenorphine and an appetite stimulant. Within a few days, she was afibrile and her neutropenia was resolved. She went home on Hill’s Prescription Diet i/d because of a food hypersensitivity she’d developed while hospitalized.

Gracie is just one face of pancreatitis, Dr. Owens said. While most cats with pancreatitis are dehydrated on presentation, only 7% are hypothermic; 68% are hypothermic as a result of poor perfusion. Fewer than two in 10 manifest abdominal pain, but 38% are icteric due to either associated hepatic lipidosis or inflammation around the bile duct leading to post-hepatic obstruction.

Blood work may show azotemia, neutrophilia/neutropenia and mild anemia, Dr. Owens said. The Spec fPL is typically elevated, despite normal serum amylase/lipase; the SNAP fPL and the serum trypsin-like immunoreactivity (TLI) tests are less useful due to low specificity and low sensitivity, respectively. Pylonephritis should be ruled out by urinalysis.

Ultrasound, despite its poor sensitivity for pancreatitis in cats, might show an enlarged, hypechoic pancreas, dilated pancreatic duct surrounded by edema, and saponified fat, indicated by bright mesentery. Crystalloids should replace fluid deficits over 24 hours, and be continued thereafter to maintain blood pressure and diuresis, said Dr. Owens. “You need to replenish before you can flush out the toxins.”

Colloids (VetStarch [Zoetis] or plasma) can be added if hyperalimentation or vasculitis/edema are present. Once hydrated, dopamine, dobutamine or norepinephrine may be used to support blood pressure. For pain, which is often present but inapparent in cats, buprenorphine and fentanyl are effective. Antiemetics and appetite stimulants are important. Eating enables reperfusion of the damaged pancreas and resolution of any associated hepatic lipidosis.

In the case of triaditis—inflammatory bowel disease, cholangiohepatitis and pancreatitis—corticosteroids are a potent adjunctive treatment. Dietary changes, if indicated, are aimed at reducing allergens (for inflammatory bowel disease) rather than fat.

The lazy pancreas
Exocrine pancreatitis insufficiency (EPI) is often the antipodal end stage of chronic pancreatitis. The pancreas simply burns out.4 In one study, 10 of 16 affected cats had a known history of pancreatitis. Uncommon in cats, EPI results from the loss of acinar cells and the enzymes they manufacture; it is not clinically apparent until about 95% of pancreatic function is absent.

Unlike dogs with EPI, which typically present with a ravenous appetite and voluminous stools, feline patients often manifest weight loss only, although polyphagia, diarrhea and vomiting can occur. Diagnosis is confirmed by low serum trypsin-like immunoreactivity. Most cats respond quickly to supplemental pancreatic enzymes that can be sprinkled onto moistened food. Because EPI can hinder cobalamin absorption, serum cobalamin should be measured and, if low, treated with injectable vitamin B12.

Other pancreatic diseases
Pancreatic adenocarcinoma is uncommon in cats and typically diagnosed by ultrasound. Signs include anorexia, weight loss, and alopecia and shiny skin on the ventrum. It carries a guarded prognosis, especially if metastasized at the time of diagnosis. In one study, 11 of 34 cats diagnosed with pancreatic adenocarcinoma had metastatic disease on presentation.7 The median survival for all subjects was three months, but it was slightly longer for those that underwent surgery and/or chemotherapy; 10% of cats lived for over one year.

Some less common feline pancreatic conditions include pancreatic cysts and abscesses (which are often secondary to severe pancreatitis) and parasitic infestation.

REFERENCES
Take 5: Key points for managing cutaneous mast cell tumors in dogs

They’re anything but predictable—and unfortunately very common. Here’s what veterinarians need to keep top of mind when managing this malignancy.

By Michael O. Childress, DVM, MS, DACVIM (oncology)

Do canine mast cell tumors (MCTs) drive you crazy? If so, I suspect you probably aren’t alone. The clinical behavior of these tumors runs the gamut from relatively benign to highly malignant, making it challenging to decide on the best treatment approach for an individual tumor.

Surgical removal is the mainstay of treatment for most MCTs, while chemotherapy and radiation therapy are valuable adjunctive treatments (or alternatives) to surgery in some cases. When deciding on which course of therapy is best for dogs with cutaneous MCTs, here are five key points to keep in mind.

1. The most important step in managing dogs with cutaneous MCT is determining whether the tumor is surgically curable. This seems inherently logical, but rational thinking can be subverted by unreasonable expectations of surgical benefit harbored by pet owners and veterinarians alike. Most veterinarians are aware that histopathologic grade is the factor most associated with survival after surgical MCT excision. Unfortunately, this factor cannot be assessed until after the tumor is removed, so veterinarians must rely on other clinical features to decide whether to attempt surgery.

Small, solitary, slow-growing tumors on areas of the body amenable to wide surgical excision (such as the trunk) are usually excellent candidates for surgical removal. On the other hand, tumors that are large, rapidly growing or located at sites where wide excision is challenging may not be. These latter tumors are often high-grade cancers that cannot be cured with surgery.

Other clinical features that are more common in high-grade MCTs include bleeding or ulceration after surgical MCT excision. Unfortunately, this factor cannot be assessed until after the tumor is removed, so veterinarians must rely on these clinical features to decide whether to attempt surgery.

2. Surgery does more harm than good for some dogs with cutaneous MCTs. Approximately 40% of surgically resected high-grade MCTs will recur locally even if “clean” margins are identified on the histopathology report. Managing locally recurrent MCTs is extremely challenging, as these tumors often grow more rapidly and extensively than the original tumor. Heparin and tissue proteases released by neoplastic mast cells at the surgical site can cause hemorrhage, surgical wound...
that fell into grade 2. Well, but it fared poorly with tumors of grade 1 and grade 3 tumors very system predicted the clinical behavior with increasing grade number.1 This biological aggressiveness associated (grade 3) grades, with increasing 

1984 divided MCTs into low (grade 1), intermediate (grade 2) and high (grade 3) grades, with increasing biological aggressiveness associated with increasing grade number.1 This system predicted the clinical behavior of grade 1 and grade 3 tumors very well, but it fared poorly with tumors that fell into grade 2. The more recent two-tiered system proposed by Kiupel and coworkers in 2011 circumvents this problem by classifying MCTs as either low-grade (grade 1) or high-grade (grade 2), eliminating the intermediate-grade designation altogether.2 In the initial report describing this system, dogs with low-grade MCTs survived more than two years after surgical tumor removal, while dogs with high-grade MCTs survived less than four months. Subsequent reports have confirmed the prognostic relevance of the two-tiered system, although it does fail to predict outcome for about 5% to 10% of dogs with low-grade MCTs that ultimately succumb to tumor-related death.22 Importantly, the two-tiered system is applied consistently by pathologists, who agree on tumor grade in more than 95% of cases when using it.2 This compares with rates of agreement of approximately 60% to 70% when using the three-tiered system.24

4. Dogs with multiple cutaneous MCTs usually have a good prognosis. One of the most frustrating syndromes in dogs with MCTs is that of multiple cutaneous tumors. This syndrome vexes pet owners and veterinarians alike, who may worry that the presence of multiple MCTs implies a systemic, life-threatening disease. However, many—if not most—of these dogs appear to have a favorable prognosis. Veterinarians do still need to be mindful of the clinical features associated with aggressive tumors (see point 1) when assessing dogs with multiple cutaneous MCTs, as dogs with multiple large, rapidly growing, ulcerated tumors probably do have a life-threatening disease (Figure 2).

But most dogs with multiple MCTs tend to present with small, slow-growing tumors. In such cases, surgical removal of one or two representative tumors is recommended to establish their histopathologic grade (they are almost always low-grade). If a low histopathologic grade is confirmed, watchful waiting is prudent, accompanied by batched surgical removal of several tumors at a time if new tumors continue to form (and they often do). There is no evidence that any medical therapy prevents new tumors from forming in these cases, which can be upsetting to pet owners. However, reassuring these owners that the disease is not life-threatening (think of it as “mast cell acne”) can help to ease their concerns.

5. The most useful chemotherapy drugs for cutaneous MCTs are toceranib, vinblastine and prednisone. Chemotherapy is indicated for dogs with MCTs that cannot be removed surgically or dogs that have undergone successful surgical removal of high-grade tumors, which carry a significant risk for metastasis. In the first of these settings, chemotherapy is given with palliative intent, with the goal of temporarily shrinking the tumor and improving the dog’s quality of life. In the second, chemotherapy is given to prevent or delay metastasis, thereby extending survival. Toceranib (Palladia-Zoetis), vinblastine and prednisone are the drugs that most reliably achieve either one of these outcomes.

Because its spectrum of side effects does not overlap with that of toceranib or vinblastine, prednisone can be combined with either drug, which may result in additive or synergistic anti-tumor activity. Combinations of toceranib and vinblastine, however, have proven too toxic to recommend their use at this time. Other drugs whose use for treating MCTs is reported include lomustine (CCNU), cyclophosphamide and chlorambucil. However, these drugs appear to be less effective than the aforementioned three, and they probably should not be used in the first-line treatment setting.

Dr. Michael O. Childress is associate professor of comparative oncology at Purdue College of Veterinary Medicine.

REFERENCES
Efficacy of laser therapy in veterinary medicine: thoughts from a novice

By Joshua G. Levinson, DVM, DACVECC

Like many clinicians, I find it daunting to stay current with the many evolving topics in veterinary medicine. Photobiomodulation (also referred to as low-level laser therapy [LLLT] or cold laser) represents a particularly challenging modality to approach for several reasons. For one, colleagues who know more about LLLT than I do have a wide range of often strong opinions regarding its effectiveness. Also, the biophysics involved are less familiar to me than are other aspects of veterinary medicine. Nevertheless, the use of LLLT is quickly becoming widespread for a wide range of applications, and I thought I should learn a bit more about it.

For those who can relate, what follows is my novice attempt to reach an evidence-based and open-minded opinion about the efficacy of LLLT in small animal patients.

A broad overview

As I started my inquiry, I found that an American Society of Laser Medicine and Surgery exists, with an official journal: *Lasers in Surgery and Medicine.* This journal ranks in the top 25% for journal impact factor (which reflects frequency of citation) for both dermatology and surgery impact. After reading in this journal and related others, two things stood out to me:

1. The reports on LLLT are largely encouraging.
2. Unfortunately, a novice is in no position to rigorously evaluate this massive body of data.

From what I did read, the benefits of LLLT in people and laboratory models are numerous: cosmetic skin applications, wound healing, edema reduction, return to function from sports injuries, improving vaginal health, dental healing, head trauma recovery and many more. The efficacy of LLLT did seem hard to discount after this reading. Of the studies that reported discouraging results, most generally concluded with confidence that optimization of protocols would improve outcomes.

Because I lacked a clear, evidence-based conclusion from my broad review, I turned specifically to the veterinary literature. Searching for small animal investigations from major journals, I found nine recent publications. All happened to study dogs, and applications of LLLT were identified in dermatology, tibial plateau leveling osteotomy (TPLO) and intervertebral disk disease (IVDD).

**Exploring the veterinary research**

**Dermatology studies**

Most of the veterinary research on LLLT relates to applications for the skin. Two recent articles evaluated the healing of wounds in healthy skin. In the first study, the investigators created and then closed 20 incisions in intact male beagles. No differences were found between LLLT or sham treatment for epithelization, contraction or histopathology. The same study also looked at the effect of LLLT on 20 incisions that were left open to heal, and again found no effect. In a second study, LLLT was used in 10 female dogs during bilateral flank spay procedures. The investigators found relatively less necrosis and fewer perivascular lymphocytes in the incisions in the LLLT group at day 7, but more perivascular lymphocytes in the LLLT group at day 14. No differences were found between groups visually during healing or with any other histologic variable. Taken together, these two studies of healing of healthy skin with LLLT are discouraging.

Two studies investigated LLLT use in abnormal skin. In a 2014 study published in Veterinary Dermatology, Olivieri et al. reported a dramatic improvement in canine noninflammatory alopecia using LLLT, in that much more fur grew with LLLT than in a control group. In the same journal and year, Stich and colleagues found no effect of LLLT on pedal pruritis due to atopy.

**Surgery studies**

Three reports on the use of LLLT in promoting healing after TPLO surgery have been published since 2017. The largest study, reported in *Veterinary Surgery* in 2018, examined 95 dogs and found LLLT-associated improvement with regard to owner assessment of gait. No improvement was seen with regard to pain management or radiographic healing. Results of a 2017 study showed that LLLT was associated with improved surgical limb function eight weeks postoperatively in 27 dogs undergoing TPLO, as evidenced by more force applied to a plate. The smallest study, involving 12 dogs, found more lameness and more pain during the first postoperative month in the LLLT group. The investigators found no differences at 8 weeks, or at any time point, radiographically or cytologically. So, the two larger studies were encouraging, and the smallest one was discouraging.

Two reports on dogs undergoing hemilaminectomy examined postoperative use of LLLT. A 2012 study involving 36 dogs demonstrated dramatic shortening of time to return to ambulation with LLLT (median of 3.5 days vs. 14 days for controls). A study from 2017 compared 11 dogs treated with LLLT postoperatively with 10 dogs treated with sham LLLT. No differences were found between the LLLT and sham groups at several recovery benchmarks, including initial limb movement, ability to stand with some support, ability to walk at least 3 steps, and ability to walk at 10 days.

**Conclusions**

Making a broad conclusion about the effectiveness of LLLT based on the above nine canine studies is fraught on several levels, including that the studies involve different disease states and different protocols. Considering that substantial caveat, however, I can draw one conclusion: Five of these nine studies (55%) revealed at least one metric showing a benefit of LLLT compared with control.

Of note, the above text was reviewed at a well-regarded specialty facility that commonly uses LLLT. Feedback included the facts that several of the referenced discouraging studies were flawed by not reporting all critical parameters, and that such discouraging results could be attributed...
to underdosing, which is often a problem in use of LLLT. While this article was undergoing review, Veterinary Dermatology published an article on the use of LLLT in 36 dogs with interdigital pyoderma. The investigators found that LLLT shortened resolution of lesion time from 10.4 to 4.3 weeks.

Now at the end of my initial attempt to form an opinion on LLLT efficacy in small animal patients, I would emphasize my humility in the face of others’ expertise. That noted, following are my conclusions from exploring the recent articles about LLLT in major small animal publications:

- I see discouraging data for LLLT use in healing healthy skin incisions as well as conflicting reports on its use for spinal cord injury recovery.
- Use of LLLT in TPLO recovery seems more promising than not, and perhaps this information can be generalized for all orthopedic surgeries.
- Effectiveness in diseased skin seems dependent on the condition.

I look forward to further research as it becomes available, of course, but I now feel comfortable referring cases for LLLT as long as the status of current research is made clear to clients.

Dr. Levinson became board certified in veterinary emergency and critical care in 2010. He practices at Brenford Animal Hospitals in Dover, DE, where his interests include echocardiography and fostering a Fear Free environment.

REFERENCES
Inhalational anesthetics have an air of mystery about them—an attribute that Mike Barletta, DVM, MS, PhD, DACVAA, finds amusing. “It just blows my mind that we don’t really know how inhalants work,” he said with a laugh at a recent Fetch dvm360 conference. “They’re the most used anesthetic drugs, and we don’t even know their full mechanism of action.”

But what is known can help you compare inhalants, said Dr. Barletta, an associate professor of anesthesia at the University of Georgia College of Veterinary Medicine. He described the following scenario: A representative for inhalant X comes to your clinic and says, “You need to buy inhalant X. It’s way better than the inhalant Y you’ve been using.”

If you know the basics about vapor pressure, solubility and minimum alveolar concentration (MAC), Dr. Barletta said, you’ll be able to discern whether X really is better than Y and worth the switch (and the potentially higher price tag).

Knowledge is power. To get the confidence, you’ll need to understand three concepts: vapor pressure, solubility and MAC.

**Vapor pressure**

“First things first,” said Dr. Barletta. “We talk about ‘gas anesthesia,’ but we should be talking about ‘vapor anesthesia.’ Isoflurane, sevoflurane and desflurane are administered as vapors. A vapor is a substance in its gaseous phase that can be condensed to a liquid by increasing the pressure without reducing the temperature.”

According to Dr. Barletta, this is possible because room temperature is lower than the critical temperature (i.e. the temperature above which the gas cannot be liquefied by pressure alone) of that specific vapor.

**The chemistry of vapor pressure**

Defining vapor pressure requires a quick chemistry lesson. When molecules of a liquid evaporate in a closed container, they can’t escape and eventually condense back into a liquid. When the rate of evaporation equals the rate of condensation, the gas is at equilibrium with the liquid, and the pressure it exerts at this point is defined as its vapor pressure. The temperature at which the

---

**What’s so sensational about inhalational?**

Inhalational anesthesia tops injectable in several ways, Dr. Barletta said. First, it allows you far more control, since you can adjust it throughout the anesthetic event.

It’s also easier to monitor how much drug is in the animal. “If you have a gas analyzer for inhalants, you have a good idea of how much of the inhalant is in the animal’s body every time it exhales,” he explains. “If you want to do that with injectable, you’d have to get a sample of the target organ, which in anesthesia is the brain. So, you could do that—but it would probably be the last thing you do for that patient.”

Another perk: Injectable anesthetics are metabolized and excreted renally, while inhalational anesthetics are mostly eliminated via the lungs.

---

**What’s not so sensational about inhalational?**

So why not use inhalants all the time? Anesthesia machines are expensive, bulky and require maintenance, Dr. Barletta said. Moreover, because inhalational anesthesia causes cardiovascular depression, it isn’t well tolerated by all patients.

“I’ve had cases where I’ve had to turn the gas off and put the patient on injectable drugs because every time we’d turn on even minimal inhalants, the patient’s blood pressure would drop to the floor,” he said.
vapor pressure equals the barometric pressure—is termed the boiling point.

To put things into a practical perspective, Dr. Barletta looked up the atmospheric pressure for Kansas City, Missouri, where his session was taking place. “It’s 740 mm Hg at 20°C,” he noted. “The vapor pressure of desflurane is close to 700 mm Hg at 20°C. That means that if you’re going to open that bottle, it will start boiling at around 70°F. That’s why desflurane has to be sealed in a bottle at all times. It has to be pressurized and locked into a special vaporizer before opening, which is why most people don’t use desflurane.”

“Looking at Table 1, you realize how much damage we can do if we’re just putting some isoflurane on a cotton ball and putting it in front of a bird or cat or even a big dog,” said Dr. Barletta. “You’re delivering about 32% isoflurane. How high does the dial go on your isoflurane vaporizer? Five percent. You can kill a dog if you leave the vaporizer at 5%, so imagine if you’re giving almost 32%.”

Partial pressure
Because inhalants are delivered with other gases, it’s important to understand partial pressure—the pressure exerted by a particular gas within a mixture—as well, Dr. Barletta said. “We talk about percentages, because inhalants are measured in volume percent,” he adds. “If I say I’m giving 2% isoflurane, what does that mean? It’s the percent of the mixture that I’m giving. So, if I give 2% isoflurane, it means that maybe 95% is oxygen and the rest is all the other gases that are coming out of the animal.”

Here’s the equation: Volume % = Vapor pressure/Barometric pressure x 100

“If I want to calculate 2% isoflurane into mm Hg, which is how we measure an inhalant’s partial pressure, it’s just 2% of the atmospheric pressure,” Dr. Barletta explained. So, for Kansas City, it would be 0.02 x 740 mm Hg = 14.8 mm Hg.

Partial pressure plays a pivotal role in inhalational anesthesia, Dr. Barletta said. “Though we don’t know much about inhalant anesthesia’s mechanism of action, we do know that inhalants move thanks to the partial pressure gradient,” he said. “Gases move from areas of high partial pressure to areas of lower partial pressure. So, when you turn on the anesthesia machine, which has a high partial pressure, the gas will move into the lungs, where the partial pressure is very low. Once the partial pressure gets high enough in the lungs, it moves to the blood and from the blood to the organs. Movement continues until you reach equilibrium.”

When you turn off the gas, the process is reversed until the inhalant is eliminated completely and the patient wakes up.

Think of it this way, said Dr. Barletta: “Imagine I have two boxes with two different substances: air and blood. Inhalant molecules can move from one box to the other, but blood and air remain in their respective boxes. I pour inhalants into the air compartment. I have a certain amount of molecules, which is the concentration. These molecules start moving around in the air box and develop partial pressure. Because gases move from areas of high partial pressure to areas of lower partial pressure, inhalant molecules will start moving into the blood box until the partial pressures in each box are exactly the same.”

How many molecules are in each box?
“We don’t know. It depends on how well the molecules dissolve into the substances. I could have a lot of molecules in the air and very few in the blood and still have the same partial pressure in each, or vice versa,” Dr. Barletta explained. “But what I’m interested in is partial pressure because that’s what I can measure. It’s an important concept because in order to anesthetize an animal, I have to reach a certain partial pressure in its brain. At equilibrium, the partial pressure of inhalants in the animal’s brain is the same as in its blood and lungs and what comes out of its lungs when it exhales. If I can measure that, I know exactly how much of the inhalant is in the animal’s brain, which determines whether or not that animal is going to fall and stay asleep.”

---

**Table 1.** Boiling point, vapor pressure and maximum concentration of isoflurane, sevoflurane and desflurane

<table>
<thead>
<tr>
<th>Inhalant</th>
<th>Boiling point (at 760 mm Hg)</th>
<th>Vapor pressure (at 20°C)</th>
<th>Maximum concentration (at 20°C, 760 mm Hg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Isoflurane</td>
<td>48.5°C</td>
<td>238 mm Hg</td>
<td>31.3%</td>
</tr>
<tr>
<td>Sevoflurane</td>
<td>58.6°C</td>
<td>157 mm Hg</td>
<td>20.7%</td>
</tr>
<tr>
<td>Desflurane</td>
<td>22.8°C</td>
<td>669 mm Hg</td>
<td>88%</td>
</tr>
</tbody>
</table>
Solubility

“When we talk about an inhalant’s solubility, we’re referring to its solubility in blood,” said Dr. Barletta. “The solubility of inha- lational anesthetics in blood is measured using the blood-gas partition coefficient, which describes how the gas partitions itself between the blood and the alveoli. The higher the coefficient, the more soluble the anesthetic is in the blood. An inhalant with a higher blood-gas partition coefficient will take longer to reach equilibrium (i.e. partial pressure) because it likes to sit in the blood. It’s comfortable there. But an inhalant with a lower coefficient doesn’t like it. It goes into the blood and bounces out and reaches equilibrium quickly.”

Thus, highly soluble anesthetic agents will take longer to induce general anesthesia, to recover and to make a change in anesthetic depth. “In other words,” he explained, “solubility means speed and control.”

As a professor, Dr. Barletta is always ready with an illustration: “Imagine I’m holding a cup of water over a sponge that’s placed over a bucket. The water in the cup represents my inhalant, the sponge is the patient’s blood and the bucket is the patient’s brain. If I use the cup to pour a highly soluble inhalant into the sponge (i.e. blood), I’m going to have to pour for a long time before the sponge gets saturated enough for the inhalant to start leaking out of the sponge and into the bucket (i.e. brain) to reach the right partial pressure for my patient to fall asleep.”

For a highly insoluble inhalant, just switch out the sponge for a laminated sheet of paper. “As soon as I pour, it goes right over the edges of the sheet and into the bucket. Partial pressure is reached really fast, and the animal goes to sleep,” he said.

The blood-gas partition coefficients of isoflurane, sevoflurane and desflurane at 37°C are 1.4, 0.6 and 0.4, respectively. “Clinically speaking, there isn’t a huge difference between the solubility of isoflurane and sevoflurane,” said Dr. Barletta. “So if someone tries to sell you on sevoflurane being faster, it’s true, but not by that much—maybe a few minutes. Is it worth the extra money? I’ll let you answer that question.”

Minimum alveolar concentration

If solubility can be boiled down to speed and control, then the MAC is all about potency. “The MAC is the volume percentage of an inhalation anesthetic required to prevent movement in 50% of subjects exposed to a supramaximal stimulus,” Dr. Barletta explained. “The lower the MAC, the greater the potency.”

It’s also important to know that MAC values are additive, meaning two inhalants used in the same patient work synergistically, Dr. Barletta said. “The lower the MAC, the higher the potency. “Remember that this is the percent of inhalants the animal has to exhale,” Dr. Barletta noted. “That’s the partial pressure we need to reach in the brain. In order to have 99% of animals not move, we need to multiply the MAC by 1.4 or 1.5.”

Isoflurane in dogs, for example, would be calculated like this: 1.4% × 1.5 = 2.1%. “That’s pretty high for isoflurane, if you think that this isn’t what you’re dialing on your vaporizer,” he explained. “This is what’s coming out of the animal. So, you’d probably need to put the dial at 3.5% or 4% at the beginning of the anesthetic event. But because we’re using so many other drugs, such as opioids, benzodiazepines and other sedatives and analgesics, this number goes way down.”

Most of the animals Dr. Barletta has anesthetized in the past four or five years have been on constant-rate infusions of ketamine or fentanyl in order to decrease the amount of inhalant needed. “We’ve able to run isoflurane at around 1%, which is good because inhalants depress the patient’s cardiovascular system,” he said. “The more you use, the more they do that. So, I want to keep my inhalants low, but I still want to use the inhalants because I like the control.”

The beauty of the MAC is that inhalants do pretty much the same thing at equipotent MAC, said Dr. Barletta. “For example, at 1 MAC, the cardiovascular depression that you get from your isoflurane is the same as you get from sevoflurane and desflurane,” he explained. “So, what isoflurane does in a dog at 1.3%, desflurane does at 7.2%. This makes comparison easy. If someone comes into your clinic and says, ‘You’ve got to buy sevoflurane because it’s so much more cardiovascular-friendly’—that’s a lie.”

Knowledge for now ... and later

Though Dr. Barletta’s sessions focused on isoflurane, sevoflurane and desflurane, he says the same points of comparison and the rules that govern them will apply to new inhalants developed in the future as well—which will come in handy when their representatives come knocking.

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

Table 2. MAC values for isoflurane, sevoflurane and desflurane in cats and dogs

<table>
<thead>
<tr>
<th>Inhalant</th>
<th>MAC in dogs</th>
<th>MAC in cats</th>
</tr>
</thead>
<tbody>
<tr>
<td>Isoflurane</td>
<td>1.3%-1.4%</td>
<td>1.3%-1.6%</td>
</tr>
<tr>
<td>Sevoflurane</td>
<td>2.3%</td>
<td>2.6%-3.4%</td>
</tr>
<tr>
<td>Desflurane</td>
<td>7.2%-8.2%</td>
<td>9.8%-10.2%</td>
</tr>
</tbody>
</table>

Pop quiz on solubility

Dr. Barletta gave session attendees the following quiz to check their understanding of solubility:

If inhalant A is highly soluble and inhalant B has low solubility, which of the following is true?

1. Inhalant A will cause a faster induction
2. Inhalant B will cause a faster induction
3. Both will be equally fast.

Answer: 2. Because inhalant B doesn’t mix well with the blood, it will reach partial pressure faster and will thus cause a faster induction.
A low-tech approach to diagnosing anemia

Successful management of anemia in dogs and cats requires an accurate diagnosis and treatment of the underlying disease process. Three simple tests can help facilitate the diagnosis by classifying a patient’s anemia as blood loss, hemolysis or decreased production.

By Miranda Spindel, DVM, MS

Anemia is a common presenting complaint that often manifests with lethargy, anorexia and other nonspecific signs. Animals can also develop anemia while hospitalized as the result of underlying disease processes, surgical complications or medical interventions. At a recent Fetch dvm360 conference, L. Ari Jutkowitz, DVM, DACVECC, provided practical tips for approaching the diagnosis of this important clinical condition.

Dr. Jutkowitz, an associate professor of small animal clinical sciences at Michigan State University College of Veterinary Medicine, recommends focusing first on diagnosis and quickly trying to categorize the anemia into one of three broad categories related to cause: blood loss, blood cell destruction (hemolysis) or decreased blood cell production. The list of differentials is finite if one can categorize initially by these three causes.

Immediately after assessing the patient’s stability, three simple tests will provide valuable information about the cause of anemia. All three tests require less than about five minutes to perform and can be done as part of the initial exam. The results allow for a more focused discussion with the owner about next steps and creation of a more targeted diagnostic plan.

Packed cell volume/total solids

The first thing to evaluate is the packed cell volume (PCV; the percentage of red blood cells in a blood sample) and total solids (TS). Blood for evaluating these parameters can often be obtained from the hub of a catheter during placement. PCV must always be interpreted in conjunction with another blood constituent such as TS. Decreases in both values mean the patient is losing plasma and blood cells, and blood loss is likely. Conversely, if PCV is low but TS values are normal, whatever is happening is affecting only red blood cells and must be either hemolysis or decreased production.

It can also be useful to look at the color of the serum. An orange pigment indicates bilirubin, which suggests extravascular hemolysis. Red pigment is likely due to blood cells rupturing during circulation, and intravascular hemolysis should be suspected. The diagnostic differential and prognosis will change depending on whether intravascular or extravascular hemolysis is present.

Blood smear

Next, a blood smear should be evaluated. Blood smears are useful for differentiating hemolysis from decreased production anemia. The presence of significant polychromasia and anisocytosis may indicate a regenerative response. Alterations in cell morphology or evidence of parasites should also be assessed. If many cells have Heinz bodies (bulging red cell membranes), then oxidative damage is occurring and may be due to a toxin such as onions, ethylene glycol or garlic. Babesia canis will appear as a tear-shaped organism within the red cells. Ghost cells are red blood cells that have ruptured membranes such that the cell loses its hemoglobin and only the membrane and free hemoglobin remain. These can be indicative of intravascular hemolysis. Spherocytes are small, round cells that are seen in approximately 80% to 90% of dogs with immune-mediated hemolytic anemia (IMHA). Spherocytes are formed when a phagocytic cell recognizes and ingests antibody bound to the red cell membrane. The red cell re-forms small and round and lacking central pallor. A large number of spherocytes is common with IMHA, but IMHA shouldn’t be ruled out when this is not noted.

Saline dispersion

The third test is the saline dispersion, or slide agglutination, test. This should be performed when there is evidence of hemolysis or when agglutination of blood cells is visible. Mix a drop of anticoagulated blood from a purple-top or capillary tube with five drops of saline on a slide. Then, evaluate the slide for clumps or flecks—true agglutination—forming in the sample. The saline is added to differentiate from rouleaux. (Rouleaux can form in states of inflammation but will disperse with saline, whereas true agglutination will not.) Autoagglutination is caused by cross-linking of antibodies bound to the erythrocyte membranes. When seen, this indicates an underlying immune component to the hemolysis.

Conclusion

Because a number of diseases may result in anemia in veterinary patients, successful management of the condition relies on accurate diagnosis and treatment of the underlying disease process. To facilitate the diagnosis, three simple tests can help classify a patient’s anemia as blood loss, hemolysis or decreased production. Initiation of immunosuppressive therapy before performing a methodical search for infectious, neoplastic or other causes of anemia may result in therapeutic “misteps” and treatment failure.

Dr. Spindel serves as the shelter medicine consultant and student advocate for VIN. She initiated and completed the first residency in shelter medicine with a master’s of clinical sciences through Colorado State University in 2007, and then worked as the senior director of shelter medicine at the ASPCA for 10 years. She is a member of the Shelter Medicine Organizing Committee and Residency Committee for Shelter Medicine for ABVP. Dr. Spindel lives on a small acreage in Colorado with her daughter and dogs, cats, chickens, horses and donkeys.
**Tripsy**
Kidney supplement for cats and dogs

This all-natural supplement contains gentle herbal ingredients to encourage healthy kidney function and proper urinary health, and to soothe painful signs associated with kidney problems in dogs and cats. Ingredients include wild hydrangea to increase the flow of urine and eliminate swelling and fluid retention, and stone root to help prevent the formation of kidney calculi. Echinacea purpurea is included to stop bacteria formation, reduce inflammation and help with healing, and marshmallow root offers anti-inflammatory and immune-supporting properties to help reduce urinary tract inflammation and fight bacterial infections. The supplement also contains parsley-piert to aid digestion, gravel root to help cleanse the organs and Oregon grape to help to fight bacterial and fungal infections.

For more information, visit nhvnaturalpetproducts.com

---

**Planmeca ProX**
Two-dimensional intraoral imaging

This intraoral x-ray unit for dental radiology provides “adjustable settings to capture high-resolution images,” and its practical design makes it easy to install and use in veterinary practices. The unit can be installed on wall, ceiling and floor mounts, and it can also be used for mobile services. A steady arm and lightweight tube head allow for precise, drift-free positioning and consistent, accurate image capture. Planmeca ProX is pre-programmed with exposure settings for both large and small animals. Once an image receptor is selected, the unit automatically adapts the pre-programmed settings for digital sensor, phosphor plate or film.

For more information, visit veterinary.planmeca.com

---

**VetNOW**
Veterinary telemedicine platform

This new virtual care platform allows veterinarians to connect in real-time with both their clients and veterinary specialists across the globe. Its high-definition technology operates on a cloud-based system to enable “virtual patient examinations and remote monitoring of patient pet care.” VetNOW is compatible with practically any internet-connected device and can be used for “virtual follow-ups, urgent care, diagnostic tools and pet owner communication.” Monthly subscriptions include real-time access to board-certified specialists via a portal that can be used for virtual follow-ups, urgent care, diagnostic tools and pet owner communication. The platform also allows for safe, secure storage of patient information such as medical images and records, contact information, patient history and more.

For more information, visit vetnow.com

---

**Retrovirus Toolkit**
Diagnostic and treatment guide

Feline leukemia virus (FeLV) and feline immunodeficiency virus (FIV) infections are found in cats worldwide, with variable clinical signs that can affect both health and quality of life. The Retrovirus Educational Toolkit, developed by the American Association of Feline Practitioners (AAFP) Retrovirus Testing and Management Guidelines, and produced with an educational grant from Idexx Laboratories, is intended to help veterinary professionals diagnose and manage these retroviruses in their patients. The toolkit offers access to key feline retrovirus testing and management information for assessing patients that may be facing infection. Available in both print and digital formats, the toolkit includes an FAQ section and client resources.

For more information, visit catvets.com
Join us in Indianapolis.

At the Fetch dvm360® conference in Indianapolis, expect two days packed with industry-leading continuing education sessions and workshops that focus on every aspect of your life. You will not only receive the latest clinical updates and industry trends, but you will also learn how to maintain a healthy sense of well-being, all while connecting with influential veterinary professionals.

Register today! fetchdvm360.com/indy
dvm360 launches online CE center

This new resource offers veterinary professionals and students an opportunity to earn RACE-approved CE credit via a series of informative online webinars.

WITH SO MANY LIVE CE EVENTS being postponed or canceled as a result of COVID-19, dvm360 is excited to announce the launch of a new online continuing education (CE) center. This new learning platform was created to help veterinary professionals and students continue learning during the pandemic and beyond.

“This is an unprecedented time for everyone, but dvm360 understands the necessity of continuing education in order to improve veterinary practice and meet ongoing certification requirements,” says Mike Hennessy Jr., president and CEO of MJH Life Sciences, the parent company of dvm360. “While live events are not a safe option, we are committed to providing education for veterinary professionals with our online CE center.”

Designed to support veterinary health care professionals at all levels, the dvm360 CE Center features 10 hours of informative courses led by key industry leaders. By purchasing a one-time subscription, you will gain access to our library of webinars covering today’s most relevant topics:

- COVID-19
- Telemedicine
- CBD
- Pain management
- And more!

Each webinar will earn attendees 1 hour of RACE-approved CE credit.

dvm360’s Chief Veterinary Officer Adam Christman, DVM, MBA, and the participating veterinary experts will also provide insightful and meaningful ways to apply the information you’ve learned to your practice, your clients and your patients.

“In this series, attendees will find a wide variety of content that is both relevant and interesting,” Dr. Christman says. “So, sit back, relax and enjoy the learning experience.”

For more information about the courses being offered this spring, visit connect.dvm360.com/ccenter/spring2020. To register, visit connect.dvm360.com/ccenter/spring2020/register.

For a full listing of events in 2020, visit dvm360.com/calendar

Here are the CE opportunities coming in the next few months:

**August 6**
- VMC’s Financial Boot Camp Seminar
  - Richmond, VA
  - vmc-inc.com
  - (303)-671-8169
  - vmc@vmc-inc.com

**August 14-16**
- 2nd Biennial VETgirl U Veterinary Conference
  - Chicago, IL
  - vetchronltherun.com
  - vetchronltherun.com/vetchronltherunconference

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

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

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

**September 18-19**
- Sports Horse Medicine & Orthopedics: A 2-Day Practical Course
  - info@vetpd.com
  - (844)-870-6097
  - vetpd.com/courses

**October 15-18**
- ABVP Symposium
  - Chicago, IL
  - (800)-677-3853
  - abvp.com/symposium

**October 26-29**
- Atlantic Coast Veterinary Conference
  - Atlantic City, NJ
  - (800)-255-6864
  - acvc.org

**November 1**
- VMC’s It’s What’s Up Front That Counts!
  - Pittsburgh, PA
  - vmc@vmc-inc.com
  - vmc-inc.com/seminar-its-whats-up-front-that-counts

**November 9-10**
- Fetch dvm360 Conference
  - Indianapolis, IN
  - (800)-255-6864 ext. 6
  - Fetchdvm360.com

**November 15**
- VMC’s It’s What’s Up Front That counts!
  - Memphis, TN
  - 303-675-8169
  - vmc@vmc-inc.com
  - vmc-inc.com/seminar-its-whats-up-front-that-counts

To let us know about your upcoming CE offering, email dvm360news@mmhgroup.com.
The EZ-Breathe (EZB) was designed to be the simplest anesthesia ventilator available to veterinarians today.

Unlike other ventilators that demand both the space in your operating room and the attention of your technicians, EZB becomes just one more part of your routine surgical procedure. It fits comfortably into any operating room size / protocol and is designed to be permanently attached to your anesthesia machine ready to be used at the push of a button.

- The EZB is a very cost effective way to ventilate a veterinary patient
- Simple to set up in less than 5 minutes, easy to operate
- Compact design, takes up almost no space, weighs only 2 lbs
- Ventilates patients from 1kg to 120kg (2lbs to 264lbs)
- Fill & Hold button
- Electronic and mechanical pop-off for added safety
- No inconvenient or cumbersome accessories
- Easy to wean patients off after surgery
- Designed and proudly made in the USA

Engler Engineering Corporation

\[1099 \text{ East 47th Street – Hialeah, Florida 33013 USA} \]
\[ (800) 445-8581 \text{ • (305) 688-8581 • (305) 685-7671} \]
\[ \text{info@englerusa.com} \]

Ez-breathe.com
Englerusa.com
Engler411.com

Proudly Made in the USA

Introductory price of $3150
Get a 360-degree educational experience that focuses on every aspect of your life.

Attend the only industry conference that offers more than 350 industry-leading educational sessions, plus inspires personal growth and wellness while connecting you with other influential veterinary professionals at the same time.

Register today for our Early Bird rate!
fetchdvm360.com/KC

Kansas City, MO | Aug. 28-31, 2020

Mobile Veterinary

Helping you prepare for the future.

www.laboit.com
800-776-9984

Surgical Supplies

The Easy Choice

Pay full price every day

Get up to 1/2 off every day

eSutures.com is a liquidator of Ethicon and Covidien sutures and endomechanicals, as well as Synthes screws, implants and instruments.

eSutures Can Offer Your Business:
- Name Brands, In Stock
- All Items Available by the Box or Individual Packet
- Low Prices
- No Contracts or Minimum Orders
- Same Day Shipping

Find out more at: eSutures.com or call 888-416-2409
Use promo code: DVM15 for 15% off your order of $100 or more.*

*Promo code valid for (1) one use only. Offer expires 12/31/20.
Anesthesia Equipment

BluePrint for Breathing
Anesthesia made simple... A.D.S. 2000

Revolutionary Veterinary Breakthrough
- Anesthesia Machine (Positive Pressure)
- Electronically microprocessor controlled
- Delivery & Ventilation for small animal use
- Automatically sets breathing parameters
- Very affordable and easy to use
- Just connect to vaporizer & Oxygen

1099 East 47th Street - Hialeah, Florida 33013 USA
800-445-8581 - FAX 305-685-7671
www.englerusa.com

Pet ID Products

Microchips
FREE LIFETIME
- ISO Compliant
- 134.2 kHz freq.
- Readable by ANY Universal Reader

www.911PetChip.com
(818) 445-3022 / jon@911petchip.com

Medical Services

Son-Mate II
Dental Scaler
Polisher Combo

The only unit you will need
for all your dental needs

Proudly made in the U.S.A.

SON-MATE, POLI-X and ADS 1000, SONUS II, SON-MATE II and ADS 2000
(Anesthesia Delivery System/Ventilator). Sells manifold of spare parts for the ENGELER line of scalers and all the former LITTON units the Sonus II, LT-200, Ultrasonic 880, Veterinary II & others. Six month warranty on repairs. In business since 1964.

New! Now Repairing SHORELINE, Prosonic, OraSonic & AlphaSonic
Piezo Electric Ultrasonic Dental Scaler Units

Check out our NEW SUPPORT WEBSITE www.engler411.com

1099 East 47th Street - Hialeah, Florida 33013 USA
800-445-8581 - FAX 305-685-7671
www.englerusa.com

Medical Services

ULTRASONIC REPAIRS
Send your Ultrasonic Scaler for tuning and repair to ENGELER ENGINEERING CORPORATION, the manufacturer of TIPS, STACKS and MARATHON 25K series. SONUS V, ULTRASON 990, SONUS MATE, POLI-X and ADS 1000, SONUS II, SON-MATE II and ADS 2000

Connecting vet techs with jobs since 2003
WhereTechsConnect.com is your answer!

Mobile Veterinary

Mobile Veterinary Clinics
Lower stress on your patients by bringing all your services to your clients. With less overhead and more freedom!

(602) 715-2814 | MagnumMobilesv.com

Contact Yousef Elhusseini
@ YElhusseini@mmhgroup.com
for information about reserving ad space.

Want to be in the know?
Check out the video veterinary news highlights every week at dvm360.com.

Place your ad here
Get your message to veterinarians TODAY!
Tougher-than-nails, Bo bandage!

No horse had ever chewed one of those off, and this one had done it in less than 10 minutes.

No 3-year-old horse was going to outsmart me. I arrived the next morning on a mission and warned the gelding that he had met his match. He just kind of looked at me and smiled. Game on, buddy.

Getting to work

We took biopsies to try to determine an underlying cause. We built a crib to go around the horse’s neck that would keep him from being able to bend his head down low enough to chew on the leg. And just in case, we covered the new bandage with hot sauce mixed with Vaseline. You’re all mine, little gelding!

About an hour later, I saw the bandage in the alley outside the gelding’s pen; he had his leg propped up on the second pipe of his stall and was chewing on it like a beaver. This was going to be more of a challenge than I imagined.

The biopsy came back clean; the tissue was simply granulation tissue from chronic aggravation inflicted by the horse. It had become a habit for this rascal, like biting one’s fingernails.

Over the next two months we tried everything. My vet buddies and horse trainer friends had dozens of ideas, and the horse soundly defeated every one. He remained standing in the stall sans bandage, with a goo-covered nose and no change in the size of the lesion, and gave me a sly smile every time I walked by the pen.

A little help from momma

I few days later we went to Amarillo to visit my momma. We were gathered around the table eating breakfast when I noticed a pretty bowl of peppers. I reached to get one and momma stopped me.

“Don’t eat those! We grew them in the garden and they are so hot that Earl nearly had a stroke when he took one bite,” she said. “I can’t understand why my peppers are always so dang hot. I just kept them because they look pretty in that bowl. But I wouldn’t eat one if I was you.”

I picked one up. It was a pretty normal-looking light-green pepper. I figured maybe it was just that one pepper Earl had tasted that was bad and decided to give it a go. I took a small bite from the end, chased it with a bite of egg and sausage, and began chewing the mixture on the left side of my mouth.

The first few chews went really well, and I was beginning to think Earl was a lightweight when suddenly the left half of my face began to sweat and turned “red as a tomato,” according to my wife. My tongue was on fire. That little hangy-down thing in the back of your throat that you thought had no pain receptors … well it does—and that was on fire, too. My left eye was watering and I could feel my bottom eyelid drooping. Every inch of my esophagus that had come in contact with that piece of hell vegetable was screaming at me.

I had to abandon ship. I took a large gulp of milk and gargled for several minutes. I paced the living room while fanning my paralyzed face. I had a feeling if a couch cushion had been handy he would have been fanning his face with it. He ambled over to the fence and began rubbering his tongue back and forth on it vigorously. He went to the trough and took several big glugs of water and then shook his head and wagged his tongue some more.

It took five weeks of magma-covered bandages to get that leg healed up to a dry scar. I delighted in every bandage change. Gone were the smirky grins that had tormented me for months. When the owner came to pick up the gelding, she asked how I was able to get him to quit chewing on it long enough for it to heal. I simply told her my momma had helped me out. After all, you just never know where the best medicine might come from.

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.
A HARDY SKIN BARRIER: the best defense against allergens

NEW!
with hardy kiwi

DERMAQUIN®
SKIN SUPPORT SUPPLEMENT
Available in SOFT CHEWS for small/medium and large dogs
To learn more, visit DERMAQUIN.COM
IDEXX Reference Laboratories

DISCOVER MORE

✓ Most complete and advanced menu of tests
✓ Personalized support, guidance, and expertise
✓ Technology and tools that make your work easier
✓ IDEXX Preventive Care
✓ Unrelenting commitment to innovation