Every dog and cat deserves comprehensive, broad-spectrum protection. That’s why Advantage Multi® delivers layers of protection from heartworms, fleas and intestinal parasites.

Provide the multi-layered protection of Advantage Multi® to the pets in your care.

Visit LayersofMulti.com or contact your Elanco Sales Representative.

*Treats and controls roundworms, hookworms and whipworms in dogs and roundworms and hookworms in cats.

CAUTION: Advantage Multi® is only available from a licensed veterinarian. Dogs: WARNING: DO NOT ADMINISTER THIS PRODUCT ORALLY. For the first 30 minutes after application, ensure that dogs cannot lick the product from application sites on themselves or other treated animals. Children should not come in contact with the application sites for two (2) hours after application. (See Contraindications, Warnings, Human Warnings and Adverse Reactions for more information.) Cats: Do not use on sick, debilitated, or underweight cats. Avoid oral ingestion.
Advantage Multi® for Dogs and for Cats (imidaclopid + moxidectin)

BRIEF SUMMARY: Before using Advantage Multi® for Dogs (imidaclopid-moxidectin) or Advantage Multi® for Cats (imidaclopid + moxidectin), please consult the product insert, a summary of which follows:

CAUTION: Federal (U.S.A.) Law restricts this drug to use by or on the order of a licensed veterinarian.

Advantage Multi for Dogs:

WARNING
- DO NOT ADMINISTER THIS PRODUCT ORALLY.
- For the first 30 minutes after application ensure that dogs cannot lick the product from application sites on themselves or other treated animals.
- Children should not come in contact with the application sites for two (2) hours after application.
(See Contraindications, Warnings, Human Warnings, and Adverse Reactions for more information.)

INDICATIONS:
Advantage Multi for Dogs is indicated for the prevention of heartworm disease caused by Dirofilaria immitis and the treatment of Dirofilaria immitis circulating microfilariae in heartworm-positive dogs. Advantage Multi for Dogs kills adult fleas and is indicated for the treatment of flea infestations (Ctenocephalides felis). Advantage Multi for Dogs is indicated for the treatment and control of sarcoptic mange caused by Sarcoptes scabiei var. canis. Advantage Multi for Dogs is also indicated for the treatment and control of the following intestinal parasites species: Hookworms (Ankylostoma caninum) (Uncinaria stenocephala), Roundworms (Toxocara canis) (Toxascaris leonina) and Whipworms (Trichuris vulpis).

Advantage Multi for Cats is indicated for the prevention of heartworm disease caused by Dirofilaria immitis. Advantage Multi for Cats kills adult fleas (Ctenocephalides felis) and is indicated for the treatment of flea infestations. Advantage Multi for Cats is also indicated for the treatment and control of ear mite (Otodectes cynotis) infestations and the intestinal parasites species Hookworm (Ankylostoma tubaeforme) and Roundworm (Toxocara canis). Ferrets: Advantage Multi for Cats is indicated for the prevention of heartworm disease in ferrets caused by Dirofilaria immitis. Advantage Multi for Cats kills adult fleas (Ctenocephalides felis) and is indicated for the treatment of flea infestations in ferrets.

CONTRAINDICATIONS: Do not administer this product orally. (See WARNINGS). Do not use the Dog product (containing 2.5% moxidectin) on Cats.

WARNINGS:
Advantage Multi for Dogs: For the first 30 minutes after application: Ensure that dogs cannot lick the product from application sites on themselves or other treated dogs, and separate treated dogs from one another and from other pets to reduce the risk of accidental ingestion. Ingestion of this product by dogs may cause serious adverse reactions including depression, salivation, dilated pupils, incoordination, panting, and generalized muscle tremors. In avermectin sensitive dogs, the signs may be more severe and may include coma and death.

Some dogs are more sensitive to avermectins due to a mutation in the MDR1 gene. Dogs with this mutation may develop signs of severe avermectin toxicity if they ingest this product. The most common breeds associated with this mutation include Collies and Collie crosses.

Although there is no specific antagonist for avermectin toxicity, even severely affected dogs have completely recovered from avermectin toxicity with intensive veterinary supportive care.

Advantage Multi for Cats: Do not use on sick, debilitated, or underweight cats. Do not use on cats less than 9 weeks of age or less than 2 lbs. body weight. Do not use on sick or debilitated ferrets.

HUMAN WARNINGS: Not for human use. Keep out of the reach of children. Dogs: Children should not come in contact with the application sites for two (2) hours after application. Cats: Children should not come in contact with the application site for 30 minutes after application.

Advantage Multi for Cats: Do not use on sick, debilitated, or underweight cats. Do not use on cats less than 9 weeks of age or less than 2 lbs. body weight. Do not use on sick or debilitated ferrets.

HUMAN WARNINGS: Not for human use. Keep out of the reach of children. Dogs: Children should not come in contact with the application sites for two (2) hours after application. Cats: Children should not come in contact with the application site for 30 minutes after application.

Causes eye irritation. Harmful if swallowed. Do not get in eyes or on clothing. Avoid contact with skin. Wash hands thoroughly with soap and warm water after handling. If contact with eyes occurs, hold eyelids open and flush with copious amounts of water for 15 minutes. If eye irritation develops or persists, contact a physician. If swallowed, call poison control center or physician immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison control center or physician. People with known hypersensitivity to benzyl alcohol, imidaclopid, or moxidectin should administer the product with caution. In case of allergic reaction, contact a physician. If contact with skin or clothing occurs, take off contaminated clothing. Wash skin immediately with plenty of soap and water. Call a poison control center or physician for treatment advice. The Safety Data Sheet (SDS) provides additional occupational safety information. For a copy of the Safety Data Sheet (SDS) or to report adverse reactions call Bayer Veterinary Services at 1-800-422-9874. For consumer questions call 1-800-255-6826.

PRECAUTIONS: Do not dispense applicator tubes without complete safety and administration information. Use with caution in sick, debilitated or underweight animals. The safety of Advantage Multi for Dogs has not been established in breeding, pregnant, or lactating dogs. The safe use of Advantage Multi for Dogs has not been established in puppies and dogs less than 7 weeks of age or less than 3 lbs. body weight. Advantage Multi for Dogs has not been evaluated in heartworm-positive dogs with Class 4 heartworm disease.

Cats may experience hypersalivation, tremors, vomiting and decreased appetite if Advantage Multi for Cats is inadvertently administered orally or through grooming/licking of the application site. The safety of Advantage Multi for Cats has not been established in breeding, pregnant, or lactating cats. The effectiveness of Advantage Multi for Cats against heartworm infections (D. immitis) after bathing has not been evaluated in cats. Use of this product in geriatric cats with subclinical conditions has not been adequately studied. Ferrets: The safety of Advantage Multi for Cats has not been established in breeding, pregnant, and lactating ferrets. Treatment of ferrets weighing less than 2.0 lbs. (0.9kg) should be based on a risk-benefit assessment. The effectiveness of Advantage Multi for Cats in ferrets weighing over 4.4 lbs. (2.0 kg) has not been established.

ADVERSE REACTIONS: Heartworm Negative Dogs: The most common adverse reactions observed during field studies were pruritus, residue, medicinal odor, lethargy, inappetence and hyperactivity. Heartworm Positive Dogs: The most common adverse reactions observed during field studies were cough, lethargy, vomiting, diarrhea (including hemorrhagic), and inappetence. Cats: The most common adverse reactions observed during field studies were lethargy, behavioral changes, discomfort, hypersalivation, polydipsia and coughing and gagging. Ferrets: The most common adverse reactions observed during field studies were pruritus/scratching, scabbing, redness, wounds and inflammation at the treatment site; lethargy; and chemical odor.

For a copy of the Safety Data Sheet (SDS) or to report adverse reactions call Bayer Veterinary Services at 1-800-422-9874. For consumer questions call 1-800-255-6826.

Advantage Multi is protected by one or more of the following U.S. patents: 6,232,328 and 6,001,858.

NADA 141-251,141-254 Approved by FDA V-03/2016
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Bayer, the Bayer Cross, Advantage Multi are registered trademarks of Bayer.
Made in Germany.
Common sources of RX errors and prevention strategies

Why prescription errors might occur, plus how to avoid them.

By Kate Boatright, VMD, and Lauren Forsythe, PharmD, DICVP

Serious errors have been reported when pet prescriptions are filled at community pharmacies. Awareness of why these errors might occur and strategies for prevention will help protect patient health and improve working relationships between veterinarians and community pharmacists.

As the market for pet prescriptions has expanded rapidly beyond the veterinary clinic, awareness of serious prescription errors has grown. There are numerous potential sources and causes of error, each with its own potential consequences. Although it can be frustrating for veterinarians to learn that an error has occurred with a patient’s medication, it is essential to remember that errors are not typically made with malicious intent. Similar errors can—and do—happen in a veterinary clinic.

See page 28

An estimated 6 million dogs and an additional 6 million cats receive a cancer diagnosis each year, according to the Animal Cancer Foundation. While the disease types, stages, and treatments vary, the shock and grief doting pet parents endure are universal.

Delivering a cancer diagnosis is a delicate balance between reality and compassion, a challenging but all too common part of the profession. Thankfully, oncology research, diagnostics, and treatments have advanced tremendously over the past decade, offering opportunities for cats and dogs to maintain a high quality of life.

“At a high level, oncologists are learning how to tailor care to each patient,” Karen Oberthaler, VMD, DACVIM (Oncology), who practices at VCA Veterinary Specialists of Northern Colorado, tells dvm360®. “We are always learning more about individual cancers and subtypes of cancers, and that helps us fine-tune our treatments. Today we can take samples and test a patient’s own tumor to learn what receptor it has and personalize the treatment to that individual.”

See page 26
Everything Starts With Protecting Them.

Canine and Feline Vaccines From Boehringer Ingelheim.

Research. Innovations. Solutions. All With One Goal.

We packed years of research and innovations into each of our vaccines. But it all started with prevention. See how the RECOMBITEK® canine vaccines, PUREVAX® feline vaccines, and IMRAB® rabies vaccines help protect against common dangerous infectious diseases for canines and felines.

Talk to your Boehringer Ingelheim Sales Representative today to learn more.
Here are some of the CE opportunities coming in the next several months. Note that many 2021 CE events are now being held online or via a combination of live and virtual learning. Please visit individual event websites for details.

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HAPPY FROM THE CORE

Rapidly activate your patient’s unique gut microbiome for ultimate digestive health with breakthrough ActivBiome+ Technology.

Ask about microbiome nutrition that’s A STEP AHEAD FOR THEIR BEST LIFE
Opening back up

Although the COVID-19 pandemic put our popular Fetch live meetings on hold for over a year, we are proud to announce that we are bringing these popular conferences back into the live realm starting in August.

Although COVID-19 sidelined plans for our live continuing education conferences, our team quickly pivoted and have since hosted 4 Fetch dvm360° virtual conferences: 2 in August and November 2020 and 2 in February and May of this year.

At our most recent conference held last month, our editorial team hit the ground running by providing you with a robust mix of conference coverage. From exclusive interviews with Fetch key opinion leaders to articles highlighting the latest on managing feline gastrointestinal issues and pain to advancing your career, there’s a nice array of content for everyone to enjoy on dvm360.com.

Our conferences offer attendees affordable access to informative and relevant content that can be applied to veterinary practices. It has always been our goal to present a wide range of topics to our audience and continue to keep them updated with the latest veterinary industry news. We will continue to post conference coverage on our website (dvm360.com/conferences) as well as in our magazines and newsletters (dvm360.com/subscribe).

Additionally, registration for our first live 2021 meeting is now open. The Fetch dvm360° conference in Kansas City, Missouri, our first live event in more than a year, will be held August 27 to 30, 2021. We can’t wait to see you there. We have missed interacting with you in person. We also have a brand new lineup of topics and speakers to help you practice your best medicine and thrive professionally and personally.

For more updates on our first live event of the year, visit fetchdvm360.com. For now, enjoy the warm weather! Now that more of the public is getting vaccinated, it is time to get out and make new and wonderful memories with friends and family. You deserve it.

—Mike Hennessy Sr
Chairman and Founder,
MJH Life Sciences™

Cheers to new beginnings: Congratulations, Class of 2021

I’ll never forget my graduation day at Iowa State University College of Veterinary Medicine. Adrenaline was pumping through my body as I walked across the stage. My family was rooting me on as I became Dr Adam Christman, and faculty members were grinning from ear to ear.

I remember thinking, “OK Adam, are you ready to practice?” Then a bunch of what-ifs popped into my head—I thought of everything I might experience as a veterinarian and realized I might not be fully prepared, but it was still OK.

Now I am surrounded by a sea of incredible colleagues who have been in the same shoes. That’s why I focus so much on coaching, mentoring, listening, and helping new graduates become acclimated to their new careers. I consider a combination of excellent mentorship and continuing education as the fundamentals of career advancement. Let’s face it—we all need mentorship. Our profession provides a beautiful balance of educating and coaching.

Additionally, continuing education opportunities are vast and valuable, and all of us at Fetch dvm360° acknowledge that we all learn differently (eg, visually, audibly, in-person, etc). We are proud to announce that we will be offering live-in-person events during the latter half of this year, starting with Fetch Kansas City from August 27 to August 30, 2021.

I understand how critical in-person events are to this profession. Networking; socially connecting with colleagues, exhibitors, and faculty; and immersive in-person educational experience are crucial to success. I look forward to seeing all of you safely in person soon!

—Adam Christman, DVM, MBA
Chief Veterinary Officer

A special message to the Class of 2021
To the graduating class of 2021, congratulations! You did it! You pushed through the COVID-19 pandemic, giving you 2 key professional skills that many of us took years to develop—adaptability and resilience. If you can make it through this, you can make it through anything. Remember, when you receive that wonderful diploma, your dvm360° family will be here to support you, educate you, and help you become the best veterinary professionals you can be. Welcome to the best profession on the planet! We are so proud of you!

—Adam Christman, DVM, MBA
Chief Veterinary Officer
SURVEY SHEDS LIGHT ON PET OWNERS’ PERSPECTIVE ON CANCER

Pet CancerCare Alliance’s survey provides insight into pet owners’ attitudes about cancer and how likely they are to pursue treatment.

By Amanda Carrozza

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The end is near.

**Canine CE-IBD Assay**
**Only from Antech**

Get to the cause of chronic vomiting and diarrhea faster. Quickly rule in or rule out IBD/chronic enteropathy in your canine patients with this non-invasive assay—letting you arrive at treatment decisions more quickly.

To download the diagnostic algorithm and learn more about the Canine CE-IBD Assay visit q-r.to/dvm-06-ibd
## NEWS

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The First True Generic Revolution® Alternative
At a Third of the Price

Now Available at an Average Cost of
$5.24 a dose*

Complete Protection Against Heartworms, Fleas, and
Other Problematic Parasites for Cats and Dogs

Compare the Similarities:
- Same active ingredient and dosing regimen as Revolution® (selamectin)
- Same protection against heartworms, fleas and problematic parasites
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- Unique twist and apply minimizes application errors
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*Based on Revolt® prices of cats and dogs up to 40 lbs.

To request a free sample, please call 1-800-345-1793

Provide Value Without Compromising Safety or Efficacy, Prescribe Revolt® Today.
**Revolt** (selamectin)  
Topical Parasiticide for Dogs and Cats

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

**DESCRIPTION:**  
Revolt (selamectin) Topical Parasiticide is available as a colorless to yellow, ready to use solution in single dose tubes for topical (ermal) treatment of dogs six weeks of age and older, and cats eight weeks of age and older. The content of each tube is formulated to provide a minimum of 2.7 mg/kg (6 mg/kg) of body weight of selamectin. The chemical composition of selamectin is C_{22}H_{35}Cl_{2}N_{2}O_{4} (O-ethyl-22,23-dihydro-5-hydroxyiminoavermectin A1a).  

**INDICATIONS:**  
It is recommended for use in dogs six weeks of age and older, and cats eight weeks of age and older for the following parasitic conditions:

**Dogs:**
- Revolt kills adult fleas and prevents flea eggs from hatching for one month and is indicated for the prevention and control of flea infestations (Siphonaptera: Pulicidae). Prevention of flea infestations caused by *Sarcoptes scabiei* and the control of tick infestations (Ixodidae) in dogs.  
- Revolt topically in accordance with the following tables. (See Dosage and Administration.)  
- Administer the entire contents of a single dose tube (or two tubes used in combination for dogs weighing over 130 pounds) of Revolt to dogs and cats prior to first use. The recommended minimum dose is 2.7 mg selamectin per pound (6 mg/kg) of body weight.  
- The recommended minimum dose is 360 mg per cat (12 mg/kg) of body weight. 

**Cats:**
- Revolt kills adult fleas and prevents flea eggs from hatching for one month and is indicated for the prevention and control of flea infestations (Siphonaptera: Pulicidae). Prevention of flea infestations caused by *Sarcoptes scabiei*, and the treatment and control of ear mite (Otodectes cynotis) infestations. Revolt is also indicated for the treatment and control of ear mite (Otodectes cynotis) infestations.  
- Administer the entire contents of a single dose tube (or two tubes used in combination) of Revolt to cats prior to first use. The recommended minimum dose is 2.7 mg selamectin per pound (6 mg/kg) of body weight.  
- The recommended minimum dose is 60 mg per cat (1 mg/kg) of body weight.

**WARNINGS:**  
Not for human use. Keep out of the reach of children.

In humans, Revolt may be irritating to skin and eyes.  

**REACTIOnS SUCH AS HIVES, ITCHING AND SKIN REDNESS HAVE BEEN REPORTED IN HUMAN IN RARE Instances. INDIVIDUALS WITH KNOWN HYPERSENSITIVITY TO SELAMECTIN SHOULD BE TREATED FOR THE POST-ADMINISTRATION OF REVOLT TO PREVENT HUMAN HYPERSENSITIVITY TO SELAMECTIN.**

**PRECAUTIONS:**  
Prior to administration of Revolt, dogs should be tested for existing heartworm infections. At the discretion of the veterinarian, infected dogs should be treated to remove adult heartworms. Revolt is not effective against adult D. immitis and, while the number of circulating microfilariae may decrease following treatment, Revolt is not effective for microfilarial clearance.

**Hypersensitivity reactions have not been observed in dogs with patent heartworm infections administered three times the recommended dose of selamectin. Higher doses were not tested.**

**ADVERSE REACTIONS:**

**Pre-approval clinical trials:**  
FOLLOWING TREATMENT WITH SELAMECTIN, TREATMENT-RELATED LOCALIZED ALOPCA with or without inflammation at or near the site of application was observed in approximately 1% of 1743 treated cats and dogs. Other signs observed rarely (<0.5% of 1743 treated cats and dogs) included vomiting, loose stool or diarrhea with or without blood, anorexia, lethargy, salivation, tachypnea, and muscle tremors.

**Post-approval experience:**  
In addition to the aforementioned clinical signs that were reported in pre-approval clinical trials, there have been reports of pruritus, urticaria, erythema, alopecia, and effeminacy. The safety of selamectin administered orally also was tested in case of accidental oral ingestion. Oral administration of selamectin at the recommended topical dose in 5- to 8-month-old beagles did not cause any adverse reactions. In a pre-clinical study with an unknown history and was malnourished and underweight (see WARNINGS).  

**DOSEage:**  
The recommended minimum dose is 2.7 mg selamectin per pound (6 mg/kg) of body weight. Administer the entire contents of a single dose tube (or two tubes used in combination for dogs weighing over 130 pounds) of Revolt topically in accordance with the following tables. (See ADMINISTRATION for the recommended treatment intervals.)

**SAFETY:**  
Selamectin has been tested safe in over 100 different pure and mixed-bred cats and dogs. Selamectin has been shown to be safe and effective in dogs and cats weighing over 10 pounds. Selamectin is now approved by the FDA for the prevention and control of tick infestations (Ixodidae) in cats weighing over 10 pounds. Selamectin is also indicated for the treatment and control of ear mite (Otodectes cynotis) infestations in cats.  

**DOSSIER:**
- DOGS: In safety studies, selamectin was administered at 1, 3, 5, and 10 times the recommended dose to six-week-old puppies, and no adverse reactions were observed. The safety of selamectin administered orally was also tested in case of accidental oral ingestion. Oral administration of selamectin at the recommended topical dose in dogs weighing over 10 pounds did not cause any adverse reactions. In a pre-clinical study with an unknown history and was malnourished and underweight (see WARNINGS).  

**CATS:**
- CATS: In safety studies, selamectin was administered at 1, 3, 5, and 10 times the recommended dose to six-week-old kittens. No adverse reactions were observed. The safety of selamectin administered orally was also tested in case of accidental oral ingestion. Oral administration of the recommended topical dose of selamectin to cats caused salivation and intermittent vomiting. Selamectin was also administered at 4 times the recommended dose to patent heartworm infected cats, and no adverse reactions were observed.

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

**HOW SUPPLIED:** Available in eight separate dose strengths for dogs and cats of different weights (see Dosage and Administration). Revolt for puppies and kittens containing 3 single dose tubes; Revolt for dogs and cats is available in 15 single dose tubes.

Approved by FDA under ANADA # 200-673

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Revolt® (selamectin)  
Topical Parasiticide for Dogs and Cats

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How to foster stronger bonds with your associate veterinarians

Associate doctors play an integral role in the success of your practice. That’s why it’s crucial for practice managers to build long-lasting and positive relationships with them. Not sure where to start? Here are a few useful strategies.

By Julia Burke, Assistant Editor

Associate veterinarians are the lifeblood of your practice, according to Brian Conrad, CVPM, practice manager of Meadow Hills Veterinary Center in Kennewick, Washington. “Without our associate [doctors], we don’t exist,” he said.

During his lecture at the Fetch dvm360® virtual conference, Conrad explained the significance of building stronger bonds with associate veterinarians. He also offered strategies for helping practice managers and owners create a more cohesive environment that everyone can thrive in.

Set clear expectations
To help establish tighter relationships with your associate veterinarians, you must have clear job descriptions, Conrad told attendees. “The clearer the expectations are laid out, the better the relationship will be from the start,” Conrad said. Here’s a look at some key characteristics he says to look for when hiring associate veterinarians:

- Practice exceptional medicine
- A leader within the clinic
- Ethical
- A good communicator
- A delegator
- Change ready and an innovator
- Work to educate clients toward compliance
- A team player
- Reliable
- Creates a positive environment for staff and clients

Financial expectations
In addition to providing job expectations, it’s crucial to discuss the monetary components of the business. Make sure associate veterinarians understand your expectations for:

- Gross production
- Average transaction
- Number of appointments per hour
- Number of surgeries/dental appointments per hour
- Doctor schedule and hours worked
- Community service

Continuing education goals
Veterinarians tend to enjoy continuing education (CE), something Conrad encourages at his practice. He says one great way to help strengthen your relationship with associate doctors is by highlighting their CE accomplishments on social media. Not only does that make them feel valued, but it shows your clients the strides these doctors are willing to take to provide the best possible care to their pets.

Promote staff education
Staff meetings are great learning opportunities for the entire team. Conrad suggests having associate veterinarians prepare a 30-minute lecture providing practical information that is client-friendly and includes plenty of photos. At his staff meetings, he sends a notebook across the room and everyone writes down their topics of interest. Then, he lets the doctors pick out 1 or 2 of these topics to discuss.

We work very hard and it’s very stressful and it’s going to be important for us to let our hair down a little bit and at least have a good laugh.

“It’s important that we educate our staff so that they can be confident. Our clients love a confident staff member. There is nothing worse than having someone incompetent or not sure,” Conrad said.

Team building
Another way to boost staff morale is by incorporating more fun into the workplace, says Conrad. Try hosting several team-building exercises and events so your associate veterinarians can mix and mingle with other team members outside of the workplace.

“We are very quick to do some kind of team building to really create that cohesive team,” he said. “We work very hard and it’s very stressful and it’s going to be important for us to let our hair down a little bit and at least have a good laugh.”
Elura helps cats with CKD maintain or gain weight to keep them feline fabulous.

It can be hard to watch cats with chronic kidney disease (CKD) waste away. Prescribe Elura at the first sign of weight loss in your feline CKD patients.

**INDICATION**
For the management of weight loss in cats with chronic kidney disease.

**IMPORTANT SAFETY INFORMATION**
For oral use in cats only. Do not use in cats that have a hypersensitivity to capromorelin, or in cats with hypersomatotropism (acromegaly). Elura may increase serum glucose for several hours after dosing; use in cats with current or historical diabetes mellitus has not been evaluated and may not be appropriate. Use with caution in cats that may have cardiac disease, severe dehydration, or hepatic dysfunction. Elura has not been evaluated in cats younger than 5 months of age, or in breeding, pregnant or lactating cats. The most common adverse reactions included vomiting, hypersalivation, inappetence, behavior change and lethargy. Please see accompanying brief summary for product safety information.

*Compared to 4/10 control cats. A multi-center, placebo-controlled, randomized and masked field study including 176 cats with CKD and at least 5% unintended loss of body weight (as compared to the highest weight in the medical records for the 3 years preceding enrollment). Study period was 56 days (Day 0 – Day 55). Primary endpoint was percent change in weight from Day 0 to Day 55.

CKD, chronic kidney disease.
**Indication:**
For management of weight loss in cats with chronic kidney disease.

**Dosage and Administration:**
Administer ELURA orally at a dose of 2 mg/kg (0.9 mg/lb) or 0.1 mL/kg (0.045 mL/lb) body weight once daily.

**Contraindications:**
ELURA should not be used in cats that have a hypersensitivity to capromorelin.

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

For oral use in cats only.
Do not use in cats with hypersomatomatopism (acromegaly). ELURA may increase serum glucose for several hours after dosing. Use in cats with current or historical diabetes mellitus has not been evaluated and use may not be appropriate.

**Precautions:**
Use with caution in cats that may have cardiac disease or severe dehydration. ELURA causes transient decreases in heart rate and blood pressure up to 4 hours following dose administration. Some cats may exhibit clinical signs of bradycardia or hypotension following administration of ELURA. Use with caution in cats with hepatic dysfunction. Capromorelin is metabolized in the liver in humans and dogs and similar metabolism is expected in the cat. The safe use of ELURA has not been evaluated in cats younger than 5 months old. The safe use of ELURA has not been evaluated in cats that are pregnant, lactating, or intended for breeding.

**Adverse Reactions:**
Safety was evaluated in a 56-day field effectiveness study in 176 client-owned cats (118 administered ELURA, 58 administered vehicle control). The study was conducted in multiple veterinary practices in the United States. All stages of chronic kidney disease (CKD) were enrolled in the study. The study enrolled 176 client-owned cats (118 administered ELURA, 58 administered vehicle control). The primary effectiveness variable was the percent change in body weight from Day 0 to Day 55. Effectiveness was evaluated in 112 cats: 71 cats administered ELURA and 41 cats administered vehicle control. There was a statistically significant difference (p<0.001) compared to the vehicle control group (−1.6%) at Day 55 (p<0.001). Secondary analysis for percent change in weight at Day 15 and Day 27 demonstrated cats in the ELURA group gained weight throughout the study. 10 (8.5%) of 118 ELURA cats and 3 (5.2%) of 58 vehicle control cats increased by two CKD stages; 8 ELURA and 2 vehicle control cats demonstrated cats in the ELURA group gained weight throughout the study.

<table>
<thead>
<tr>
<th>Adverse Reaction</th>
<th>ELURA (n=118)</th>
<th>Vehicle Control (n=58)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vomiting</td>
<td>35 (29.6%)</td>
<td>13 (22.4%)</td>
</tr>
<tr>
<td>Hypersalivation</td>
<td>25 (21.2%)</td>
<td>0 (0.0%)</td>
</tr>
<tr>
<td>Inappetence</td>
<td>22 (18.6%)</td>
<td>7 (12.0%)</td>
</tr>
<tr>
<td>Behavior Change</td>
<td>17 (14.4%)</td>
<td>3 (5.2%)</td>
</tr>
<tr>
<td>Lethargy</td>
<td>16 (13.6%)</td>
<td>6 (10.3%)</td>
</tr>
<tr>
<td>Anemia</td>
<td>11 (9.3%)</td>
<td>1 (1.7%)</td>
</tr>
<tr>
<td>Dehydration</td>
<td>11 (9.3%)</td>
<td>2 (3.4%)</td>
</tr>
<tr>
<td>Stage of CKD Increased a</td>
<td>10 (8.5%)</td>
<td>3 (5.2%)</td>
</tr>
<tr>
<td>Diarrhea</td>
<td>9 (7.6%)</td>
<td>2 (3.4%)</td>
</tr>
<tr>
<td>Urinary Tract Infection</td>
<td>6 (5.1%)</td>
<td>2 (3.4%)</td>
</tr>
<tr>
<td>Hyperglycemia</td>
<td>6 (5.1%)</td>
<td>2 (3.4%)</td>
</tr>
<tr>
<td>Upper Respiratory Infection</td>
<td>7 (5.9%)</td>
<td>1 (1.7%)</td>
</tr>
<tr>
<td>Hypercalcemia</td>
<td>7 (5.9%)</td>
<td>0 (0.0%)</td>
</tr>
<tr>
<td>Facial Skin Lesion</td>
<td>6 (5.1%)</td>
<td>3 (5.2%)</td>
</tr>
<tr>
<td>Hyperkalemia</td>
<td>5 (4.2%)</td>
<td>0 (0.0%)</td>
</tr>
<tr>
<td>Ataxia</td>
<td>4 (3.4%)</td>
<td>0 (0.0%)</td>
</tr>
<tr>
<td>Diabetes Mellitus</td>
<td>1 (0.8%)</td>
<td>0 (0.0%)</td>
</tr>
<tr>
<td>Congestive Heart Failure</td>
<td>1 (0.8%)</td>
<td>0 (0.0%)</td>
</tr>
</tbody>
</table>

Note: If an animal experienced the same event more than once, only the first occurrence was tabulated.

a Behavior change included hiding from the owner (8 ELURA, 1 vehicle control); owner reported difficulty administering medication (7 ELURA, 1 vehicle control); and redirected aggression to another household cat (2 ELURA, 1 vehicle control).

b Two ELURA and 1 vehicle control cat increased by two CKD stages; 8 ELURA and 2 vehicle control cats increased one CKD stage. It could not be determined if the progressive renal disease was the natural course of the pre-existing disease or treatment related. Hypersalivation was generally associated with dosing and resolved within a few minutes. Nine cats (8 ELURA and 1 vehicle control) either died within 1 hour of dosing or were euthanized during or shortly after the study. Six ELURA cats were euthanized or died from decompensated CKD. One ELURA cat was euthanized after study withdrawal on Day 33 for declining quality of life and recent identification of a new mass. One ELURA cat acutely declined and was euthanized for findings of nodules in both kidneys and diagnosis of sarcoma. The vehicle control cat was euthanized for acute onset of right hindlimb paresis and suspected bowel obstruction. Two additional cats were diagnosed with neoplasia during the study (one ELURA cat with unspecified soft tissue sarcoma and one control cat with mammary adenocarcinoma) but completed the study. In voluntary post-approval reporting for extra-label use of a capromorelin product for dogs, the following adverse events have been reported in dogs (listed in decreasing order of reporting frequency): bradycardia, lethargy, hypersalivation, hypotension, behavior change, and vomiting.

To report suspected adverse events, for technical assistance or to obtain a copy of the Safety Data Sheet (SDS), contact Elanco US, Inc. at 1-888-545-9573.

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

**Effectiveness:**
Effectiveness was demonstrated in a multicenter, prospective, masked, randomized, vehicle-controlled field study. The study enrolled 176 client-owned cats with ≥5% unintended weight loss and a history of chronic kidney disease (CKD). Cats had a mean age of 15 years and at enrollment 11.4% of the cats were in Stage 1 CKD, 66.5% were in Stage 2, 21.0% were in Stage 3, and 1.1% were in Stage 4. Cats enrolled in the study had a variety of comorbid conditions (98.3%), moderate or severe muscle loss (43.2%), heart murmur (28.4%), history of vomiting or underlying gastrointestinal disease (28.4%), hyperthyroidism (13.6%) and hypertension (9%).

**Table 1: Adverse Reactions in the Field Effectiveness Study**

The Revenue Share Bonus Program will provide all veterinary team members the opportunity to earn up to $2080 in bonuses per year.

By dvm360° Staff

CareVet announces new revenue bonus program for all veterinary team members

The Revenue Share Bonus Program will provide all veterinary team members the opportunity to earn up to $2080 in bonuses per year.

“"This incentive bonus program aligns the goals of all members of the CareVet family and rewards team members for the integral part they play in their hospital’s success,” says Greg Swak, CareVet CEO, in a company release. “Goals are based on revenue and mutually agreed upon by hospital leadership each month. By growing our hospitals together, we are able to invest back into our teams and facilities.”

According to the release, bonuses will be paid out monthly and cost an estimated $3.5 million companywide in 2021. Additionally, this wage increase to $17.08 hourly will impact over 50% of its hospital (or nonveterinarian staff). When combined with its Living Wage Program, the average annual wage increase per person is $6600.

What’s more, the program was established as an investment in the company’s team members who deliver the highest quality of care and customer service to their patients and clients.

“We recognize that without our team members we would not be able to provide exceptional service to our patients and clients,” says Swak. “We see the incredible effort this takes from our team members day in and day out, which is why we’re dedicated to giving back to them. By investing back into our teams and sharing our successes, we give our teams the capacity to serve more pets in our communities, increase compliance, and deliver unparalleled care. At CareVet, we all win together.”

The Revenue Share Bonus Program is 1 component of CareVet’s Whole Person Approach and supplemental to the Living Wage Program, which was announced April 1, 2021, providing a minimum of $15/hour to all team members. 14 | June 2021 | dvm360.com
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AALVMC revamps brand with new name

By dvm360® Staff

The Association of American Veterinary Medical Colleges (AAVMC) subtly changed its name last month to the American Association of Veterinary Medical Colleges, to better reflect its role as an international organization.

The new name became official on April 9, 2021, and on April 12, 2021, the AAVMC began the process of updating signage, collateral materials, communication product mastheads, social media platforms, etc.

Though the modification appears faint, the new name now recognizes that international members are part of an American-based association, linked by a common accreditation system. The former moniker identified the colleges as American based.

“Our international members told us that they wanted us to retain the word ‘American,’ indicating their association with the American accreditation system,” said Andrew T. Maccabe, DVM, AAVMC, chief executive officer, in an association release. “Because of that preference, the term ‘international’ was not included in the new name, even though institutions from throughout the world are eligible to qualify for membership.”

According to the release, AAVMC leaders have been circling around the idea of a name change ever since international veterinary colleges and schools became eligible for accreditation by the Council on Education (COE)—ergo qualifying for AAVMC membership.

Currently, 22 of the 55 COE accredited schools are outside the US—12 AAVMC collaborative and provisional members are not yet COE-accredited.

The new name still preserves the original acronym and graphic appearance, “which has earned strong brand recognition among internal and external stakeholders,” it says in the release.

The process of implementing the new name is expected to take several months.

NJ animal hospital creates “happy visits” for anxious patients

By dvm360® Staff

Mount Laurel Animal Hospital’s (MLAH) primary care team now offers “happy visits,” to encourage both positive association and cooperation for pets during vet visits.

The new service was established in response to concerned pet owners who experienced many roadblocks when bringing in their pets for a visit. According to an MLAH release, happy visits promote positive emotional learning associated with location (parking lot, exam room, scale), instruments (stethoscope, needles), and team members.

“Happy visits are designed to reduce stress and establish trust and positive experiences with patients. With happy visits, we have seen an appreciable difference in an animal’s well-being during routine exams,” says Erica Sweigard, VMD, MLAH’s lead primary care veterinarian, in the release. “Performing basic routine care becomes less stressful for the patients, their owners, and the entire veterinary team.”

These special visits are conducted using counterconditioning by pairing a pleasure-inducing interaction such as eating treats, with an interaction, that previously caused fear or anxiety. Happy visits also involve training pets to comfortably wear a muzzle or Elizabethan collar (if necessary) when handling.

Veterinary visits can be stressful for some animals as unfamiliar people, sounds and smells, can incite negative reactions for anxious pets. Before his recurrent happy visits—MLAH patient Saffron, experienced traumatic stress symptoms upon entering the site, resulting in muzzle use and physical restraint.

“Now, with the happy visit approach, Saffron loves coming to the vet and being able to take treats and lie down calmly for his exam, vaccines, and a blood draw. It’s like he’s a different dog,” says his owner.
Rarebreed Veterinary Partners appoints 2 new board members

Christina V. Tran, DVM, and Amy Wallis, PhD, SPHR, are charged with helping to develop new and innovative solutions to further enhance veterinary medicine.

By dvm360® Staff

Rarebreed Veterinary Partners, a community of veterinary hospitals whose mission is to create a premier animal hospital experience for both patients and clients, recently appointed Christina V. Tran, DVM, and Amy Wallis, PhD, SPHR as members of its board of directors.

“Rarebreed was founded to create exceptional work experiences for hospital teams,” says Sean Miller, cofounder and chief operating officer of Rarebreed Veterinary Partners, in a news release. “The addition of Dr Tran and Dr Wallis to our board reflects our commitment to developing unique solutions that shape the future of work in veterinary medicine.”

Tran, an associate professor and clinical relations lead veterinarian at the University of Arizona College of Veterinary Medicine, in Oro Valley, Arizona, has spent over half of her career working with small animals in shelters, private practice, and as a house-call practice owner. She is also a founding board member and immediate past president of the Multicultural Veterinary Medical Association.

“I’m thrilled to join the Rarebreed Veterinary Partners board of directors,” Tran says in the news release. “I look forward to actively participating and sharing my ideas to help transform the veterinary profession. Through their actions and words, Rarebreed Veterinary Partners strives to be a place where the entire veterinary team thrives, new technologies are embraced, the human-animal bond is strengthened, and pets receive excellent medical care.”

Wallis is an experienced organizational development and human resources leader in both the business and academic worlds. She also serves as chief human resources officer for Sunbelt-Solomon Solutions, where she guides the organization through a significant cultural transition and merger. Additionally, Wallis is a professor of practice in organizational behavior and ethics at Wake Forest University School of Business in Winston-Salem, North Carolina.

“I am excited to be part of the growth of this organization and look forward to advancing the Rarebreed mission,” she says in the release.

Dan Espinal, cofounder and chief executive officer at Rarebreed Veterinary Partners, is more than thrilled to welcome Tran and Wallis to the board. “I’m confident that their backgrounds, experiences, and insights will provide our community with the perspective and knowledge that will accelerate our ability to reimagine the veterinary experience in ways we hadn’t yet considered. I look forward to working with and learning from them,” he says in the news release.

BluePearl launches wellness ambassador program

The corporate hospital chain recently launched this first-of-its-kind program to help promote health and well-being among associates.

By dvm360® Staff

During the COVID-19 pandemic, many mental health organizations have observed an influx of people battling depression, anxiety, loneliness, and other mental health conditions, according to Mental Health America.

In an effort to help promote health and well-being among its 7000 plus associates, BluePearl Specialty and Emergency Pet Hospital recently launched the Wellness Ambassador Program, according to a company release. For this new program, trained wellness ambassadors will serve as liaisons between BluePearl hospitals and the organization’s veterinary social work and leadership teams as well as champion associate participation in wellness programs, training, and events.

“The Wellness Ambassador Program was specifically designed to create trained wellness champions across the organization, said Angela Calderone, vice president of people and organization at BluePearl. “These are associates who wanted to be involved in promoting a culture of health and well-being and in turn, support their fellow associates in getting the access to care and support they need to ensure self-care.”

BluePearl’s health and well-being team developed this new program based on feedback from associates who solicited help integrating BluePearl’s social work program at their hospitals. All ambassadors serving in the program will be trained in Mental Health First Aid, a public educational platform that teaches participants how to identify, understand, and respond to signs of mental illness and substance use disorders.

The core mission of the Wellness Ambassador Program is to:

- Normalize discussions about mental health and substance abuse challenges in BluePearl hospitals.
- Reduce the stigma often associated with a lack of understanding of those who may be experiencing substance abuse or mental health challenges.
- Help others to recognize the signs and symptoms of a mental health or substance abuse issue.
- Teach leadership and associates how to address and engage with someone who may be suffering from mental health or substance abuse challenges.

“Different from most health and wellness initiatives that work from the top down, this program works from the ground up, utilizing hospital-based wellness ambassadors to fill the gap between the resource or support and the associate in need,” says Lori C. Harbert, MSW, LCSW, director of health and well-being at BluePearl, in the release.

“This program, we hope to reach more associates, increase awareness of and engagement in our well-being programs, and build a sustainable culture of acceptance, support, and unity.”

By the close of 2022, BluePearl desires to have 200 Mental Health First Aid trained Wellness Ambassadors in its practices.
San Francisco SPCA challenges restrictive telemedicine policy

By dvm360® Staff

The San Francisco Society for the Prevention of Cruelty to Animals (SPCA) recently filed a First Amendment lawsuit against the California Veterinary Medical Board, contesting the law that prevents veterinarians from using telemedicine to discuss patient health with pet owners unless they have already met face-to-face.

The lawsuit insists that prohibiting veterinarians from engaging in telemedicine violates veterinarians’ and pet owners’ First Amendment right and is detrimental to animal welfare—depriving animals of access to care throughout the state, according to a company release.

Additionally, the lawsuit requests to grant veterinarians the ability to use telemedicine based on their judgment and training.

“With a growing pet population, it is the San Francisco SPCA’s top priority to ensure access to veterinary care for all animals in California,” says Brandy Kuentzel, senior vice president and general counsel at the San Francisco SPCA, in the release. “By limiting telemedicine, this law is restricting equitable access to animal care among California’s diverse people and geographic regions.”

Amid the COVID-19 pandemic, many states (including California) have loosened limitations on veterinary telemedicine. In Ontario, Canada, veterinarians have successfully incorporated the telemedicine practices the lawsuit seeks for about 3 years.

“The California Veterinary Medical Board is suggesting they don’t trust veterinarians that they licensed to make sound decisions for animals,” says Kuentzel. “The law not only restricts veterinarians and pet owners’ constitutional right to free speech, but it also restricts a pet’s access to veterinary care.”

“People can use telemedicine for themselves and their children, so why not for their pets?” Kuentzel questions. “Telemedicine can be a vital tool to improve the lives of pets and the people who love them.”

REFERENCE

Ethos Veterinary Health CFO named 1 of the 21 Women to Watch in 2021

By dvm360® Staff

The Center for Women and Wealth recently named Meredith Caggiano, CPA, chief financial officer of Ethos Veterinary Health, as 1 of the 21 Women to Watch in 2021. This title is awarded to women who have made monumental strides in their field and display prominent leadership and entrepreneurship skills.

According to a press release, Caggiano brings her strategic financial leadership to various business areas by working with the executive management team to establish long-range strategies, plans, and financial policies while preserving the company’s financial integrity and curtailing threats.

Additionally, she incorporates her firsthand exposure in overseeing organizations through change initiatives, business ramps, growth capital investments, and organizational changes.

Caggiano says the biggest lesson she learned in 2020 was to demonstrate flexibility and agility in problem solving and prioritize team members to help cultivate best-in-class customer service and patient care at Ethos.

“Our staff was stretched beyond what they thought they were capable of in 2020,” says Caggiano in the release. “However, because they felt valued and prioritized by leadership, they kept caring for patients and clients by continuing to deliver best-in-class medicine during a time of great uncertainty.”

“With a large majority of our staff being women, not only was there a need to be flexible at work, but they needed to have flexibility at home,” she continues. “We had to be nimble in how we deployed new safety procedures and operating workflows and, more importantly, ensure we were showing them the gratitude and recognition that they all deserved. I’ve always said that regardless of the organization, the employees are the biggest asset, but 2020 helped to reemphasize that point within Ethos.”

Game-changing equine barrier cream is now available

By dvm360® Staff

The versatile use of antibiotic ointments in barns contributes to the development of serious diseases (“superbugs”) like *Clostridium difficile* that wreak havoc on the equine gastrointestinal system and kidneys. Recently launched Zarasyl was designed to offer equestrians and veterinarians an antibiotic- and steroid-free solution for equine wound and skin care.

Inappropriate use of antibiotics is commonly known to cause antibiotic resistance. According to a company release, few equestrians are aware of the role antibiotic ointments play in creating resistant bacteria and routinely turn to these creams and ointments to treat even the most minor wounds.

Before the development of Zarasyl, equestrians resorted to powders and sprays that predisposed the horse to antibiotic-resistant diseases in the future. Over a decade of research has gone into the patented science behind Zarasyl. The silicate technology featured in this product was initially used to treat human skin issues, but scientists observed benefits for equine skin concerns.

Zarasyl helps manage skin infections such as pastern dermatitis, lacerations, and other similar injuries by moisturizing the skin to support wound healing. It also contains proprietary amorphous silica with a molecular structure, which offers a sustained release of orthosilicic acid, a bioavailable form of silicon associated with healthy connective tissue growth, to the skin.

Tony Kimmons, DVM, owner of Franklin Equine Services, expressed his sentiments about the new innovative product. “I’ve had several cases with deep penetrating wounds with extensive skin loss that responded extremely well to Zarasyl,” he said in the release.
Tips for promoting a clean, creative, and safe clinic

Managing your construction project

How to plan for the "pee-line"

Emergency design

What stays after COVID-19

Design without barriers
The Vidashield UV24 is an upper room UVGI disinfection device that is designed for use in occupied spaces. The Vidashield UV24 utilizes the disinfecting power of UV-C at the optimal wavelength of 253.7 nm to eliminate viruses, fungi, bacteria and other pathogens harmful to humans and animals. The CDC recommends the use of upper room UVGI devices to inactivate SARS-CoV-2.

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The Vidashield UV24 is an upper room UVGI disinfection device that is designed for use in occupied spaces. The Vidashield UV24 utilizes the disinfecting power of UV-C at the optimal wavelength of 253.7 nm to eliminate viruses, fungi, bacteria and other pathogens harmful to humans and animals. The CDC recommends the use of upper room UVGI devices to inactivate SARS-CoV-2.

To Learn More About Vidashield UV24 Visit:

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How to manage your construction project while staying in business

Planning, managing, and staying within your budget during construction can feel overwhelming. Consider these useful tips to help keep you on track for a successful project completion.

By Wayne Usiak, AIA, NCARB

You may think managing your construction project begins when you break the ground. However, this is a serious mistake, leaving you vulnerable to an out-of-control project. The decision to build or renovate must be based on a practice analysis of projected revenues generated based on services offered at a certain level. A percentage of these projected revenues will then be allotted to a mortgage payment, which will establish your initial project budget. Then comes the overall management of your project, which consists of numerous elements occurring in a logical sequence I call the “project schedule.” To help, I’ve organized each step into a series of phases.

Predesign phase
In this phase, you will select your project team, establish your project goals and objectives, analyze your needs, finalize your site selection, itemize a budget, and develop a schedule with critical milestones.

One of your first decisions is selecting an architect. Based on their...
level of experience with veterinary facilities, the architect will assist you in gaining your municipal site plan approval, your first "permit." They will develop your preliminary construction budget in more detail, analyze your space needs, and help select your engineering team. You must also investigate and select your financing option and develop your budget for practice-centered expenses like IT systems, signage, furnishings, equipment, and interest carry costs during construction.

A potential deal-breaking decision is site selection. Once you confirm demographics and size, the next hurdle is zoning. Sites not zoned for veterinary use will result in a time- and resource-consuming effort to gain a variance or change. Success is never guaranteed. You must retain a surveyor and civil engineer to develop preliminary site layout drawings, including grading and drainage, building location, setbacks, parking layout, utility connections, trash receptacle location, and any required landscaping, fences, or walls. Concurrent to these efforts, there must be a geotechnical analysis consisting of soil borings and tests to determine the soil’s bearing capacity for foundation design. Poor soils result in expensive foundations that can exceed the cost of the site itself.

Contingencies placed in your purchase offer can allow you to negate the purchase if any of these conditions are discovered, allowing you to locate an alternative site with minimal losses.

**Design phase**

During this phase, your job is to review design solutions from your architect/engineer team and provide direction for them to complete the design to your satisfaction. As you go through the process, remember that your practice’s success has been largely a result of your unique practice culture. You must guard your culture as you make each design decision.

You will also begin a more detailed itemization of every piece of equipment to be integrated into the design. It is critical to make equipment selections early and not change them. Each specific manufacturer has differing dimensions, clearances, and infrastructure requirements. New modifications or waiting too long can increase the chance of installation issues leading to costly change orders.

It’s important to decide now which construction delivery system to use. Each system has different drawings, finance distribution, and contractor involvement requirements from this phase forward. They also have different advantages and disadvantages to consider:

- **Negotiated contract**: Often best used in renovations, the architect prepares preliminary design drawings from which selected contractors prepare construction budgets. The owner and architect review them with each contractor, and the contractor deemed best fit is retained. The contractor’s job is to remain part of the team as the drawings evolve to completion, offering input to keep the job within their original budget projection.
- **Design-bid**: The architect and engineers prepare detailed construction/permit drawings and invite contractors to provide competitive bids based on the drawings. Typically, the lowest bidder is selected for construction. You will receive the final construction cost once the design is complete and bids are submitted. Bids over budget may result in project reductions or additional borrowing.
- **Design-build**: The architect and contractor are a single team, offering both design and construction for a fixed price set by your budget. For predictable quality results, prior veterinary experience is crucial. A considerable advantage is knowing the construction cost at the project outset.

**Construction/permit document phase**

The architect and engineers will now prepare and submit all required documents and drawings for the building permit to gain final contractor pricing for construction. Your job is to familiarize yourself with all the drawings: architectural, structural, heating/cooling, plumbing, electrical power and lighting, and interior design. Your team should walk you through them. Remember, if it’s not on the drawings, you aren’t getting it. Contractors are only obligated to provide what is in the drawings.

You should also finalize your construction loan. This is an interest-only loan used to pay the
contractor as they work on the building. The principal will be rolled into your permanent mortgage at project completion, but interest will be due each month at the current balance of funds distributed. It is critical you budget for this interest expense.

The construction phase
Once you have a contractor retained, your primary responsibilities are to understand and comply with the specific payment terms, review and approve materials/color submittals or substitutions, oversee the timely delivery of owner-furnished equipment, and review monthly contractor pay requests. Here is some key terminology to familiarize yourself with:

- **Schedule of values**: This is an itemized listing of each item of work, its total contract value, and the amount that has been paid to date.
- **Project schedule**: This is a bar chart illustrating the entire project duration, including each subcontractor’s time to complete their trade, from start to completion.
- **Application for payment**: Usually submitted on AIA form G702, an application for payment shows total contract value, payments made to date, and the payment due that month. The contractor, owner, and architect must each sign this document for the bank to issue a payment.
- **Retainage**: This is an amount of funds (typically 5%) withheld from each pay request until the final payment, for your financial protection.
- **Lien releases**: Each subcontractor should supply a lien release form with monthly pay requests indicating they have been paid and waive any lien rights for payment disputes.
- **Change orders**: Change orders authorize a modification in the contract amount for work to be added or deleted. Change order requests should be preceded by a proposal request from the owner, or the contractor, asking for this change. Once approved, the change order form can be processed and signed by the owner, contractor, and architect.
- **Punch list**: When the contractor is substantially complete, the architect prepares a deficiency list of items, or a punch list, to be corrected before final payment.
- **Certificate of occupancy**: Following the passing of all municipal inspections, the municipality will issue a certificate of occupancy allowing use of the building.

Managing your time
Can your practice afford to lose 40% to 60% of your personal productivity in the time it takes to construct your building? To help avoid this revenue loss, delegation is a necessity. If not you, then who should manage the time-consuming day-to-day tasks of managing the project? You could retain an outside construction manager who may bring construction knowledge but will not understand the nuances of you or your practice. This can, and has, resulted in onsite decisions that are not always best for the practice, or the project.

A more favorable option is to delegate project management to someone who understands the practice (e.g., practice manager, practice administrator, or head technician). The architect can supplement this project manager’s practice knowledge with their construction knowledge to ensure everything is running smoothly while the practice still operates. This keeps you in production and informed on the project, and you will still be the final decider on all issues. Using your design team and a project manager allows you to maintain the practice and the project at the highest level.

Wayne Usiak founded BDA Architecture in 1986 to specialize exclusively in animal facility design. In 1998, he formed their sister company CMP Construction to offer construction services to their design clients. Over 900 facilities have been completed to date.

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As an industry professional, you do your best to keep your clinic sparkling clean. However, there is 1 particular situation that poses a unique challenge—the notorious leg lifters! Everybody knows that accidents happen, but whether the patient is large or small, urine of any kind is still extremely damaging to certain materials. Over the course of this article, we will share knowledge about why urine interacts so negatively with your floors, walls, and other areas. We will also provide tips, tricks, and methods for protecting your clinic from the damages of pet urine. Because let’s face it, when they’ve got to go, they’ve got to go!

Urine hazards
Dog urine poses a significant threat because of its chemical makeup. Although all urine is primarily water (with inorganic salts and nitrogen-rich by-products such as uric acid and creatine), dog urine is much more concentrated. Did you know urine can even etch stone? The chemicals present in your pet’s urine are much more destructive.

To make things worse, urine can soak through wall and floor materials and get trapped out of reach of your cleaning efforts. Through absorption, it will penetrate the core of porous surfaces, and that is where the real problem begins. As urine breaks down and dries, it becomes more challenging to see, let alone clean. As the remaining water evaporates, a high concentration of ammonia is left behind, and a sulfur-containing chemical is formed, producing unpleasant smells. This high concentration of ammonia is a key reason to never use cleaning products also containing ammonia on affected areas. The scent will be familiar and lead your pet to believe that it is a “safe” place for them to leave their mark. Additionally, the uric acid in dog urine has a crystal-like structure that does not dissolve well in water. The crystals that remain after the liquid dries are why cleaning with soap and water alone will not resolve the issue. Traces of urine will be left behind. Issues like these have led our architect design team to develop a useful design guideline we call the “pee line,” which is an imaginary line we use to indicate the worst-case scenario height for these leg lifters. It takes into consideration where urine can reach for any size of dogs, from Chihuahua to Great Dane. In our experience, the pee line occurs over 1 m above the floor, and all finishes below it need to be selected, installed, and maintained to be durable and washable enough to withstand damage from urine.

How to plan for the "pee line"

Running a clean clinic is the dream, but it can be hard to maintain in a pet-friendly space. Here are a few design strategies to help keep the workplace glistening.

By MD Architects
Cleaning supplies
If a furry friend does decide to urinate at an inopportune time and place, there are some products we recommend using for cleanup. A water-based grout residue remover is ideal for keeping tile floors and natural stone looking stain-free and polished. It gets into those hard-to-reach crevices where urine is likely to get trapped and keeps them looking haze-free. These products are ideal for both epoxy and cement-based grouts and will keep the tile itself looking shiny and clean.

Another option is a heavy-duty alkaline floor cleaner that eliminates tough stains and protein-based build-ups, especially on textured surfaces such as epoxy floors. These products are safe to use and go above and beyond to prevent stains from ruining your finishes.

Design solution
Now that we have covered the cleanup process, we will discuss some material options proven to be reliable and able to withstand urine and liquid stains of all kinds.

As discussed above, one of the most common problem areas for pet stains is the floor. We recommend using a more durable material, such as epoxy, porcelain tile, or sheet vinyl, especially in high-traffic areas. In addition to choosing the correct materials, it is just as important to seal and install the products correctly. This will lower the absorption rate and make floors more resistant to urine and other fluids, including cleaning supplies.

Keep in mind that the pee line concept extends above the floor, so it is also crucial to consider what is applied on cabinetry and other vertical surfaces. Plastic laminates are a good example of a cleanable material that most hospitals use for exam room cabinetry. When laminates are properly cleaned and protected, uric acid crystals will not be left behind to erode the material and peel away the edges and corners of surfaces. In high-traffic or wet areas, metal or hard plastic corner guards can be placed on the edges to shield and better hold the material in place, keeping your area looking new over a longer time period.

There are some materials to avoid using altogether. Porous surfaces like carpet can absorb and trap fluids within the fibers and allow them to spread underneath, producing unwanted odors. Liquids move from wet to dry regions and, perhaps surprisingly, surfaces as seemingly hard as concrete and brick contain pores that confine excess liquids. When these porous materials get wet on one end, the pores begin filling with that liquid and spread throughout. Our recommendation is to stick with nonporous materials, like porcelain tile, solid surface products, or plastic laminate wherever possible.

The takeaway
The world of veterinary design is changing and progressing every day. We hope we can offer insights to help empower you to make the most informed decision for your practice. With an understanding of available materials and how they will perform, it will be easier to keep your clinic looking, lasting, and smelling brand-new for years to come!

Started in 2000 by Rick Renschen, MD Architects has presence from coast to coast with a national portfolio of animal care, human care, and commercial projects. The company is actively registered in 35 states and has a running list of upwards of 180 animal care projects across the country.
Designing for emergency cases

Curtail stressors, increase staff productivity, and enable smoother transitions from the client’s car to treatment spaces using these design concepts.

By Becky Gasser, NCARB

It’s no secret that emergency veterinary cases are highly tense situations, particularly when an ill patient is being rushed through your doors and transported to an appropriate treatment space. Accompanying these times are frantic owners, leaving the team dashing around trying to put out all the fires. If the layout of your hospital is insufficient for these hectic scenarios, it can create a very stressful environment for everyone involved. However, by incorporating a few simple design concepts, you can help mitigate these stressors and increase efficiency and productivity for emergency cases.

Clear signage

It starts from the moment a client pulls into the parking lot. Upon entering your site, they should be able to spot and read clear signage that directs them to the correct parking spot for unloading. Remember that owners are often rushing and stressed when their pet needs emergency care and the last thing they want to do is search for the emergency department. The quicker they can read your signs and get to the correct area, the quicker you can begin medical treatment on their pet.

The signage should also be well lit and bright in both daytime and nighttime settings. It should be easy to read with large letters and clear, concise messages. The color of the sign should be bright and bold, and contrast with whatever background you’re using. The most common design typically includes a red sign with white letters that says, “EMERGENCY.” The color red itself has psychological associations with feeling high risk and needing urgent attention.

Finally, the placement of the sign is important. It should be highly visible and clear of obstructions so that clients don’t miss it. A couple of good placement options for signs are either up high on the building or a monument-type sign as people drive in.

Designate drop-off spaces

Allocating a designated drop-off area for emergency cases is essential for emergency practices. It gives clients a place to stop and unload that is conveniently located near the entrance to the hospital, and it prevents people from having to park far away and potentially carry a large, immobile animal from their car to your front door.

Drop-off spaces can be as simple as 1 or 2 designated parking stalls near the entrance, or they can be as extensive as a porte cochere covered drive-through right by the front door (like a hotel where people temporarily park while they check in to their rooms), where clients can temporarily park while they bring their pet inside. Again, whichever you choose should be clearly labeled with easy-to-read signage.

Emergency greeter stations

If possible, designate a workspace for staff members to greet emergency cases as they arrive. For many of my emergency hospital projects, I often design larger than normal entry vestibules to allow greeters to be stationed just inside the first set of entry doors. These greeters will often have a small kiosk or desk that they can sit or stand at in between drop-offs, and large windows surrounding them to clearly see as clients pull up. There is also a space for a gurney to be parked nearby that greeters can quickly grab when they need to run out and help a client with their pet.

Emergency greeters are often perceived as an added level of care to pet owners who might not know what to do in emergency drop-off situations. The greeters are there to immediately respond to the pet owner, helping their pet get the attention they need, answering questions they might have, and directing them to the correct place to go before they’ve even entered the front doors. It’s a hospitality-type service that goes a long way...
in making pet owners feel more comfortable and taken care of.

**Direct paths to medical spaces**
Once an emergency case has entered the hospital’s front doors, it’s imperative to get them to a treatment space as quickly as possible. The path from the front door to the treatment area should be straight and direct. If the path to a treatment space is inconvenient or too long, it can cause unnecessary delays. There should be minimal corners and turns to navigate, as well as minimal doors to open and close. The width of the hallway should be wide enough to allow for a gurney and 2 people on either side to easily pass through; 5 to 7 feet wide is typically a good rule of thumb. Some other beneficial features to include in emergency hallways are automatic door openers to quickly and easily open doors when passing through and wall guards or bumpers to protect the hallway walls from rushing gurneys.

**Triage exam rooms**
Triage exam rooms are the first response station in emergency hospitals. They are essentially a special-use exam room that serves as the first stop for emergency care. Clients will often accompany their pets into a triage exam room along with a doctor. These rooms give the doctor a private space to evaluate the severity of the situation, provide immediate medical treatment if needed to stabilize a patient, and discuss options with the client for how to move forward. The difference between triage exam rooms and standard exam rooms has to do with the way they are outfitted. For example, triage exam rooms generally need more cabinetry than standard exam rooms because they need more storage for treatment supplies like intravenous equipment, syringes, bandages, and more. They also typically have a gurney or rolling table as the exam surface instead of a fixed or folding exam table to allow for mobility, and there is often more open floor space for emergency-type equipment such as crash carts. Some veterinarians also choose to incorporate medical gases into triage exam spaces such as oxygen.

**Small considerations with big impact**
Obviously, getting an animal from a client’s car to a medical space is just the beginning of emergency veterinary care, but it’s arguably one of the most important steps to ensure successful treatment and satisfied clientele. If you can ease the stress of those first few moments in emergency cases, you can set the tone for the entire emergency experience.

As the Director of Design with BDA Architecture, Becky Gasser has more than 10 years of experience designing animal care facilities across the United States. Passionate for both animals and architecture, she has been the lead designer on several award-winning veterinary hospitals.
COVID-19 keepers: Practice design changes that should stay

The pandemic brought abrupt change to the practice of veterinary medicine. Here’s why and how these adaptations can actually advance the future of your veterinary practice.

By Sarah Boman, AIA, AAA, NCARB

To say the past year has resulted in major changes in veterinary operations would be a dramatic understatement. Practices have evolved and grown during the COVID-19 pandemic. Although there were likely some growing pains, some changes will also serve veterinary practices well into a more normal future.

Calm lobbies
Imagine a nearly empty lobby with no scared cats meowing or barking dogs at your reception desk. You’ve learned that people can wait in their cars or outside until you and the exam rooms are ready. Consider adapting the restaurant approach of texting diners when their table is ready and text clients when their exam room is open. Creating more opportunities to keep your lobby calm and stress low will help improve your staff and client interactions. Less crowded lobbies allow for greater species separation too. Whether you are renovating or expanding your practice, look for ways to include exam rooms with outside entrances so clients and patients can enter and exit directly to and from the parking lot or covered, outdoor waiting areas.

Curbside services
Another way to keep your lobbies calm and improve your customer experience is to expand curbside services. Think about minimizing reasons for people to leave their cars, and then consider reducing reasons to enter the lobby. Can you meet people at their vehicles for pharmacy pickup? There may be an opportunity to install a slider window like drive-through restaurants or human pharmacies at your facility, which would make handoffs even easier. Surgery drop-offs don’t always need to involve clients bringing their animals in the front door; it might work better if they meet you at the back of the building if that’s closer to preop and postop holding. Basic oral medications could be given to patients outside. No one enjoys transporting feces through lobbies, so look at outside handoffs for fecal samples. Implementing more curbside or drive-through services will enable you to keep your lobby and public spaces peaceful and less stressful for the pets who do spend time there.

Telemedicine
Both human and animal medical fields have grown their telemedicine services over the past year. Although many veterinary services are best provided in person with the animal appearing in front of your team, there are a few areas that can be kept virtual such as:

- mobility issues
- skin conditions
- and minor wound

Incorporating telemedicine provides the ability to share and potentially downsize offices and charting spaces. Although this may not always be popular, it can be a great strategy if you’re rapidly outgrowing your space. Additionally, virtual consultations can be...
a good first pass when dealing with fearful or overstimulated animals, especially if they dislike car rides.

**Fastidious hygiene**
It appears the whole world has recently learned how to properly wash their hands. Let’s keep up the handwashing. Don’t ditch your sinks so you can collectively continue to have better hygiene and minimize fomite transmission. If you plan to replace plumbing fixtures, go touchless wherever possible to avoid turning faucets on and off with dirty hands. Soap and paper towel dispensers are also more sanitary when they are touchless. Consider retrofits for doors like foot-operated restroom doors, so people don’t have to touch dirty handles just after washing their hands. You can also retrofit wireless push buttons and automatic openers on doors at key locations in your facility.

**Good airflow**
Veterinary hospital design has focused on air quality in animal-occupied spaces, ensuring that medical spaces are pressurized properly and that odors in animal zones are properly managed. Over the past year, the world has also learned how important good airflow can be in human spaces too. Indoor-outdoor spaces can be a great asset in many areas. Exam rooms connected to the outdoors can also be more psychologically comfortable for your staff and clients—especially if you open windows and bring in fresh air. Try not to neglect your staff spaces either. Connecting break rooms to the outside is beneficial for many reasons. Humans thrive in spaces with natural light, so even if your treatment areas are inside and lack windows, providing break rooms with outdoor access will benefit your team. It’s even better if you can open your break space windows or install sliding doors or a garage door.

Over the past year, everyone has faced incredible challenges and adapted in innumerable ways. Although there are many things we would all like to put behind us, it’s important to reflect on the changes that improved operations and preserve the innovations that worked well so you can continue to grow your veterinary practice.

Sarah is a principal with Animal Arts Design Studios, an architecture firm dedicated to designing spaces for the care of animals. In her years with the firm, she has worked on dozens of projects.
I studied chemistry in college and distinctly remember the chemistry building on campus, which was built in the late 1960s, as the nadir of academic building design. This building was brutal, loud, poorly ventilated, and downright inky when the electrical systems failed, which was more frequent than one might imagine. The building had 30-inch hallways and not 1 handicapped-accessible bathroom.

Fortunately, the buildings of today are friendlier than their late modern ancestors. Spaces must accommodate anyone with a physical disability, and they must be healthy to inhabit. They must have windows, code-required ventilation, enough ambient lighting to perform tasks, and fire alarm systems. But there is still a lot of work to do. In honor of horrendous chemistry buildings of the past, let’s explore designs for a more comfortable future when veterinary practices pose far fewer barriers to clients, staff, and doctors.

**Nursing mothers**

Architecture used to be a male-dominated profession, and I was the first woman in my office to have a baby. I started a mini baby boom! For a while, 3 mothers were trying to figure out pumping schedules in the single-occupancy bathroom, and sometimes, we had to be in there together (which was certainly one way to get to know my coworkers). Perhaps this description is a bit uncomfortable to read, but for those ladies out there who have had to endure absurd accommodations to be both working and nursing mothers, it is time to push for better solutions. Creating a safe, healthy, and family-friendly workspace is one way to retain staff. In fact, lactation areas are now required by law, particularly for practices that employ more than 50 individuals. From a practical standpoint, here are some rules of thumb for providing these types of spaces in veterinary practices:

- These spaces do not have to be large, but they do need to be large enough to accommodate a chair and an employee who has a disability.
- Power needs to be provided.

- It is best to provide a refrigerator, so a staff member does not have to put her breastmilk in the break fridge as this is awkward, and unsanitary.
- If possible, adding a small sink is very important. A sink is essential for handwashing and keeping personal items clean.

**Gender accommodations for bathrooms**

The main benefit of gender-neutral bathrooms is that they can accommodate individuals with diverse gender identities. No one should have to think about issues relating to bathrooms when they are attending to professional tasks. Modern plumbing codes allow for different interpretations of how many men’s, women’s, and gender-neutral restrooms are provided. Have an architect talk to the building official about the special requirements of veterinary hospitals and have them pitch interpretations of bathroom designs that make sense. I have never failed in approaching this topic proactively with building inspectors. They will not grant special favors for deleting life-safety requirements such as proper exits or fire alarm systems, but they will listen to reason on bathroom design.

**Implicit racial bias**

Veterinary medicine is currently one of the least racially diverse professions and many communities of color may have less access to reasonable and affordable veterinary care. The sooner we can talk openly about these concerns, the better we can take care of people and animals for the health and well-being of communities. From an architect’s perspective, here are some of the first steps that can be taken to create open, inclusive, and respectful environments:

- Ensure that the architecture feels open and welcoming. For example, a front desk that feels like a barrier will be perceived as such.
- Provide multilingual signage as needed for your community of clients.
• Find ways for the building to support the community. Within your budget, provide learning spaces to support children, students, interns, hospital staff, and veterinary colleagues. Partner with schools, churches, and other community groups. A good way to do this without breaking the bank is to provide a space within your lobby that can be converted after hours or on weekends for educational purposes.

Design for aging
I have had the fortunate experience in my life of caring for many older family members, beginning with my grandfather, whom I loved so dearly, and with whom I stayed frequently while in college. He was a big man and a World War II veteran, and as he aged, there were fewer things we could do together, mostly because buildings were not accommodating to him. Most of them were too harsh, too loud, too startling for a veteran, too cramped, and too hard to move around for individuals like him. Let’s consider designing buildings that are better equipped for folks like my sweet grandpa, as well as for older or more physically constrained veterinary staff members. Here are some ideas:

• Enlarge some parking spaces so it’s easier to park and the parking lot is less of a barrier. Deliberately exceed the code if necessary to provide some easy-to-use spaces near the front of the hospital.
• Make the front entrance simple. Doors should be wide and easy to operate. You can use a handicapped operator on the doors if you want but use 2 sets of doors that open at different times if you use this feature, so pets do not escape.
• Furnishings should be easy to sit on and not too deep or low.
• The ceilings should have a high noise reduction coefficient to reduce reverberation.
• Ensure the restrooms are handicapped accessible with the right type of grab bars. It is very undignified not to be able to get off a toilet.
• Light spaces evenly to reduce shadows and make everything easier to see.

For older veterinarians and staff, consider the following:
• Lift tables to reduce the need to bend and lift. I know an older veterinarian who uses her lowered lift table to sit on so she can be near the floor and pet without sitting on the floor.
• Provide ergonomically adjustable stools and tables. Of particular importance is the dental procedure table, which can be spectacularly hard on a body if it is not adjustable. Therefore, I prefer adjustable dental tables, even though they can be more expensive.

• Use good procedure lights. Double lights are important for surgery spaces as they reduce glare and shadows. If your practice is old, consider upgrading your lights; the new LED ones are so much better.
• Consider kinder flooring for your staff. A sheet rubber floor is not only softer to stand on, but it is slip resistant for both your clients and their pets, which is a huge bonus because it helps reduce fear, anxiety, and stress for patients.

As with most brainstorm ideas, I start, I have a hard time finding a place to stop. There are so many opportunities to design and build veterinary hospitals that are so much kinder, inclusive, community-oriented, family-friendly, and more accommodating. If we begin with the idea that the hospital building should not be a barrier for anyone, that it should in fact be the opposite, imagine what we can do together for people, pets, and our communities.

Heather Lewis, AIA, NCARB, AAA, is a principal with Animal Arts Design Studios. In her more than 20 years with the firm, she has designed hundreds of projects for the care of animals, including veterinary hospitals, animal shelters, and service dog facilities.
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Designing better care.
PetSmart Charities funds CSU study to help improve access to veterinary care in Spanish-speaking communities

The $350,000 plus grant will fund phase 1 of Colorado State University’s multi-year interdisciplinary study to assess linguistic and cultural barriers between veterinary professionals and Spanish-speaking companion animal owners.

By dvm360® Staff

According to World Population Review, the United States has the largest population of Spanish-speaking residents where Spanish isn’t the predominant language. However, an access gap to veterinary care for Spanish-speaking pet owners remains.

To help better understand these cultural and linguistic barriers to veterinary care, investigators from Colorado State University (CSU) College of Liberal Arts are conducting a multiyear interdisciplinary study. PetSmart Charities’ generous donation will allow the university to conduct phase 1 of its research, which involves performing a comprehensive language needs analysis of veterinary professionals in predominantly Spanish-speaking communities, according to a Colorado State University release.

“Language barriers shouldn’t stand between Spanish-speaking communities and veterinary care for their companions,” says Aimee Gilbreath, MBA, president of PetSmart Charities. “We are proud to support the diverse communities in which we live and look forward to a future where language divides no longer limit access to veterinary care.”

Lead investigator Shannon Zeller, a Spanish instructor and curriculum developer from CSU’s Department of Languages, is teaming up with coprincipal investigator Danielle Frey, DVM, director of veterinary international and outreach student experiences in the College of Veterinary Medicine and Biomedical Sciences to conduct this research. Additionally, 5 university students will support this initiative: a graduate teaching assistant, a graduate research assistant, and 3 veterinary students.

This month, the CSU investigators will evaluate daily communication between veterinary professionals and their Spanish-speaking clients in clinics and shelters located along the Front Range. Then, the team will use this information to pinpoint any existing communication gaps and discover necessary measures to help resolve them.

In phase 2 of the study, which still needs funding, investigators will utilize the extensive research from phase 1 to help develop in-person and online Spanish-language education opportunities for students at CSU and elsewhere.

“Providing a communication pathway for veterinarians to interact with our country’s growing Spanish-speaking community will help create access to care for those families and their pets,” says Frey. dvm360®

REFERENCE

Tuskegee names new chair of dean’s advisory board

Dr George Robinson carries over 30 years of veterinary practice and industry experience to this position, further propelling the college’s core values and mission.

By dvm360® Staff

Tuskegee University College of Veterinary Medicine (TUCVM) has named George Robinson, DVM, MSPH, as chair of the dean’s advisory board (DAB).

Robinson, who was welcomed into his new role at TUCVM’s first virtual 55th Annual Veterinary Medical Symposium, is the former CEO and cofounder of Former Heartland Veterinary Partners. With his more than 3 decades of veterinary practice and industry experience, he will “bring a valuable perspective to the college with innovative and transformative members as entrepreneurial partners and advocates,” said TUCVM dean Ruby L. Perry, DVM, PhD, DACVR, in a university release.

“I extend my appreciation to Dr George Robinson, who will serve as the chair of the dean’s advisory board, and Drs Saralyn Smith-Carr and Lloyd Jarmon, who will serve as cochairs of the dean’s alumni board,” she said.

The advisory board is made up of influential leaders in business, industry, government, academia, alumni, and other collaborators who support the dean by:

• Taking counsel in the college’s strategic direction, vision, and decision-making for long-term planning.
• Providing collaborative expertise, esteemed advice, and various perspectives.
• Advocating for Tuskegee as supporters and champions.
• Engaging in and driving fundraising efforts.
• And elevating the college’s public appearance and prestige, while preserving its legacy.

Robinson says he’s excited to join this illustrious group and bring his expertise to the table.

“I am grateful for the opportunity to work with Dean Perry and the members of the dean’s advisory board. Lending expertise and insight is a significant way for me to contribute to the Tuskegee University CVM and the veterinary profession at large,” Robinson said. dvm360®
Tuskegee announces 2 winners of the PetDesk Equity in Veterinary Medicine Scholarship

By dvm360® Staff

Tuskegee University College of Veterinary Medicine (TUCVM) recently announced the recipients of the 2021 PetDesk Equity in Veterinary Medicine Scholarship. The scholarship was established last fall to help expand veterinary medicine opportunities to marginalized groups. The 2021 recipients are Pauline Hunter, a first-year student, and Alijah Bradford, a fourth-year student at TUCVM. The duo will each be awarded $20,000 to help defray veterinary education costs.

“We are very grateful to PetDesk for their inspiring and intentional commitment to the veterinary profession through the establishment of the PetDesk Equity in Veterinary Medicine Scholarship,” says Ruby L. Perry, DVM, PhD, DACVR, dean of TUCVM, in a university release. “The spirit of this scholarship aligns with the legacy of TUCVM to embrace and advance diversity, equity, and inclusion in the veterinary profession. PetDesk’s vision and generosity will not only support students in the professional DVM program on track to becoming career-ready veterinarians but also undergraduate preveterinary medical scholars aspiring to become veterinarians.”

Hunter knew from an early age that she wanted to pursue a career in veterinary medicine. Her heart was initially set on becoming a small animal veterinarian, but her interests have since broadened to large animal medicine and beyond.

Bradford currently serves as a secretary of the Tuskegee University Student Veterinary Emergency and Critical Care Society. Over the years, she served as an active member of various clubs and organizations and has especially enjoyed assisting with Tuskegee community events.

“When developing our Equity in Veterinary Medicine program, we knew we had to start at Tuskegee University. [The university] has been dedicated to equity-focused work for decades and we’re honored to be a part of their larger programs, supporting those who need it most,” says Taylor Cavanah, CEO and cofounder of PetDesk. “This scholarship is but a taste of the positive changes Tuskegee fosters on a daily basis and PetDesk looks forward to growing our impact together.”

Say hello to a brand-new spider species

By dvm360® Staff

There’s a new large spider species in town—and it was recently found lurking around the endangered pine Rockland forest surrounding Zoo Miami. With a name reflecting its habitat, the Pine Rockland Trapdoor Spider (Ummidia richmond) was first discovered by a zookeeper inspecting reptile research traps in 2012. At the time, the zoo’s conservation and research department couldn’t identify this mystery spider, as it didn’t match any existing records of species in the area.

Fast forward 2 years later and another one of these spiders was found and evaluated by experts including, Rebecca Godwin, PhD, assistant professor of biology at Piedmont College in Demorest, Georgia, who confirmed this arachnid is a previously undescribed species. After years of research, Godwin identified the 8-legged creature, kin to the tarantula, as a new species, according to a Zoo Miami release.

This exciting finding offers hope for more discoveries like these in large regions such as the Greater Miami Area, says Zoo Miami staff. However, since roughly 1.5% of the pine Rocklands outside the Everglades National Park remains, this newly identified spider is likely already endangered.

“The fact that a new species like this could be found in a fragment of endangered forest in the middle of the city underscores the importance of preserving these ecosystems before we lose not only what we know but also what is still to be discovered,” says Frank Ridgley, DVM, head of the conservation and research department at Zoo Miami. Venoms of related species have been found to contain compounds with potential use as pain medications and cancer treatments.”

Trapdoor spiders are some of the longest-lived and can spend their entire lives in the same burrow. Currently, zoo staff have found only a handful of male Pine Rockland Trapdoor spiders but no females to date. Over the past 35 years, this species has not been identified anywhere aside from the area surrounding Zoo Miami.
There is a new couple in town

Spironolactone is the essential addition to an ACE inhibitor

The only FDA approved combination drug for the management of congestive heart failure (CHF) in dogs.

- Improved patient acceptance solves owner compliance challenges.
- CARDALIS™ chewable tablets provide half of the ACVIM quad-therapy recommendation for congestive heart failure.*

Chewable tablets for dogs
Once a day
With meal
Flavored**

*In 2019, the ACVIM published new guidelines recommending a quadruple therapy approach for the treatment of CHF in dogs. The safety and efficacy of CARDALIS™ has not been investigated with pimobendan.

**Non-allergenic beef flavoring
See legal on page 2/2
Cardiovascular disease (CVD) remains the leading cause of mortality and morbidity in humans and is also a major public health concern in dogs. Approximately 50% of deaths in dogs are related to heart disease, and dogs intended for breeding or known to be pregnant or lactating, were excluded.

The safety of CARDALIS has not been evaluated in growing dogs. Spironolactone has an antinatriuretic effect and should be used with caution in growing dogs. The safety of CARDALIS has not been established in pregnant, lactating or breeding dogs.

**Adverse Reactions:** A 2.5-9.5 mg/kg dose of CARDALIS once daily for 14 days was studied in 42 client-owned dogs with left-sided heart failure. The rate of treatment failure was the primary effectiveness variable used to compare CARDALIS to benazepril hydrochloride alone. Treatment failure was defined as death or euthanasia (including death of unknown cause), occurrence or worsening of pulmonary edema, new or increased cardiogenic ascites, or clinical signs of congestive heart failure requiring administration of a furosemide dosage higher than 8 mg/kg/day. The rate of treatment failure rates are summarized in Table 4.

**Other Cardiovascular Effects:** Cardiac drug for oral use in dogs only.

**Mechanism of Action:** The main pharmacological target of spironolactone and benazepril is the renin-angiotensin-aldosterone system (RAAS) at the aldosterone receptor. Spironolactone and its active metabolite, (3S)-17α-ethynylspironolactone and canrenone, act as specific antagonists of aldosterone. Spironolactone is rapidly and extensively metabolized in humans and experimental animals, with species differences in the metabolic pathways. Spironolactone is metabolized to the primary metabolite canrenone by a cytochrome P450 enzyme(s) and to a secondary metabolite, 7α-thiourylspironolactone (TMS), which is used as a marker for spironolactone in dogs. Pulmonary edema is reversible with clinical signs associated with cardiogenic ascites. Probenecid (300 mg/kg) administered concomitantly with benazepril hydrochloride did not affect the bioavailability of benazepril hydrochloride, suggesting that benazepril is not a substrate for probenecid.

**Storage Information:** Store at controlled room temperature, 20° to 25°C (68° to 77°F), in original containers. Excipients are permitted between 15° and 25°C (between 59° and 77° F).

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**Cardiac Drug for Oral Use in Dogs Only.**

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One patient with cancer's dream of becoming a veterinarian came true thanks to Make-A-Wish Oklahoma and Oklahoma State University (OSU) College of Veterinary Medicine, according to a university release.

Addie, who arrived at OSU Veterinary Teaching Hospital in a white limousine, was welcomed with open arms by faculty, staff, and students and gifted a white coat that she proudly sported along with hospital scrubs and a stethoscope.

Addie made her rounds shadowing various experts, including an anesthesia specialist, zoological medicine expert, the theriogenology team, and more. She also assisted with performing wellness exams on puppies and kittens, learned all about anesthesia, and helped deliver puppies from a stuffed animal dog. Additionally, Addie was exposed to a variety of exotic animals and helped perform a pregame exam on OSU's equine mascot, Bullet.

"It was a privilege for us to grant Addie's wish to be a veterinarian for a day," says Jeff Studer, DVM, director of OSU Veterinary. "Our faculty, staff, and students enjoyed showing Addie what it's like to be a veterinarian. Our team members are experts at making dreams come true, and it was an honor for us to be part of this special day for Addie."

Addie's day concluded with a "graduation" ceremony. OSU officials, students, and basketball team members attended along with the CEO of Make-A-Wish Oklahoma and other members of the nonprofit. Addie's departure from the hospital was epic. She was cheered on by hospital staff and praised for her hard work. It was an unforgettable day for Addie and the OSU College of Veterinary Medicine community.
Petco Health and Wellness Company, Inc., has recently expanded its Pride collection, “The Proudest,” to Petco Pet Care Centers and online, demonstrating its steadfast support for the LGBTQ+ community. What’s more, Petco is joining forces with The Trevor Project, the world’s largest suicide prevention and crisis intervention organization for LGBTQ+ youth. Petco is offering a limited-time-only 10% giveback donation on every qualifying Pride collection product purchase from April 26 to August 8.

“We’re thrilled to be expanding the Pride collection this year and giving it even more purpose by giving back to The Trevor Project,” says Jennifer Kovacs, vice president of merchandising at Petco, in a company release.

“We value the various backgrounds, experiences, ideas, and perspectives that enrich the work we do for the diverse communities of pets and pet parents we serve at Petco—and our Pride collection is a beautiful representation of just that,” she continues. “The line offers a wide range of products that symbolize and celebrate the diversity found in the LGBTQ+ community.”

As an official corporate partner of The Trevor Project, Petco vows to donate a minimum of $100,000, regardless of product sales. The new Pride collection includes a wide variety of rainbow-colored toys and vibrant pet and human attire with encouraging messages. According to the release, each product was designed to promote pride among pet owners and their pets.

“We hear directly from LGBTQ youth working to cope with daily stressors that they find comfort in their pets, and we’re grateful to Petco for sending LGBTQ young people the message that they are supported and never alone,” says Shira Kogan, director of corporate development for The Trevor Project. Petco’s support will help The Trevor Project continue supporting LGBTQ youth in crisis 24/7 and for free, while also working to prevent suicide and protect LGBTQ young people through research, education, advocacy, and more.

Additionally, Petco’s employee resource group, LGBTQ+ at Petco, is open to all partners, members, and allies of the LGBTQ+ community. The group spotlights inclusivity through language, benefits, career advancement, and support. This month, Petco and The Trevor Project are teaming up again to deliver Pride programming to Petco partners with an educational lunch and learn.

SynDaver launches new synthetic feline surgical training model

This revolutionary training tool simulates the anatomy of a live cat, allowing veterinary students to perfect their craft without the use of a live patient.

By dvm360® Staff

SynDaver, an advanced biotechnology company known for its synthetic educational human and animal simulators, recently launched a new synthetic feline surgical training model. This innovative tool is designed to teach veterinary students how to perform feline spay surgeries without the fear of harming a live patient.

“By dvm360® Staff”

Petco celebrates LGBTQ+ community by expanding Pride collection and donating to The Trevor Project

By dvm360® Staff

The surgical trainer mimics live tissue by including the company’s patented synthetic tissues composed of water, fibers, and salts. Unlike silicone or plastic, it maintains the fidelity and lifelike properties of live tissue.

According to the release, the first synthetic feline model was used to teach anatomy at large schools and universities worldwide. Galina Hayes, DVM, PhD, BVSc, DACVECC, DACVS, MRCVS, associate professor of small animal surgery at Cornell University College of Veterinary Medicine, anticipates that this new model will have a significant impact on her students and the surgical community.

“I am beyond thrilled with SynDaver,” says Hayes. “Our students have had the privilege to train on the canine surgical models previously, and we couldn’t be happier. However, the newest feline surgical model gives them the opportunity to perform the feline spay, which is a benchmark in their surgical skills acquisition. The simulator allows them to practice in a highly realistic model where they can repeat as often as necessary, get comfortable with the tools required, and have no fear of failure or harm to a patient.”

“What SynDaver has provided is an opportunity to remove the enormous stress and anxiety our students feel when practicing an unfamiliar procedure on a live patient,” Hayes continues. “This is a huge leap forward for us in achieving high-quality learning and retention of surgical skills.”
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Veterinary professionals are familiar with the research, data, and firsthand experiences that prove a cancer diagnosis is not always a death sentence. But how do the clients perceive a cancer diagnosis?

To provide insight into pet owners’ attitudes about cancer and how likely they are to pursue treatment, the Veterinary Centers of America (VCA) released results from its “Pet Owner Perception of Cancer in Pets” study. Conducted by Trone Research and Consulting on behalf of VCA’s Pet CancerCare Alliance, the survey was completed by 1925 pet owners, allowing for 95% confidence with a margin of error of plus or minus 5.

Pet owner perceptions

Nearly all (90%) of the pet owners who took part in the survey recognized that dogs and cats can develop cancer. They also identified cancer as 1 of the top 3 threats to their pets’ health, behind arthritis/joint issues and heart issues. However, when it came to their respective pets, more than half of respondents (59%) said it was unlikely their pet would eventually develop cancer.

Statistically, the Veterinary Cancer Society estimates that 1 in 4 dogs and 1 in 5 cats will develop cancer at some point.

To better understand how pet owners might respond to a veterinary cancer diagnosis, the survey posed questions specific to the balance between quality of life, costs of care, and exhausting the medical options to extend a pet’s life.

Respondents were asked to assume their pet recently received a cancer diagnosis. An overwhelming majority (74%) indicated they would do everything possible to make their pet comfortable. But that did not always include moving forward with treatment. Just over one-third (35%) of respondents said they would do whatever their veterinarian recommended regardless of the financial commitment. Similarly, 38% said they would spend any amount to save their pet’s life. More commonly, respondents said they would have to weigh the decision between their pet’s quality of life and length of life (67%).

When pressed about cancer treatments, two-thirds (66%) of pet owners said they believe cancer treatment is cost-prohibitive. In addition to the financial components, 45% of pet owners said cancer treatment would be painful for their pet, and 43% believe cancer treatment would cause their pet to experience adverse events (AEs).

“So many people have had a friend or family member battle cancer, and they imagine their pet will have the same experience. But cancer treatment in pets is far less painful and more affordable,” says Zachary Wright, DVM, DACVIM (Oncology), chair of the VCA Pet CancerCare Alliance.

Finances will always be a top concern when it comes to veterinary care. “I acknowledge that cancer treatment can be expensive, but I also let clients know that the specialist will talk to them about their financial situation, and the flexible finance options they may not know exist,” says Lollie Mensik, DVM, coowner of Country Creek Animal Hospital in Allen, Texas, a VCA-affiliated hospital.

Above all else, practice patience. This information can feel overwhelming, and your clients probably were not expecting their pet to receive this diagnosis.

“I think people expect me to tell amazing stories about pets who are cured. And I do have stories like that. But some of the best success stories for me are pets who came in very sick or with family members who were very scared—and we did something to make their time together better. I know we’re conditioned to think that a cure is the win. But sometimes it’s a win when we know we really made a difference. Success to me is a comfortable, happy animal and a family that’s less stressed and feels confident that they know what to do for their beloved pet,” says Oberthaler.

How can veterinarians use these data?

After reviewing the responses, the VCA believes the stats are a positive indication that clients are not completely unprepared to face this difficult conversation. However, there is still plenty of work to be done to help bridge the knowledge gap. Pet owners place trust in their veterinarians to provide the best care for their furry family members, and there are actionable items hospitals can implement to ensure clients make informed decisions.

Understand and address client treatment concerns

Remember that as well versed as your veterinary team is on the commonality of cancers and the incredible strides that have been made in treatment protocols, for clients, this is an uncharted, scary realm. Recognizing their clients’ fears and concerns about diagnosis and treatment can better prepare veterinary professionals for these difficult conversations.

For instance, although 89% of pet owners were aware that specialty oncology services exist, they didn’t have the knowledge or experience to know that pets experience far fewer adverse effects (AEs) than human patients undergoing cancer treatments. Most individuals equate cancer treatments with hair loss, severe nausea, pain, and exhaustion. Convey to clients that veterinary oncologists administer lower doses of drugs, generally provide medications at less frequent intervals, and do not combine as many drugs as in human protocols. Many of the most common AEs animals experience, such as mild nausea and a decreased appetite, can often be treated with supplemental medication.

“Regular back-and-forth communication keeps us on the same page, so there is always a unified message to the pet owner. We all want the same thing; we want to do our best for the pet,” says Wright.

Mensik says that when she makes a referral to a specialist, she calls them in advance of the client’s appointment or consultation.

“I give the specialist a call so they have a heads up and tell them where I am thus far. I ask whether there’s anything else I should have done or known, so that I can learn and help clients even better in the future,” she says.

Bottom line? “More communication helps us stay on the same page,” says Mensik.
SEE THE DIFFERENCE
Pain and dysphoria don’t have to be part of the post-op experience.*

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FDA-Approved
Long-Acting Local Anesthetic
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Indications
For single-dose infiltration into the surgical site to provide local postoperative analgesia for cranial cruciate ligament surgery in dogs. For use as a peripheral nerve block to provide regional postoperative analgesia following onychectomy in cats.

Important Safety Information
NOCITA is for use in dogs and cats only. Do not administer concurrently with bupivacaine HCl, lidocaine or other amide local anesthetics. The safe use of NOCITA in dogs and cats with cardiac disease or with hepatic or renal impairment has not been evaluated. The safe use in dogs or cats younger than 5 months of age, that are pregnant, lactating, or intended for breeding has not been evaluated. The most common adverse reactions in dogs were discharge from incision, incisional inflammation and vomiting. The most common adverse reactions in cats were elevated body temperature and infection or chewing/licking at the surgical site. Please see accompanying brief summary for product safety information.

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

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Colleagues in the pharmacy work hard to fulfill their legal and ethical obligations to patient health and safety when filling prescriptions. Unfortunately, pharmacists receive minimal training in veterinary pharmacology. Results from a 2017 survey of pharmacists in North Carolina found that 91% of respondents reported no previous training in the subject.1 Because there can be large differences in use, route of administration, doses, and adverse effects for many medications among different species, the potential for errors is high when pharmacists lack species-specific knowledge or resources. Understanding when and why errors occur and strategies for error prevention is essential for patient health and maintaining good working relationships between veterinarians and community pharmacists.

**NOCITA®**
(bupivacaine liposome injectable suspension)

13.3 mg/mL

For local infiltration injection in dogs only

For use as a peripheral nerve block in cats only

Local anesthetic

Single use vial

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

Before using this product, please consult the Product Insert, a summary of which follows:

**DOG Indication:**
For single-dose infiltration into the surgical site to provide local postoperative analgesia for cranial cruciate ligament surgery in dogs.

**CAT Indication:**
For use as a peripheral nerve block to provide regional postoperative analgesia following onychectomy in cats.

**CAT Adverse Reactions:**
NOCITA is for single dose administration only. A dose of 5.3 mg/kg (0.4 mL/kg) is administered by infiltration injection into the tissue layers at the time of incisional closure for dogs. A single dose administered during surgical closure may provide up to 72 hours of pain control.

**DOG Dosage and Administration:**
NOCITA is for single dose administration only. A dose of 5.3 mg/kg (0.4 mL/kg) per forelimb (0.4 mL/kg per forelimb, for a total dose of 10.6 mg/kg/cat) as a 4-point nerve block prior to onychectomy. Administration prior to surgery may provide up to 72 hours of pain control.

**Contraindications:**
Do not administer by intra-venous or intra-arterial injection. If accidental intravascular administration occurs, monitor for cardiovascular (dysrhythmias, hypotension, hypertension) and neurologic (tremors, ataxia, seizures) adverse reactions. Do not use for intra-articular injection. In humans, local anesthetics administered into a joint may cause chondrolysis.

**Warnings:**
Not for use in humans. Keep out of reach of children. NOCITA is an amide local anesthetic. In case of accidental injection or accidental topical exposure, contact a physician and seek medical attention immediately. Wear gloves when handling vials to prevent accidental topical exposure.

**Precautions:**
Do not administer concurrently with bupivacaine HCl, lidocaine or other amide local anesthetics. A safe interval from time of bupivacaine HCl, lidocaine or other amide local anesthetic administration to time of NOCITA administration has not been determined. The toxic effects of these drugs are additive and their administration should be used with caution including monitoring for neurologic and cardiovascular effects related to toxicity.

The safe use of NOCITA in dogs or cats with cardiac disease has not been evaluated. The safe use of NOCITA in dogs or cats with hepatic or renal impairment has not been evaluated. NOCITA is metabolized by the liver and excreted by the kidneys.

The ability of NOCITA to achieve effective anesthesia has not been studied. Therefore, NOCITA is not indicated for pre-incisional or pre-procedural loco-regional anesthetic techniques that require deep and complete sensory block in the area of administration.

The safe use of NOCITA in dogs for surgical procedures other than cranial cruciate ligament surgery has not been evaluated.

The safe use of NOCITA in cats for surgical procedures other than onychectomy has not been evaluated. The safe use of NOCITA has not been evaluated in dogs or cats younger than 5 months old.

The safe use of NOCITA has not been evaluated in dogs or cats that are pregnant, lactating or intended for breeding.

**DOG Adverse Reactions:**
Field safety was evaluated in 123 NOCITA treated dogs. The most common adverse reactions were discharge from incision (3.3%), incisional infection (2.4%) and vomiting (2.4%).

**CAT Adverse Reactions:**
Field safety was evaluated in 120 NOCITA treated cats. The most common adverse reactions were elevated body temperature (6.7%), surgical site infection (3.3%) and chewing/flicking of the surgical site (2.5%).

**Storage Conditions:**
Unopened vials should be stored refrigerated between 36°F to 46°F (2°C to 8°C). NOCITA may be held at a controlled room temperature of 68°F to 77°F (20°C to 25°C) for up to 30 days in sealed, intact (unopened) vials. Do not re-refrigerate. Do Not freeze.

**How Supplied:**
13.3 mg/mL bupivacaine liposome injectable suspension in 10 mL or 20 mL single use vial. 10 mL supplied in 4-vial carton. 20 mL supplied in a single vial carton and 4-vial carton.

NADA 141-461, Approved by the FDA
US Patent: 8,182,835; 8,834,921; 9,205,052

Manufactured for: Aratana Therapeutics, Inc., Leawood, KS 66211

Additional Information is available at www.aratana.com or by calling Aratana Therapeutics at 1-844-272-8262.

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NOC 0088-2 August 2018

**Potential Prescription Errors**

In 2012, the Oregon Veterinary Medical Association (OVMA) conducted a member survey to collect data on the frequency of prescription errors when utilizing community pharmacies. Four other VMAs performed similar surveys in 2012 and 2013. In total, over 700 veterinarians responded, with approximately one-third reporting dispensing errors and 10% reporting harm to patients due to these errors.2

**Dispensing of Incorrect Medication due to Substitutions**

One of the most serious potential errors that can occur is the dispensing of incorrect medication. Multiple cases were documented in the OVMA’s 2012 survey of prescription errors.2 The 2 primary reasons for this are miscommunication and inappropriate substitutions.

Medications with similar-sounding names, such as azathioprine and azithromycin, pose the largest risk of miscommunication. In extreme cases, these errors can result in patient death due to a lack of improvement (e.g. prescription filled for azithromycin instead of azathioprine for a patient with an immune-mediated disease in a dog) or adverse effects of the wrong medication (e.g. prescription filled for azithromycin instead of azathioprine for a cat, leading to bone marrow suppression).3

Regarding substitutions, there is more of a gray area. Pharmacists can legally substitute a generic medication for the brand name product or interchange manufacturers unless the prescriber specifies otherwise. Often, pharmacists make these substitutions to help clients save money.

A legal substitution could be problematic in a veterinary patient if one manufacturer’s product contains a toxin, such as xylitol, whereas another does not. If a veterinarian prescribed the specific manufacturer without specifying “no substitutions,” a pharmacist could legally dispense a different generic gabapentin suspension, resulting in potential toxicity to the patient.

Although some substitutions are legal, illegal substitutions are sometimes made, such as dispensing a drug related to but not interchangeable with the prescribed medication. While the prescribing doctor should approve these types of substitutions before dispensing the medication, this does not always happen. Examples that could be especially problematic for veterinary patients include:

- cyclosporine (Sandimmune) in place of modified cyclosporine (Atopica, Neoral, or Gengraf).
- prednisone in place of prednisolone.

Although the unmodified product would provide cost savings, it is not as bioavailable in veterinary patients, leading to reduced efficacy. Technically, this is an illegal substitution because modified cyclosporine is considered a different drug.

- prednisone in place of prednisolone. Veterinarians are well aware of the inability of cats to convert prednisone into the active form prednisolone and therefore, exclusively prescribe prednisolone. Humans can convert the prednisone prodrug into prednisolone without issue. However, pharmacists may be unaware of the difference between the 2 drugs for feline patients and might dispense prednisone if prednisolone is not in stock.4
- an opioid in combination with acetaminophen in place of the opioid alone (e.g. hydrocodone plus acetaminophen in place of Hydrocodan).
Alters to medication strength or dose
Pharmacists are legally required to verify the accuracy and validity of each prescription they receive. If pharmacists are unaware of species-specific dose differences between humans and veterinary patients, they may advise clients that the dose prescribed by their veterinarian is too high or recommend a dose reduction. In a 2019 survey of veterinarians in Pennsylvania regarding prescription errors, 73% of respondents reported that a pharmacist had questioned the strength or dose of the prescribed medication.1

If the pharmacist is concerned about the dose and contacts the veterinary office before filling the medication, no patient harm occurs. However, this may put a strain on the relationship between the veterinary office and community pharmacy.

Concerns arise when pharmacists counsel owners to give a reduced dose or express their concern directly to the client. This can result in upset clients who are under the impression that their veterinarian made an error, or clients who do not administer the medication as prescribed. For a drug such as phenobarbital, the patient may experience complications because of the subtherapeutic dosing. In fact, the OVMA survey results included the case of a dog that was euthanized because of ongoing seizures after a pharmacist advised the owners to administer a reduced dose.2

Another common drug that raises concerns for pharmacists is levothyroxine. There is a large difference in dosing between humans (dosed in micrograms) and canines (dosed in milligrams) owing to differences in bioavailability, daily requirements, and half-life.3

Clients advised of incorrect adverse effect profiles
Pharmacists play an essential role in the health care team for human patients and are required to offer counseling to patients on possible adverse effects and drug interactions. Because of a lack of training in veterinary pharmacology, pharmacists may counsel pet owners about adverse effects that are not applicable to animal patients. In humans, respiratory depression is a major concern with opioid medications but is rarely seen with oral opioids in veterinary medicine. Although this rarely results in direct harm to the patient, owners may become alarmed by the potential adverse effects, which may not be pertinent to their pet. The owners may elect not to have the prescription filled or administer the medication prescribed. In addition, veterinary offices may receive calls from clients who are upset the veterinary team did not advise them about these adverse effects.

Strategies for error prevention
Veterinary teams can help prevent prescription errors by ensuring clear communication and script transmission, building relationships with the pharmacy team, and educating clients.

Communication and script transmission
First and foremost, providing clear prescriptions is essential for reducing errors. Providing a written script is the best way to avoid communication errors and the most reliable way to track where an error occurred (ie, whether at the veterinary office or pharmacy), as a copy of the script can be kept in the patient’s chart.

When providing written scripts, typewritten is preferred. If a script is handwritten, ensure it’s legible. Avoid abbreviations, as they can be misinterpreted, especially “SID” instead of “once daily,” as this is not an abbreviation recognized in human medicine.4 Furthermore, be sure to denote “no substitutions” or “brand medically necessary” when substitutions are inappropriate.

Take additional steps to reduce errors, such as writing “no xylitol” for suspensions or orally disintegrating tablets, so the pharmacist is aware of the need to check this. Consider including additional information about patients, such as the weight, which may help the pharmacist when verifying doses, as a Chihuahua and Great Dane will have widely different doses for the same medication.

It is legal to provide a prescription over the phone for everything except Schedule II controlled medications; however, as the communication is verbal, tracking the source of an error is more difficult. Although it may be easier to leave a message, it is always better to speak to a live person who can confirm prescription instructions. Documentation of who received the prescription at the pharmacy and the exact instructions relayed should be made. Spell out information, especially drug names, and ask the pharmacist or pharmacy technician to repeat the order to verify accuracy.

Relationship building with the pharmacy team
Building relationships with community pharmacies can go a long way toward reducing errors. Reaching out to local pharmacies to establish a relationship as an expert and invite them to call the office with any questions. Consider donating an old copy of an animal drug reference to a local pharmacy, as many do not have access to veterinary references.

Client education
The final strategy for reducing prescription errors is to make sure clients are well educated before leaving the office with a prescription. Clients should be aware of what medication they will receive at the pharmacy and how it should be administered. Including written discharge instructions offers a way for the client to double-check whether they have received the right medication and that the dosing instructions match what they have received from the pharmacy. In most medical records systems, adding a discharge note to the bottom of an invoice only takes a few seconds.

In addition, for medications with large dosing differences between animals and humans, inform the client that the pharmacist may express concerns regarding the dose when they pick up the medication. Assure clients that the dosage is appropriate for their pet and encourage them to refer any concerns the pharmacist might express back to the office. The same can be done for any adverse effects that may not be applicable to veterinary patients.

What comes next
In the next article, other types of errors that may occur related to toxic ingredients and over-the-counter medications, concerns with insulin and insulin syringes, and how to report errors if they occur will be discussed.

REFERENCES
5. Unpublished data from a 2019 survey of Pennsylvania veterinarians regarding prescription error when using retail phar- macies. Conducted by Dr. Brian Langlois, past president of PVMA.

Kate Boatright, VMD, is a 2013 gradu- ate of the University of Pennsylvania, a practicing veterinarian, and a free- lance speaker and author in western Pennsylvania. She is passionate about mentorship, education, and addressing common sources of stress for veterinary teams and recent graduates. Outside clinical practice, Boatright is actively involved in organized veteri- nary medicine at the local, state, and national levels.

Lauren Forsythe, PharmD, DCCVB is a 2015 graduate of the University of Findlay College of Pharmacy. She completed her veterinary pharmacy residency at Purdue University Veterinary Teaching Hospital. After her residency, she spent 3 years as a veterinary clinical pharmacist at the University of California Davis Veterinary Medical Teaching Hospital and is now the medication dispensary coordinator at the University of Illinois Veterinary Teaching Hospital. She is a diplomate of the International Society of Veterinary Hospital Pharmacists. In addition to her full-time veterinary pharmacy career, Forsythe has experi- ence working in a retail pharmacy.
Set on 1.67 acres, this Texas hospital makes an impression with a radial design near the entryway, stonework, and lots of windows to allow in natural light. The 18,234-square-foot hospital serves a rapidly growing suburban market.

Ten colorful, spacious exam rooms keep the hospital moving. Rooms dedicated to technician-specific tasks and specific breeds are stocked for efficiency and are conveniently located near a hallway with all the other tools staff members need to work well.

The curved design of the lobby encourages a natural flow of clients and patients toward the exam room corridor. Spacious and bright, the reception area seats up to 30, and has a separate space for feline patients.

To not isolate feline clients, while giving them a space of their own, the doctors incorporated a large glass light in the feline lobby door as well as a 4' x 8' window that divides the general lobby from the feline lobby.

The pharmacy hallway sports bright colors, open and closed shelving, hooks to hold incidentals, and workstations.

The yard is laid out in 3 separated sections, one for guest services, 1 for isolation patients, one for the general day stay and hospitalized patients and one for the guest services population, thus discouraging cross contamination between populations.

The boarding suites feature individual windows, 2 wards with runs, one ward with canine kennels, and one ward with feline kennels. A dedicated food prep room with equipped kitchen is nearby. The doctors chose Permatex flooring for this space after visiting other facilities.
Start with a dream
Dream big, then trim your plan as needed and get your best hospital possible.

By Sarah A. Moser

Randy Cottingham, DVM, followed his mantra of “begin with your dream and not your budget” when building Turning Stone Animal Hospital in Cibolo, Texas, with his business partner and daughter, Amie Hooper, DVM. Cottingham explains that figuring out what part of your dreams to clip back is easier than figuring out your budget because you have the opportunity to envision where you want to go. “That extra $2,000 or so on your loan payment will fade into the background so figuring out quickly once you get into your new facility that you will wonder why you ever worried about it.”

Cottingham notes that although architects and other experts will encourage you to start with a budget, he prefers to start with a vision. “The building itself is not the dream; the dream is the practice you want,” he says. Thankfully, Cottingham and Hooper found both an architect and banker who would go along for the ride. Turning Stone Animal Hospital is their second veterinary hospital, with Kitty Hawk Animal Hospital, a sister property in Universal City, Texas, as the first. “Kitty Hawk was started in 1985 and we expanded about 15 years ago,” says Cottingham. “It was everything we could dream of at the time, but we’ve outgrown it.”

Turning Stone Animal Hospital opened in 2020 and boasts 18,234 square feet, 10 exam rooms, and a reception area that seats 30 clients. A smart traffic flow and the nesting of like-minded services close together make the large space more efficient. Cottingham and Hooper’s clean design earned them more than just their ideal hospital; it also won them a Merit Award in the 2021 dvm360® Hospital Design Competition for design excellence.

Nesting design
When it came time to configure an ideal hospital layout, Hooper did some arts and crafts. She cut out little cubes of paper and started moving them around to see how different areas would fit together. “We referenced Kitty Hawk a lot, thinking about what we liked and what we would do differently,” says Hooper. “Playing with the design in this way allowed us to fit a lot of what we wanted into the design. We have a great workflow here.”

A key strategy for Cottingham and Hooper was focusing on “nesting” various related functions together and separating competing functions. For example, radiology, ultrasound, and endoscopy needed to be near one another. But the feline lobby needed to be separated from the general or canine area in reception, and the isolation ward and isolation walking areas required distance from the general animal areas.

Another smart design idea they included stemmed from security issues at the previous hospital. Here, the hospital is sectioned into 3 secure areas with a key fob to access each. They isolated entry into the hospital from the guest services area and from the second-story access area using the use of key fob technology. This allows them to limit after-hours access to...
the hospital from either the guest services area or the upstairs classroom area. “This is one of my favorite things we did when deciding to keep boarding and daycare,” says Hooper. “This strategy keeps each area secure from the next.”

In such a large facility—the hospital is more than 18,000 square feet—tracking down team members could pose a problem. But these doctors say they can stand in the middle of the treatment area and see almost all of the hospital functions, thanks to a smart design and plenty of internal windows. “It’s a huge building, so anything we could do to minimize hunting down people during the workday is very helpful,” says Hooper. “Our good workflow certainly helps.”

Keeping exam rooms for just exams is another example of a good workflow. The fully equipped exam rooms are the heart of the hospital, with nearly all essential work in the hospital beginning there. The exam rooms are always open for only exams, with a separate technician procedure exam room and a consultation exam room used to ease the traffic flow from the general exam rooms. Everything staff members need is accessible along the back hallway nearby. If a pet is dropped off, team members take it straight back to the treatment area, keeping exam rooms open for the regular flow of appointments.

**Remember relationships**

Cottingham says his business is that of a “marketplace ministry,” essentially a way to show God’s love to all. This starts by focusing on creating a healthy environment for people to work in and treating their team members well. “You and your staff are going to live two-thirds of your waking hours in this building, so why wouldn’t you give them a larger break room and find ways to improve their quality of life?” Cottingham asks.

“You need to look past the search for higher revenue in everything you do; there’s more to life than another $100,000 in the bank when you die. With that philosophy, we built a place to feel good about being in. We wanted a high quality of life built into our practice.”

Cottingham and Hooper carry this idea of relationships with others into all of their dealings, from staff members to clients to even the banker and vendors they used to build Turning Stone Animal Hospital. When selecting an architect, Cottingham and Hooper flew to Colorado to personally interview Heather Lewis and make sure they would work well together before hiring her. They say Lewis helped make their ideas happen instead of imposing her own on them.

“Making sure we would click relationally was more important than getting the right plan,” Cottingham says.

At 2 different Hospital Design Conferences, they spent hours talking with vendors and building personal relationships. And even their banker was more than just numbers to them. “We are old-school and believe whole-heartedly in having a personal banking relationship where we borrow our money,” he says. “Yes, we could have gotten lower interest, but to us, lower interest on the money translates into lower interest in our project. Our banker held our hand all the way through, and I have kept him informed of every change, not only in the project but in the rest of our business finances. Because he and his bank feel like a part of our team, they are always ready to brainstorm and come with unique ways to solve financial issues with us. I would never trade cheap money for a valued working relationship with my banker.”

Sarah A. Moser is a freelance writer in Lenexa, Kansas.

**By the numbers: Turning Stone Animal Hospital**

**Owner:** Randy Cottingham, DVM, and Amie Hooper, DVM

**Number of doctors:** 2 full-time, 1 part-time

**Examination rooms:** 10

**Total cost (building and interior):** $6,867,000

**Cost per square foot (building only):** $232

**Square footage:** 18,234

**Structure type:** New construction

**Primary architect:** Heather Lewis, Animal Arts
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Stopping the otitis snowball: identifying the infection and cause

The ins and outs of otitis, plus the benefits of hand-held otoscopy.

By Katherine Myhre, DVM; Fiona Lee, VMD, DACVD, MBA

F ive or more dogs on your schedule for the day? Chances are, at least 1 of them has otitis. To set them up for short-term recovery and long-term management, we’ll walk you through identifying underlying factors, examining the patient, taking appropriate samples, and using imaging or referrals when necessary.

Keep an ear out for the upcoming otitis externa consensus guidelines from the World Association of Veterinary Dermatology as veterinary medicine continues to evolve.

Would a hair pluck help? Hair follicles are a normal component of the external ear canal. They’re often simple follicles, but there can be excessive compound hair follicles in some dog breeds. Although the presence of excessive hair can be a predisposing factor for otitis, plucking can cause inflammation in the ear canal, making the ear even more prone to bacterial or yeast colonization and proliferation. The presence of hair in the ears alone would not cause an infection, as evidenced by the many hairy-eared asymptomatic humans, so routine hair plucking is not recommended.

Examining the otitis patient Getting the whole picture Relevant history questions:
• Is the infection in one ear or both?
• Was the ear disease first noticed or diagnosed? What were the symptoms? (eg, headshaking, scratching, neurologic signs, lethargy, pain when opening the mouth, etc)
• Is this the first occurrence of ear disease? If not, when were the previous episodes? Is there a seasonal pattern?
• Have medications been used previously? If so, what was the clinical response? Any adverse effects?

How is an otoscopic exam completed on a nonadherent patient?
Proper restraint is key to a thorough otoscopic examination, particularly for a patient in pain. Restraint is best achieved by covering the dorsal muzzle with the palm of the hand, with the thumb and fingers directed downwards on opposite sides of the muzzle. Angling the head downward and restraining from above prevents a strong, quick elevation of the muzzle during otoscopy, which is a common reaction.

As with any diagnostic test, it’s important to consider what the clinician and client would do with the obtained information; for many ear cases, short-term management may not change much. For this reason, the authors typically do not sedate fractious patients solely for an otoscopic exam, unless there is also a plan for treatment while under sedation (eg, cytology, blood work, leave-in ear meds, etc.). For painful infected ears, it may be best to treat first, then recheck with pre-visit pharmaceuticals. See below for discussion of general anesthesia for ear flushes.

How is an otoscopic exam completed when the ear canal is full of debris or too inflamed?
Debris in the ear canal, which limits visualization, may be removed by ear flushing. However, this may require anesthesia if the patient is in excessive pain or if there is a concern of possible tympanic membrane rupture. If excessive swelling or hyperplasia obstructs the ear canal evaluation, then topical or systemic glucocorticoids are indicated. Potent glucocorticoid treatment, whether topical (eg, flunisolide, mometasone) or systemic (oral prednisone 1-2 mg/kg/d, 4-7 d tapers), may be used for the treatment of acute
inflammation. After initial control, there may be a de-escalation to topical steroids or systemic low-dose prednisone every 48 hours pending further management. In the authors’ opinions, glucocorticoids are more helpful for pain and inflammation than nonsteroidal anti-inflammatory drugs in the majority of ear cases.

Why are there ulcers in the ear canal?
Ulcers may suggest a Gram-negative bacterial infection, most commonly Pseudomonas aeruginosa. Iatrogenic trauma from overzealous cleaning or contact reactions (splash pattern on the pinna) should also be considered.3

What can cause a mass effect in the ear?
Tumors can be a common cause of chronic unilateral otitis externa.1 If the mass is obstructive and contributes to secondary issues (discomfort, infection), it is not entirely benign, even if it appears as such on a cellular level. In the authors’ real-world experience with obstructive tumors, if the client cannot financially afford a multi-step process of incisional biopsy followed by additional work-up, then complete excisional surgery should be discussed at the start.

Most ear canal tumors in cats are malignant (87.5%), whereas roughly 60.0% of ear tumors in dogs are malignant.7 Ceruminous gland tumors are the most common tumors of the external ear canal in both dogs and cats.7 Non-neoplastic diseases that may be encountered include ceruminous gland hyperplasia or cysts, inflammatory polyps, and nodular hyperplasia of the sebaceous glands.3

Is it the tympanum or a mass?
An engorged pars flaccida should be distinguished from a mass or polyproruding from the tympanic membrane or originating from the external ear canal.7 The pars flaccida may become edematous or bulge, which may indicate an underlying hypersensitivity or fluid within the tympanic cavity.7 Particularly in the Cavalier King Charles spaniel, a bulging pars flaccida should raise suspicion for primary secretory otitis media, caused by the formation of a sterile mucus plug within the middle ear.8

How is the patency of the tympanum assessed?
This is more of an academic rather than a routine clinical test. Besides otoscopy, patency may be evaluated with tympanometry. Tympanometry has poor sensitivity and specificity for identifying a ruptured tympanum but can be performed with readily available materials, such as a polypropylene catheter or soft red rubber catheter.13 If the tympanic membrane is intact, then the catheter will meet resistance. If the tympanic membrane is ruptured, then the catheter will enter the bulla ventrally.2

What are the benefits of video otoscopy compared with handheld otoscopy?
Handheld otoscopy remains an important, quick, inexpensive, and readily available tool for routine exams. However, for challenging ear cases, video otoscopy offers superior optics through greater magnification and detail, while maintaining a visual field for irrigation, and ports for instrumentation.7 These features help to increase the safety of procedures within the ear canal, such as the removal of foreign objects, debris, or parasites using grasping forceps; biopsy collection with biopsy forceps; CO2 laser surgery with specialized attachment tips; or guided myringotomy with a spinal needle.7 Because the images are projected onto a screen with the capabilities of image capture, recording, and printing, it has been suggested that video otoscopy increases client participation, which may translate into increased client compliance.11

When is anesthetized evaluation of the ear canal indicated?
Anesthesia is indicated for deep ear flushing.3 Auffed endotracheal tube protects the airway from contaminated fluid traveling from the Eustachian tube into the nasopharynx through a known, unknown, or iatrogenic tympanic membrane perforation.3 Sedation is not a reasonable alternative, as it impedes the animal’s ability to protect the airway, thereby posing a significant risk factor for aspiration pneumonia.7

Indications for deep ear flushing include foreign bodies that cannot be retrieved when the patient is awake, severe acute otitis, purulent discharge or debris that obscures visualization and treatment, peripheral vestibular symptoms, Horner syndrome, and recurrent or chronic otitis.13 The goal of flushing is to remove excessive cerumen, infectious organisms, proteolytic enzymes, previous medication residue, and exudate—all of which can be irritating, mask foreign bodies or tumors, serve as a nidus for infection, or reduce the efficacy of medicaments.12 Deep ear flushing may be an indication for referral to a veterinary dermatologist with access to a video otoscope, for both short-term and long-term management.

Which anatomical areas of the ear cannot be examined with otoscopy alone?
Beyond the tympanic membrane, the middle ear consists of the epitympanic recess, which contains the auditory ossicles, the tympanic cavity proper, and the ventral air-filled tympanic bulla.14 The septum bulla delineates the tympanic cavity proper from the ventral cavity; this is an incomplete osseous ridge in dogs but is nearly complete in cats. This is clinically relevant for the treatment of otitis media in cats as the ventral cavity typically cannot be cleaned or sampled without the surgical approach.1 Nevertheless, results from more recent research indicate that medical management can sometimes be successful.7 The musculotubal canal is the exit point of the middle ear, opening rostrally to communicate with the nasopharynx.7

How can deafness be detected?
Infection alone can lead to deafness, but it can also be iatrogenic (eg, aminoglycosides, particularly gentamicin, loop diuretics, antiseptics, and face.

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<td>Chorda tympani (branch of facial nerve)</td>
<td>Rostral 1/3 of tongue</td>
<td></td>
</tr>
<tr>
<td>Sympathetic tract</td>
<td>Lifting upper eyelid</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Retracting third eyelid</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dilating pupil</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Pulling eye rostrally</td>
<td></td>
</tr>
</tbody>
</table>

KCS, keratoconjunctivitis sicca.
antineoplastic agents). Brainstem auditory evoked response testing can be used to identify conductive or sensorineural deafness, but it tends to be an academic pursuit, given the lack of treatments for deafness in veterinary patients.

**SAMPLING THE OTITIS PATIENT**

Otitis externa – cytology

Cytology is a valuable tool because of its simplicity, practicality, low cost, and rapid turnaround time. It should be performed for every compliant patient presenting with clinical signs of otitis externa. Exudate characterization and odor are not reliable alternatives.

**How should cytology samples be collected?**

Samples should be collected before the introduction of any cleaning agents or therapies. Patients presenting with otitis externa should have both ears evaluated, even if they have unilateral disease. Collection from deeper within the canal is more clinically relevant but harder to obtain. The safest method of collection to maintain consistency is to aim for the junction of the horizontal and vertical ear canals by keeping the pinna relaxed and directing a cotton-tip applicator ventrally through the intertragic incisure.

**How should cytology be prepared?**

Ear cytology slides may be stained with either modified Wright stain or Gram stain. Heat-fixing has been shown to have no significant difference on cytology results. A modified Wright stain (eg, Diff-Quik) is clinically the most practical, as it is simple, rapid, stains the relevant cells (bacteria, yeast, leukocytes), and is easy and quick to perform in-house.

**What features are considered ‘normal’ on ear cytology?**

1. **Leukocytes:** The presence of leukocytes, especially neutrophils, may indicate infection. They gain access to the lumen via exudative inflammation, epithelial ulceration, or extension from the tympanic cavity. Noting the presence of leukocytes on serial cytology can help to monitor disease progression or response to therapy. The presence or absence of bacteria should be noted, as sterile inflammation could indicate other differential diagnoses, like allergic contact reactions or pemphigus foliaceus.

2. **Malassezia:** Look for the characteristic peanut, snowman, or shoeprint shape due to unipolar budding. Malassezia pachydermatis is the predominant species, although culture and speciation are not considered clinically relevant. Mean counts of 5 or more per high-dry field (40x) in dogs or 12 or more per high-dry field in cats is considered abnormal; 2 or less per high-dry field is considered normal in both dogs and cats.

3. **Bacterial cocci or rods:** Pathogenic bacteria typically identified are coagulase-positive Staphylococcus (pseudintermedius, schleiferi spp coagulans, aureus, some coagulase-negatives can be pathogenic—eg, schleiferi spp schleiferi), Pseudomonas, and Proteus. Finding rods in the absence of inflammation may suggest Corynebacterium, which can be found in a normal ear canal and are not considered pathogenic.

4. **Parasites:** Otodectes cynotis, an ear mite, is not species specific and is contagious among animals. It is more commonly a cause of otitis externa in cats than in dogs, whether through mite burden or types 1 and 3 hypersensitivities.

5. **Diagnostics:** tympanic membrane is discolored, absent, or bulging; fluid visible behind the tympanum; the malleus is not apparent; mass effect; other abnormalities identified on imaging.

6. **History:** chronic recurrent otitis that is not responding to appropriate empirical therapy (the authors suggest a 2-strikes rule for first-line antibiotics) or with concurrent neurologic signs

Cytology and culture of the middle ear are necessary to definitively diagnose otitis media and guide systemic antibiotic therapy. Cytology is recommended to confirm the presence of organisms in the submitted sample and that culture results are consistent with what is seen cytologically. It is important to note that the bacterial population within the middle ear can differ from the population in the external canal in up to 89.5% of cases. This reinforces that empiric choices of systemic antibiotics for some severe/neurologic otitis media cases can be started based on external ear cytology. However, ideally, a middle ear culture would be obtained for the best targeted treatment.

**How is a middle ear culture obtained?**

When a patient is under anesthesia, the tympanic membrane is visualized. If the tympanic membrane is intact, then the external ear canal should be flushed thoroughly before a myringotomy is performed in order to collect as specific a sample as possible.

A sterile cone is passed to the tympanic membrane with a hand-held otoscope, and a sterile swab is passed into the middle ear through the caudoventral portion of the pars tensa in order to avoid the germinal epithelium over the manubrium and to avoid the oval and round windows.

With a video otoscope, a beveled tomcat catheter or a spinal needle is used through the working channel, and a 12.0 mL syringe is attached. Immediately after puncturing the tympanic membrane using the bevel, 1 mL of saline is flushed into the middle ear and aspirated back. After the sampling and rechecking the endotracheal tube cuff, the middle ear is gently flushed with saline (eg, using a 3.5 French red rubber catheter and a 12.0-mL syringe or a VETPUMP system). Complications of overaggressive or inaccurate cleaning can include excessive pain, vestibular symptoms, symptoms of facial nerve injury, partial deafness, or iatrogenic otitis interna. Cats can be highly susceptible to developing Horner syndrome following flushing due to submucosal, postganglionic, sympathetic nerve fibers that pass near the cochlear prominence. All fluid should be suctioned out, and a nonototoxic drying agent (eg, boric acid, acetic acid, salicylic acid, malic acid, etc.) or topical steroid can be applied.

Following myringotomy, systemic medications can be started or continued, such as steroids for inflammation and pain or empiric antibiotics based on cytology pending culture results. A recheck cytology...
Do you blush too easily?

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and otoscopy should be scheduled 3 and 6 weeks postprocedure to ensure appropriate resolution of infection and healing of the tympanic membrane. The tympanic membrane should heal within 21 to 35 days if the area is free of infection and debris.

What types of imaging can be used for the ear? Imaging can determine involvement of the middle or inner ear, differentiate between peripheral vs central vestibular conditions, differentiate between infectious or inflammatory and neoplastic processes, show changes consistent with chronicity, assess involvement of adjacent structures, and screen for post-surgical complications. Imaging is part of the diagnostic work-up of otitis media as it can be clinically indistinguishable from otitis externa in the absence of neurologic abnormalities.

Common types of imaging used are as follows:

- **Radiographs:** Although plain film radiographs plus or minus canalography are the most accessible, they require specific positioning under general anesthesia to obtain diagnostic quality images and can be challenging to draw meaningful interpretations. The authors do not perform this diagnostic as the costs outweigh the benefits.

- **Computed tomography (CT):** CT is useful for evaluation of otitis externa and otitis media, as well as nasopharyngeal polyps, tumor and lymph node staging of neoplasia, and evaluation of fistulous tracts or abscesses. CT is often the preferred modality, even in humans, because of its greater sensitivity than radiographs, better availability, lower cost, and faster imaging process than magnetic resonance imaging.

- **Magnetic resonance imaging (MRI):** MRI is generally less indicated for otitis but may be more helpful in the presence of neurologic signs, such as differentiating between central and peripheral vestibular disease.

This is more commonly performed under the consult and care of a neurologist than a dermatologist.

**What about prevention rather than treatment?**

Otoscopy, cytology, and advanced imaging of the external and middle ear must address the short-term perpetuating causes of infectious otitis. However, identifying and addressing the underlying cause is necessary to prevent chronic, recurrent cycles of otitis externa that can lead to end-stage ear disease, discomfort, decreased quality of life, and client frustration. Treating infectious otitis without addressing and managing primary factors will result in treatment failure. The hunt for primary causes should include evaluation for atopy, food allergies, endocrine disease, etc., as determined based on the clinical picture. Specific diagnostics may include abdominal ultrasound, complete blood count, chemistry, urinalysis, baseline cortisol, thyroid levels, skin cytology, fungal culture, diet trial, and intra-dermal and serum testing for environmental allergies.

**What happens when the patient isn't responding to appropriate first-line treatments?**

Don’t let the snowball get out of control. Referring to specialists earlier offers a better prognosis for the patient, hence the suggested 2-strikes rule for empiric antibiotics. The ear is an incredibly unforgiving organ. Whereas the skin may have additional treatment options due to its accessibility, options for the ear are more limited, particularly with the brain nearby. The resultant avalanche of chronic irreversible changes, antibiotic resistance, and neurologic signs can be dangerous, difficult, and expensive for the patient.

In a study of 65 dogs with chronic otitis, dogs treated by board-certified veterinary dermatologists in addition to primary care veterinarians had better long-term outcomes (lower median rate of otitis recurrence, complete resolution of otitis signs, resolution of otic proliferative changes) than those that were not referred and treated by primary care veterinarians alone.

As a general guideline, the authors recommend specialist referral in at least these situations:

- Failed 2 attempts at medical management of the otitis (eg, before reaching for 3rd-line/compound antimicrobials)
- Has not resolved with treatment after 2 to 3 months
- Recurrent otitis (>3 episodes per year)
- Suspected/confirmed otitis media

**REFERENCES**

The road to itch relief felt like a long one, until APOQUEL

Trusted for over 7 years, APOQUEL® (oclacitinib tablet) has been prescribed to more than 9 million dogs in need of fast and effective allergic itch relief.1-6

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

IMPORTANT SAFETY INFORMATION
Do not use APOQUEL in dogs less than 12 months of age or those with serious infections. APOQUEL may increase the chances of developing serious infections, and may cause existing parasitic skin infestations or pre-existing cancers to get worse. Consider the risks and benefits of treatment in dogs with a history of recurrence of these conditions. New neoplastic conditions (benign and malignant) were observed in clinical studies and post-approval. APOQUEL has not been tested in dogs receiving some medications including some commonly used to treat skin conditions such as corticosteroids and cyclosporines. Do not use in breeding, pregnant, or lactating dogs. Most common side effects are vomiting and diarrhea. APOQUEL has been used safely with many common medications including parasiticides, antibiotics and vaccines.

See accompanying Brief Summary of Prescribing Information.

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

References:
2. Data on file, Unique Patient Count from Launch, 2020, Zoetis Inc.

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2 best-in-class options for allergic itch relief:
Generalized demodicosis after 28 days of APOQUEL administration. Two other dogs on APOQUEL in the APOQUEL group remained within the normal range. Mean lymphocyte counts were transiently increased at Day 14.

APOQUEL had decreased leukocytes (neutrophil, eosinophil, and monocyte counts) and serum globulin, and increased cholesterol and lipase compared to the placebo group but group means were not statistically different. Dogs on placebo (vehicle control) were evaluated for safety. During the 30-day study, there were no fatalities and no adverse reactions requiring hospital care. Adverse reactions reported (and percent of dogs affected) during Days 0-7 included diarrhea (2.3% APOQUEL, 0.9% placebo), vomiting (2.3% APOQUEL, 1.8% placebo), lethargy (1.8% APOQUEL, 1.4% placebo), anorexia (1.4% APOQUEL, 0% placebo), and polydypsia (1.4% APOQUEL, 0% placebo). In most of these cases, signs spontaneously resolved with continued dosing. Five APOQUEL group dogs were withdrawn from study because of: darkening areas of skin and fur (1 dog); diarrhea (1 dog); fever, lethargy and cystitis (1 dog); an infected footpad and vomiting (1 dog); and diarrhea, vomiting, and lethargy (1 dog). Dogs in the APOQUEL group had a slight decrease in mean white blood cell counts (neutrophil, eosinophil, and monocyte counts) that remained within the normal reference range. Mean lymphocyte count for dogs in the APOQUEL group increased at Day 7, but returned to pretreatment levels by study end without a break in APOQUEL administration. Serum cholesterol increased in 25% of APOQUEL group dogs, but mean cholesterol remained within the reference range.

After completing APOQUEL field studies, 239 dogs enrolled in an unmasked (no placebo control), continuation therapy study receiving APOQUEL for an unrestricted period of time. Mean time on this study was 372 days (range 1 to 610 days). Of these 239 dogs, one dog developed demodicosis following 273 days of APOQUEL administration. One dog developed dermal pigmentary viral plaques following 266 days of APOQUEL administration. One dog developed a moderately severe benign pyometra after 272 days of APOQUEL administration; this dog was treated with antimicrobial therapy and received continued APOQUEL. One dog developed an inflammatory bowel disease after 410 days of APOQUEL administration. One dog developed a dermal eccrine adenocarcinoma after 382 days of APOQUEL administration. Two dogs each developed an apocrine gland adenocarcinoma (one dermal, one anal sac) after approximately 210 and 320 days of APOQUEL administration, respectively. One dog developed a low-grade spindle cell sarcoma after 320 days of APOQUEL administration.

The following adverse events are based on post-approval adverse drug experience reporting for APOQUEL. Not all adverse events are reported to FDA/CVM. It is not always possible to reliably estimate the adverse event frequency or establish a causal relationship to product use through these data.

The following adverse events reported in dogs are listed in decreasing order of reporting frequency. Vomiting, lethargy, anorexia, diarrhea, elevated liver enzymes, dermatitis (i.e. crusts, pustulomatisis, pyoderma), seizures, polydypsia, and demodicosis. Benign, malignant, and unclassified neoplasms, dental masses (including papillomas and histocytomas), lymphoma and other cancers have been reported. Death (including euthanasia) has been reported.

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

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

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

How Supplied:
APOQUEL tablets contain 3.6 mg, 5.4 mg, or 16 mg of oclacitinib as oclacitinib maleate per tablet. Each strength tablets are packaged in 100 and 250 count bottles. Each tablet is scored and marked with AG and either an S, M, or L that correspond to the different tablet strengths on both sides. 

Approved by FDA under NADA # 141-345
Parasites in pets: understanding prevalence and perception

Parasites are common in dogs and cats, and there are often misconceptions about the prevalence of parasites in adult pets.

By Lisa Lippman, DVM

Internal parasites are incredibly common in both cats and dogs. Because of their relative ease of transmission and high rate of occurrence, the vast majority of dogs will contract a parasitic infection during their lifetime. Although treatment with parasitcides is reasonably simple and straightforward, many pet owners are unaware of how common these infections are. If left untreated and allowed to progress, these infections can create health issues such as anaemia or failure to gain weight, and some pose a risk of zoonosis.

Although most owners know that parasitic infections are possible, especially when the animal is relatively young, generally speaking, there seem to be some misconceptions surrounding their prevalence and appropriate testing.

The misconceptions originate with owners and are further reinforced by veterinarians, who may be reluctant to suggest testing, which owners might perceive as superfluous.

Testing for internal parasites is common in both puppies and kittens, largely because they represent the largest category of infected pets. In fact, according to the Companion Animal Parasite Council (CAPC), samples collected from across the United States show that more than 30% of dogs under 6 months of age are shedding Toxocara canis, or roundworm, eggs. Most owners are aware that puppies and kittens can contract parasites, particularly roundworms, from the mother, either prenataley or via lactation after birth. Because of this, many new owners accept deworming as a normal part of puppyhood, akin to the first round of vaccinations and sterilization.

However, this prevalence presents as somewhat of a double-edged sword. Although most owners of puppies and kittens have their pet dewormed as youngsters because it’s common knowledge that many puppies and kittens “have worms,” many believe that the danger parasites present dissipates once the dog or cat reaches adulthood and that no further testing is required.

There are reasons behind these misconceptions and steps veterinarians can take to offer preventive measures to patients and better inform clients.

In many ways, they are correct: Younger animals with immature immune systems are most at risk for parasitic infections. As veterinarians do not always offer testing for parasites, except at an annual visit (and not all annual visits include a fecal test), many owners believe that it’s prudent to test a fecal sample for worms only if the animal is presenting symptoms, such as the presence of worms in stool, or if the dog has knowingly been exposed to an infected dog (eg, at a dog care facility or an animal park).

Contrary to this standard belief system and practice, the CAPC recommends testing at least 4 times in the first year of life, and at least 2 times per year in adults, depending on patient health and lifestyle factors.

This frequency of testing is somewhat unusual, as most adult dogs and cats are only brought into the clinic once a year for a wellness visit which is when fecal testing for parasites is most commonly conducted. Furthermore, in low-risk households (ie, a home with strictly indoor cats or dogs that are less likely to contract a parasite), many veterinarians simply would not recommend more frequent testing unless the animal presents with signs of infection. Owners who are offered this level of testing may protest, particularly if they are aware that the dog has been dewormed, perhaps even multiple times in puppyhood, and is not presenting with any symptoms. In addition, some pet owners are unaware of the symptoms of intestinal parasites save for the presence of worms in the feces and may not know that their pet requires treatment in the early stages of infection.

The notable exception to this trend is Dirofilaria immitis, also called heartworm. Dog owners have long been conditioned to regularly test for and guard against heartworm using monthly preventives. It has become standard practice to test for heartworm annually and avoid refilling the monthly parasiticide until the dog has tested negative. Dog owners are quite aware of the dangers of heartworm and are often diligent about preventing it. This is partly because of how expensive and potentially dangerous the treatment for heartworm can be, the informative and sometimes graphic informational leaflets to which the owners are exposed, and partially because it has become standard practice.

Treatment for intestinal worms is perceived as less serious than that of heartworm. With parasitcides for dogs and cats sold over the counter at pet stores, the consequences of infections are less dire, and owners are less apt even to consider regular testing outside of puppyhood and kittenhood.

Many owners are also under the impression that different geographical areas of the United States present a higher risk for all intestinal parasites. These thoughts are similar to that of tickborne illnesses and heartworm disease, despite data showing that these parasites can be found throughout the country. Often, these associations correlate with warmer weather, and people mistakenly believe that these types of parasitic infections are only a risk in hotter climates.

In fact, many owners are not aware of how a pet may become infected with intestinal worms, such as roundworms, Trichuris trichiura (whipworms), and Echinococcus granulosus (tapeworms). These can be contracted via contaminated soil or contact with the feces of an infected animal, both of which are common in areas where there are multiple animals, such as parks, popular dog-walking trails, etc.

The public may also be unaware that these types of intestinal parasites are zoonotic diseases, and dogs and cats are the definitive hosts for the roundworm species that commonly cause infection in humans. If this information is more widely disseminated, pet owners may feel more compelled to do biannual testing, regardless of the presence or absence of symptoms in their pet, particularly because many owners come into regular contact with dog feces as a result of common etiquette surrounding canine hygiene in public.

It may be prudent to engage in more grassroots education, either by making fecal centrifugation part of a biannual or at least annual, examination. In addition, pet owners should be provided with more information about the risks that tapeworms, roundworms, and whipworms pose to their pet, even after the animal reaches adulthood. Owners should also be encouraged to use a broad-spectrum parasiticide, such as milbemycin oxime (Interceptor), which protects against heartworm, as well as roundworms, whipworms, and tapeworms.

Moreover, it should be reiterated that these types of illnesses are zoonotic, can spread to humans relatively easily, and can result in more serious infestations in humans than in their animal counterparts.

References available online at dvm360.com
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That’s because their one little chew misses two big parasites.

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

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

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

Credelio Important Safety Information
Lotilaner is a member of the isoxazoline class. This class has been associated with neurologic adverse reactions including tremors, ataxia, and seizures. Seizures have been reported in dogs receiving this class of drugs, even in dogs without a history of seizures. Use with caution in dogs with a history of seizures or neurologic disorders. The safe use of Credelio in breeding, pregnant or lactating dogs has not been evaluated. The most frequently reported adverse reactions are weight loss, elevated blood urea nitrogen, polyuria, and diarrhea. For full prescribing information see Credelio package insert.
Say bye-bye to freeloaders with the powerful 360-degree protection of Interceptor® Plus (milbemycin oxime/praziquantel) and Credelio® (lotilaner) or Seresto®.

Interceptor Plus offers broad-spectrum worm protection beyond heartworm disease. It covers all 5 major worms, including the tapeworms and whipworms others skip.

With the tick and flea efficacy of Credelio or Seresto®, this is 360-degree parasite protection.

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Credelio (lotilaner)
Chewable Tablets
For oral use in dogs

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

Description:
CREDIELO kills adult fleas and is indicated for the treatment and prevention of flea infestations (Ctenocephalides felis) and the treatment and control of tick infestations [Amblyomma americanum (dune star tick), Dermacentor variabilis (American dog tick), Ixodes scapularis (black-legged tick) and Rhipicephalus sanguineus (brown dog tick)] for one month in dogs and puppies 8 weeks of age and older, and weighing 4.4 to 10.0 lbs.

Dosage and Administration:
CREDIELO is given orally once a month, at the minimum dosage of 9 mg/kg (20 mg/kg).

Dosage Schedule:
<table>
<thead>
<tr>
<th>Body Weight</th>
<th>Credelio Per Chewable Tablet (mg)</th>
<th>Chewable Tablets Administered</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.4 to 6.0 lbs</td>
<td>56.25 mg</td>
<td>One</td>
</tr>
<tr>
<td>6.1 to 12.0 lbs</td>
<td>112.5 mg</td>
<td>One</td>
</tr>
<tr>
<td>12.1 to 25.0 lbs</td>
<td>225 mg</td>
<td>One</td>
</tr>
<tr>
<td>25.1 to 50.0 lbs</td>
<td>450 mg</td>
<td>One</td>
</tr>
<tr>
<td>50.1 to 100.0 lbs</td>
<td>900 mg</td>
<td>One</td>
</tr>
</tbody>
</table>

CREDIELO must be administered with food (see Clinical Pharmacology).

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

See product insert for complete dosing and administration information.

Contraindications:
There are no known contraindications for the use of CREDIELO.

Warnings:
Not for human use. Keep this and all other drugs out of the reach of children. Keep CREDIELO in a secure location out of reach of dogs, cats, and other animals to prevent accidental ingestion or overdose.

Precautions:
Lotilaner is a member of the isoxazoline class. This class has been associated with neurologic adverse reactions including tremors, ataxia, and seizures.

Seizures have been reported in dogs receiving isoxazoline class drugs, even in dogs without a history of seizures. Use with caution in dogs with a history of seizures or neurologic disorders.

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

Adverse Reactions:
In a well-controlled U.S. field study, which included 284 dogs (198 dogs treated with CREDIELO and 86 dogs treated with an oral active control), there were no treatment-related adverse reactions.

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

<table>
<thead>
<tr>
<th>Adverse Reaction</th>
<th>CREDIELO Group (Number and [Percent]) of Dogs with the AR (n=284)</th>
<th>Active Control Group (Number and [Percent]) of Dogs with the AR (n=86)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight Loss</td>
<td>3 (1.0%) 1.1%</td>
<td>0 (0.0%) 0.0%</td>
</tr>
<tr>
<td>Elevated Blood Urea Nitrogen (BUN)</td>
<td>2 (0.7%) 0.7%</td>
<td>0 (0.0%) 0.0%</td>
</tr>
<tr>
<td>Polyclotaxis</td>
<td>2 (0.7%) 0.7%</td>
<td>0 (0.0%) 0.0%</td>
</tr>
<tr>
<td>Diarrhea</td>
<td>2 (0.7%) 0.7%</td>
<td>2 (2.3%) 2.3%</td>
</tr>
</tbody>
</table>

Two geriatric dogs developed mildly elevated BUN (34 to 54 mg/dL; reference range: 6 to 31 mg/dL) during the study. One of these dogs also developed polyuria and a mildly elevated potassium (4.1 to 4.6 mEq/L; reference range: 2.6 to 3.3 mEq/L) and phosphorus (6.0 mg/dL; reference range: 5.2 to 8.2 mg/dL). The other dog also developed a mildly elevated creatinine (0.5 to 2.0 mg/dL). The dog was also found to have a mildly elevated alanine transaminase (ALT) and alkaline phosphatase (ALP) and weight loss.

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

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

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

To report suspected adverse events, for technical assistance or to obtain a copy of the Safety Data Sheet (SDS), contact Elanco US Inc. at 1-888-545-5973.

In a well-controlled U.S. field study conducted in households with existing flea infestations of varying severity, the effectiveness of CREDIELO against fleas on Days 30, 60 and 90 compared to baseline was 99.5%, 100% and 99%, respectively. Dogs with signs of flea allergy dermatitis showed improvement in erythema, papules, scaling, alopecia, dermatitis/pyodermatitis and pruritus as a direct result of eliminating fleas.

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

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

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

How Supplied:
CREDIELO is available in five chewable tablet sizes for use in dogs: 56.25, 112.5, 225, 450, and 900 mg tablets. Each chewable tablet size is available in color-coded packages of 1, 3 or 6 chewable tablets.

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n the United States, the traditional age for sterilizing dogs and cats has hovered between 6 and 9 months-old. This norm has led little medical reasoning behind it but possibly arose in the early 1900s in response to high anesthetic mortality in younger animals. But anesthetic protocols have advanced, rendering surgery in very young animals safer. In shelters, puppies and kittens routinely lose their gonads before they’ve lost their “milk” teeth.

However, for animals acquired intact, owners have a choice to make. But the lack of universally accepted rules leaves most generally confused. In a 2011 PetSmart study surveying owner attitudes about sterilization, 3 of 4 survey respondents either did not know when to “fix” their pet or pegged the best age at 6 to 9 months-old or beyond.

Only in the past decade has the question of “best timing” been addressed systematically. Multitudes of studies have set out to link alteration age with the later onset of various diseases and protective benefits. One thing investigators found is that works best for kittens isn’t necessarily the gold standard for puppies. In fact, they’ve shown that there is no gold standard for puppies. The rules that apply to most small dog breeds don’t hold fast for larger ones. Similar inconsistencies also exist between different breeds of similar size and different size categories of mixed-breed dogs.

The choice of when to spay or neuter is nuanced and best incorporates many factors unique to a particular animal. Even the American Veterinary Medical Association (AVMA) stays mum on timing and states, “Veterinarians should use their professional judgment to determine the optimal time for sterilization.”

A harsh reality
The health advantages of delaying spaying or neutering in a particular

Setting the timetable for sterilizing pets
There is no one-size-fits-all schedule for this procedure. When to sterilize depends on species, gender, and breed, and vets should customize their recommendations to accommodate individual pet needs.

By Joan Capuzzi, VMD
animal must be balanced against the backdrop of pet overpopulation. “Spay and neuter services are a critical piece of continuing efforts in population control and informed decision-making by owners in the care of their pets,” said Brittany Watson, VMD, PhD, MS, BS, associate professor of clinical shelter medicine at the University of Pennsylvania School of Veterinary Medicine.

Some 2 million healthy cats and dogs are euthanized annually in this country because the shelters are overrun. Although still a tragic number, it’s at least down from about 15 million a few decades back, primarily because of the newer practice of sterilization before adoption.

Rescue programs that incentivize adopters to alter their pets after bringing them home, either through contracts with local veterinarians, bonds, or deposits for later spay-neuter, have been largely ineffective. Certainly, the best chance for an animal to be sterilized is before it leaves the shelter, prompting many jurisdictions to require surgery before adoption.

“If it is an animal who does not have a dedicated owner or guardian, we should make sure it cannot reproduce,” said Peggy Root, DVM, PhD, professor at the University of Minnesota College of Veterinary Medicine.

Is early sterilization safe?
The ovariohysterectomy and castration procedures are themselves safe. It is estimated that they carry less than 0.1% mortality in dogs and cats. Considering renal and hepatic competence in clearing anesthetic compounds, the age of the animal plays a role in the outcome.

Nephrons are not fully formed in puppies and kittens until 7 to 8 weeks of age. For kittens, the age-weight relationship is more standardized than in puppies, and 1 kg of body weight generally indicates mature hepatic function. Even so, there are now anesthetic drugs that can be used with immature kidneys and livers.

Hepatocytes and nephrons aside, the larger the neonate, the better. “The young German shepherd that weighs 10 to 13 kg is different from a 2-kilo Yorkshire terrier.” Intravenous catheterization, endotracheal tube placement, thermo-regulation, and glycemic control are more difficult in smaller animals, and greater is the room for error in drug delivery too. When size is minute, it’s possible to have too much of a drug, too many fluids, too much gas pressure, and too much of a breath are all too attainable, Gianotti warned. Gianotti added that with these things in mind, the early spay-neuter model seen in the shelter environment is safe because the surgeons who perform them generally do so in a high-volume, rapid-fire way, generally under 20 minutes each.

“ ‘They are so experienced in doing these surgical procedures fast that the risk is low,’ he said. ‘The shorter the event, the less likely you are to have problems with blood pressure, vitals, and perfusion.’ Postoperative recovery times are typically shorter in younger animals. In a study that looked at spay-neuter outcomes in dogs and cats, >>

**INTERCEPTOR™ PLUS**

(mlbibemycin oxime/praziquantel)

**Caution**
Federal (USA) law restricts this drug to use by or on the order of a licensed veterinarian. Before using INTERCEPTOR PLUS, please consult the product insert, a summary of which follows:

**Indications**
INTERCEPTOR PLUS is indicated for the prevention of heartworm disease caused by Dirofilaria immitis and for the treatment and control of adult roundworm (Toxocara canis), Toxocara cati, adult hookworm (Ankylostoma caninum), adult whipworm (Trichuris vulpis), and adult tapeworm (Taenia species), Echinococcus multilocularis, Echinococcus granulosus, and Opisthorchis viverrini infections in dogs and puppies, two pounds of body weight or greater and six weeks of age and older.

**Dosage and Administration**
INTERCEPTOR PLUS should be administered orally, once monthly, for the minimum dosage of 0.23 mg/lb (0.5 mg/kg) milbemycin oxime and 2.28 mg/lb (5 mg/kg) praziquantel. For heartworm prevention, give one month for at least 6 months after exposure to mosquitoes (see EFFECTIVENESS).

**Drug Schedule**

<table>
<thead>
<tr>
<th>Body Weight</th>
<th>Milbemycin Oxime per chewable</th>
<th>Praziquantel per chewable</th>
<th>Number of chewables</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.25 lbs</td>
<td>0.3 mg</td>
<td>2.6 mg</td>
<td>One</td>
</tr>
<tr>
<td>0.5 to 1 lb</td>
<td>1.1 mg</td>
<td>11.4 mg</td>
<td>One</td>
</tr>
<tr>
<td>1 to 2 lbs</td>
<td>2.2 mg</td>
<td>22.8 mg</td>
<td>One</td>
</tr>
<tr>
<td>Over 2 lbs</td>
<td>Administer the appropriate combination of chewables.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

INTERCEPTOR PLUS may be offered to the dog by hand or added to a small amount of dog food. The chewables should be administered in a manner that encourages the dog to chew, rather than to swallow without chewing. Chewables may be broken into pieces and fed to dogs that normally need to eat slowly. Care should be taken that the dog consumes the complete dose, and treated animals should be observed for a few minutes after administration to ensure that no part of the dose is lost or rejected. If it is suspected that any of the dose has been lost, redosing is recommended.

**Heartworm Prevention**
INTERCEPTOR PLUS should be administered at monthly intervals beginning within 1 month of the dog’s first seasonal exposure to mosquitoes and continuing until at least 6 months after the dog’s last seasonal exposure (see EFFECTIVENESS). INTERCEPTOR PLUS may be administered year-round without intermission. When switching from another heartworm preventative product to INTERCEPTOR PLUS, the first dose of INTERCEPTOR PLUS should be given within a month of the last dose of the former product.

**Intestinal Nematode and Cestode Treatment and Control**
Dogs may be exposed to and can become infected with roundworms, whipworms, hookworms, and tapeworms throughout the year, regardless of season or climate. Intestinal nema todes and cestodes infections in dogs was demonstrated in well-controlled laboratory studies. In a study that looked at spay-neuter procedures fast that the risk is low,’ he said. ‘The shorter the event, the less likely you are to have problems with blood pressure, vitals, and perfusion.’ Postoperative recovery times are typically shorter in younger animals. In a study that looked at spay-neuter outcomes in dogs and cats, >>
85 veterinarians unanimously stated that spays and neuters were safer, faster, and easier when performed early than when done after 6 months of age. Another investigation’s results found the incidence of minor complications to be higher for spays and neuters performed after 12 weeks of age than before, with the greatest increase in risk occurring after 24 weeks old.

**Gonadal hormones: a physiology review**

Population control is obviously best accomplished in young animals from both a safety and efficacy standpoint. But sterilizing means turning off a faucet of hormones that modulate normal growth and maturation. For the pet owner whose puppy or kitten has come to them intact, this should be factored into their decision on surgery timing.

Estrogen and testosterone signal growth plates to close. Removing these hormones can delay physeal closure, possibly resulting in longer bones. The potential changes in tibial plateau slopes that can ensue may elevate the risk of anterior cruciate ligament rupture in some dog breeds.

And in animals sterilized on the earlier side, bone volume can lessen, likely due to hampered osteoblast function.

The importance of another compound, luteinizing hormone (LH), cannot be overstated. In the postpubertal mammal, the hypothalamic–pituitary–gonadal axis secretes gonadotropin-releasing hormone (GnRH). This then spikes a discharge of LH that triggers the release of gonadal hormones, which shuts off the GnRH/LH valve. Because there is no negative feedback in gonadectomized dogs and cats, these levels remain elevated at supraphysiologic concentrations. Dogs that have been spayed or neutered have been found to have LH levels 30 times above normal.

For medium- and large-breed dogs and cats, these hormone concentrations can delay physeal closure, possibly resulting in longer bones. The potential changes in tibial plateau slopes that can ensue may elevate the risk of anterior cruciate ligament rupture in some dog breeds.

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There are also numerous LH receptors in the thyroid gland, and they reside alongside thyroid-stimulating hormone receptors. Continuous stimulation of the thyroid LH receptors can interfere and contribute to hypothyroidism in dogs.

Sterilized dogs have also been shown to have more lymphocytes with LH receptors circulating in the bloodstream and residing in already cancerous lymph nodes. This suggests that LH could affect lymphocytes and play a role in the development and progression of lymphoma.

**Cutting cats**

Previously, the broadly recommended age for feline spay was after the first litter. Then it changed to after the first heat cycle, and eventually, the profession settled on 6 months or older. But age recommendations have since been lowered to preempt feline sexual maturation, which can hit as early as 4 months. Many shelter veterinarians sterilize cats at 8 weeks or 2 pounds. Some will do so even earlier, as long as the kittens appear healthy.

Root says she advocates spaying before the first estrus, which varies between 4 and 9 months of age, depending on genetics and geography. Although spaying has been linked to the development of obesity, diabetes mellitus, and feline lower urinary tract disease, it has a protective effect against mammary cancer, which is the third most common cancer in cats, occurring at a rate of almost 3% in intact queens. And when performed before the first heat, risk reduction is particularly dramatic.

Around the time of sexual maturity, age 4 to 5 months, toms start to show behaviors undesirable in a pet. These include biting, roaming, and urine spraying. As with the queen, sterilizing lowers metabolic rate, predisposing them to obesity. The belief that neutering male cats prior to sexual maturity results in a smaller penis and a more narrowed urethra that renders them more susceptible to urinary blockages has been shown to be false. Study results have demonstrated no difference in urethral diameter between cats neutered before sexual maturity, after maturity, or not at all.

Several investigations have failed to uncover negative long-term consequences of early gonadectomy in male and female cats. One study followed 263 shelter cats for 3 years after sterilization. Surgery was performed at under 6 months of age in 188 cats and over 6 months in the other 75. The incidences of physical disease and behavioral problems between the 2 groups were comparable.

The Feline Fix by Five Months campaign promotes spaying and neutering cats at or before 5 months of age. The program, endorsed by the AVMA, American Association of Feline Practitioners, and American Animal Hospital Association, spreads the message to the veterinary community and general public alike.

**Desexing dogs**

The interplay between reproductive hormones and overall health is generally homogenous among cats. But not so for dogs. There is considerable variation among different breeds and size categories. For instance, a Doberman pinscher does not respond the same way an Akita does to the loss of gonadal hormones. And within particular breeds, gender even makes a difference. For instance, altering at the standard 6 months of age does not seem to boost cancer risk in female Boston terriers. However, in male Boston terriers, neutering before 1 year of age is associated with a significant increase in cancers.

Research on golden and Labrador retrievers and German shepherds showed a higher incidence of 1 or more joint disorders in dogs sterilized before 1 year of age. In female golden retrievers, spaying appeared to boost cancer risk significantly.

Recent study results expanded the database by an additional 32 breeds of dog, including 3 varieties of poodle. Using retrospective data found in medical records, investigators tracked 3 joint disorders (hip and elbow dysplasia; cranial cruciate ligament rupture) and cancers that included lymphoma, mast cell tumor, hemangiosarcoma, and osteosarcoma. They also looked at mammary cancer, pyometra, and urinary incontinence in female subjects.

Small-breed dogs, such as Yorkshire terriers, Pomeranians, Chihuahuas, and toy poodles, rarely experience joint problems, nor do they manifest neutering-related increases in joint disorders compared with breeds of larger size, in whom sterilization age seems to have a greater effect on later development of orthopedic issues.

“Why would an owner want to have a greater risk of a very painful joint disorder?” questioned Benjamin Hart, DVM, PhD, distinguished professor emeritus at the University of California, Davis, School of Veterinary Medicine and the study’s lead author.

According to Hart, somewhat spared of cancer in general, small breeds are less vulnerable than large breeds to the effects of sterilization age on neoplasia. Hart is currently investigating the effects of sterilization age on the development of cognitive decline in dogs.

Another study using the same set of data evaluated long-term health outcomes of sterilizing at various ages in mixed-breed dogs of different sizes. Regardless of the weight category, sterilization age did not seem to affect cancer rates. However, in dogs weighing 20 kg or more, altering before 1 year appeared to significantly boost the risk of 1 or more joint disorders compared with that of dogs left intact; there were gender differences in degrees of severity.

Putting it all together, breed studies aside, a few general rules can be presented to clients. First, neutering male dogs before sexual maturity, sometimes as early as 6 months, can mitigate disruptive behaviors, such as mounting, roaming, barking, interdog aggression, and urine marking. Spaying females before the first heat cycle slashes the risk of mammary neoplasia, with decreasing benefit with each heat cycle the bitch experiences.

**Counseling owners**

Just as there’s no single recommendation appropriate for all dog breeds, every canine and feline gonadectomy decision should be evaluated in a way that balances surgery risk, long-term health benefits and consequences, owner logistics, and population control. These elements should all be part of the dialogue with pet owners, said Hart. “The new paradigm is ‘Have conversations with your clients and show them the data,’” he said.

References available at dvm360.com

Joan Capuzzi, VMD, is a small animal veterinarian and journalist based in the Philadelphia, Pennsylvania.
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Glucose serves a vital role in cellular metabolism in almost all tissues of the body. Although it is not the only fuel source, it is the most efficient and most common. Glucose production occurs primarily in the liver and, to a lesser extent, in the renal cortex. Storage is achieved by combining multiple molecules into a polysaccharide to limit the osmotic effect in the form of glycogen. When demand increases, glycogen is enzymatically broken down into glucose molecules again in a process called glycogenolysis. Glycogen can be found throughout the body in the cytoplasm of cells, but stockpiles also are held in muscles for local usage. The largest glucose reservoir is in the liver for rapid utilization by the entire body.

**Regulation of glucose**
The regulation of glucose levels to achieve homeostasis occurs through multiple hormonal mechanisms. The pancreas plays a primary role in the production of the associated hormones, including insulin and glucagon. Insulin is produced in the β cells of the pancreas and facilitates the translocation of glucose into the body’s cells, thereby lowering plasma glucose levels and providing the fuel for cellular metabolism. When plasma concentrations of glucose rise above the upper end of the normal range (> 130 mg/dL), insulin release is increased, which regulates the level back into the normal range. At the other end of the spectrum is glucagon, which is produced in the α cells of the pancreas and released in response to hypoglycemia glucose levels (plasma levels < 60 mg/dL). These primary means of regulation are influenced by multiple other hormonal factors in the body, including cortisol, epinephrine, growth hormone, thyroxine, and endorphins. Therefore, many different disease processes and conditions can influence glucose homeostasis and affect plasma glucose levels.

**Diseases and symptoms related to hypoglycemia**
Generally, hypoglycemia is related to decreased production of glucose or increased utilization/removal from the blood. The liver, as the primary production plant for much of the body’s glucose, is a common link in many diseases. End-stage liver failure, acute hepatitis, porto-systemic liver shunts (rarely), and various toxins can adversely affect glucose production or inhibit glycogenolysis, resulting in systemic hypoglycemia. In addition, glycogen-storage diseases, hypoadrenocorticism, and growth hormone deficiency may manifest as hypoglycemia. Increased utilization and removal of glucose from the blood may occur in other diseases such as insulinoma, or insulin-like substance secreting tumors (ie, IGF-1 and IGF-2 in malignant canine mammary carcinoma or some renal tumors), may drive glucose into cells at an increased rate, having similar effects to insulin overdosing in patients with diabetes. Toxins such as xylitol and oleander, systemic infections from *Bartonella* or *Babesia*, sepsis, and renal disease all can cause hypoglycemia. Patients with mild hypoglycemia may be asymptomatic, but symptoms of acute hypoglycemia are generally neurologic. These may include ataxia, seizures, disorientation, blindness, cardiac arrhythmias. Continues on page 52
The protection dogs need. Nothing they don’t.

Leave the bells and whistles to the toys. When heartworm prevention products and prices go to extremes, pets often lose out on getting the parasite protection they need. Keep more patients protected with proven, practically priced IVERHART® Brand Products.

IVERHART MAX® Chew (ivermectin/pyrantel pamoate/praziquantel)

- 4-in-1 protection against:
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  - Hookworms
  - Roundworms
  - Tapeworms

UP TO 14% SAVINGS PER DOSE vs. Heartgard® Plus

For puppies as young as 8 weeks. Toy dog dosing available.

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UP TO 32% SAVINGS PER DOSE vs. Heartgard® Plus

For puppies as young as 6 weeks.

Important Safety Information
IVERHART MAX® Chew (ivermectin/pyrantel pamoate/praziquantel) is well tolerated. All dogs should be tested for heartworm disease before starting a preventive protocol. Following the use of IVERHART MAX® Chew, gastrointestinal and neurological side effects have been reported. For full prescribing information, contact Virbac at 1-800-338-3659 or visit us.virbac.com.

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To purchase, talk with your distributor or Virbac representative, or call 1-844-4-VIRBAC (1-844-484-7222).
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Boost parasite treatment and control with affordable options

Offering budget-friendly heartworm options not only helps to remove barriers to compliance, but also aids in building trust and loyalty with pet owners.

By Mary Fuller, DVM

Even with the growth of pet insurance, most pet owners still pay for veterinary care, including parasite preventives, out of their own pockets.

Although pet owners generally want to do the very best for their pets, financial constraints, especially after the pandemic, can make it necessary for some to decline certain health care recommendations. This can be a stressful and emotional decision for pet owners, and they often feel guilty when they simply can’t afford the care.

At the same time, discussing prices isn’t any easier for you, as a veterinarian. The comfort you feel making recommendations based on sound medicine can crumble when you venture into what can be perceived as the business side of veterinary medicine. It can also feel stressful when your patients leave the practice without the basic, preventive care you believe is important for their health.

Still, heartworms and intestinal worms can lead to serious and even fatal disease in pets. Roundworms and hookworms can also put families at risk for devastating zoonotic diseases. Parasite treatment and control is fundamental to delivering the best quality of care for your patients and clients.

By stocking affordable parasite treatment options, you can feel confident more of your patients will receive the care you recommend. This can also help build trust and loyalty with pet owners, who appreciate that they can protect their pets without overextending their budgets.

RISK OF HEARTWORM INFECTION IS ON THE RISE

Pets are at higher-than-average risk for heartworm disease in 2021, according to Companion Animal Parasite Council (CAPC) forecasts.1 Part of this rise in heartworm prevalence is attributed to pet owners who don’t administer heartworm preventives 12 months of the year.1

In fact, a recent study revealed that only 25% of dogs receive heartworm preventives regularly.2

In addition to problems with owner compliance, other factors may contribute to the predicted rise in heartworm infections. Many geographic locations are experiencing warmer weather than usual, creating the perfect breeding ground for mosquitoes. Transporting homeless dogs and cats between states to help find adoptable homes is also more common, and may account for heartworm infections expanding into new areas.

CAPC warns that pets are especially at risk this year along the Mississippi River, the Atlantic coast and the southern parts of the Midwest. Infections are also expected to grow in new regions, including northern California, western Montana, and Idaho.

This is no time for your patients to experience a lapse in year-round heartworm prevention.

INTESTINAL WORMS REMAIN A SOURCE OF ZOONOTIC DISEASE

If only a quarter of dogs receive regular heartworm preventives, which typically also protect against intestinal worms, it’s likely there’s a gap in parasite treatment and control on that front, as well.
It's bad enough that roundworms can stunt growth and development, but hookworms can cause anemia and even death in puppies and kittens. Infected pets also serve as a source of potential zoonotic infections for family members.

Humans, especially children, can become infected with roundworms by accidentally ingesting infective Toxocara canis eggs shed by dogs or Toxocara cati eggs from cats. Migrating larva may infiltrate various organs such as the liver, lungs, and central nervous system. Signs of visceral larva migrans may include enlarged liver, coughing, pneumonia, and fever.

Roundworm larvae can also cause ocular larva migrans by traveling to the eyes, potentially damaging the retina and causing permanent vision loss.

Hookworms continue to infect pets and their owners. Dogs and cats can serve as a source for infective eggs from the species Ancylostoma braziliense and Uncinaria stenocephala. Dogs can also shed Ancylostoma caninum eggs.

Humans generally become infected when larvae penetrate the skin. Infection can lead to cutaneous larva migrans, with the telltale serpentine tracks in the skin that are intensely pruritic.

In the Bayer veterinary care usage study, 51% of owners said their veterinarians would see their dogs more frequently if the clinic offered prices on products, such as parasite treatment, that were competitive to those owners could find elsewhere.3

UNDERSCORE THE VALUE OF HEARTWORM PREVENTION

Still, purchase decisions are rarely based solely on price; value is an important consideration, too. Pet owners want to know how your recommendation will impact the health and well-being of their pets.

Helping owners understand why parasite treatment and control are crucial for minimizing discomfort and illness for their pets—can reinforce your position as the best resource for owners to turn to for pet health information.

Owners can also appreciate how heartworm prevention can potentially reduce future expenses.

In the veterinary care usage study, 59% of owners said they’d take their dog to the veterinarian more often if they knew they could prevent problems and expensive treatments later.3

It’s also critical for veterinarians or staff to take the time to explain the proper use of parasite treatment. In another study, 27% of dog owners believed they were administering heartworm preventives to their dogs when they were actually giving flea and tick products.2

Ensuring proper administration is another way to protect your patients and keep pet owners satisfied with your recommendations.

PROVEN HEARTWORM PREVENTIVES AT A PRACTICAL PRICE

With IVERHART® Brand Products, you can offer dog owners proven, effective parasite preventives that are more affordable than many other brands.

Available in a palatable pork flavor for easy dosing, IVERHART PLUS® (ivermectin/pyrantel) Flavored Chewables provide 3-in-1 protection against heartworms, hookworms, and roundworms for up to 32% savings per dose over a leading competitive brand.4

With IVERHART MAX® Chew (ivermectin/pyrantel pamoate/praziquantel), you can offer dog owners 4-in-1 protection against heartworms, hookworms, roundworms and tape-worms for up to 14% savings per dose over a leading competitive brand.4

The reasonable price, combined with the tasty bacon formula, make it easy for pet owners to comply with your recommendations.

Visit protecteverypet.virbac.com for important safety information. ⊳

REFERENCES


IMPORTANT SAFETY INFORMATION

IVERHART MAX® Chew (ivermectin/pyrantel pamoate/praziquantel) is well tolerated. All dogs should be tested for heartworm disease before starting a preventive protocol. Following the use of IVERHART MAX® Chew, gastrointestinal and neurological side effects have been reported. For full prescribing information, contact Virbac at 1-800-338-3659 or visit us.virbac.com.

IVERHART PLUS® (ivermectin/pyrantel) Flavored Chewables is well tolerated. All dogs should be tested for heartworm disease before starting a preventive protocol. There are rare reports of digestive or neurological side effects following use of IVERHART PLUS Flavored Chewables. For full prescribing information, contact Virbac at 1-800-338-3659 or visit us.virbac.com.

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ivermectin/pyrantel pamoate/praziquantel

IVERHART MAX® Chew

For oral use in dogs only.

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

Description: IVERHART MAX® Chew is a combination of three anthelminthics (ivermectin/pyrantel pamoate/praziquantel). The chews are available in four sizes in color-coded packages for oral administration to dogs according to their weight (see Dosage and Administration).

Indications: For use in dogs to prevent canine heartworm disease by eliminating the tissue stage of heartworm larvae (Dirofilaria immitis) for a month (30 days) after infection and for the treatment and control of roundworms (Toxocara canis, Toxascaris leonina), hookworms (Ancylostoma caninum, Uncinaria stenocephala, Ancylostoma braziliense), and tapeworms (Dipylidium caninum, Taenia pisiformis).

Dosage and Administration: IVERHART MAX Chew should be administered orally at monthly intervals and the recommended minimum dose level of 6 mcg of ivermectin per kilogram (2.72 mcg/lb) of body weight. 5 mg of pyrantel (as pamoate salt) per kg (2.27 mg/lb) and 5 mg of praziquantel per kg (2.27 mg/lb) of body weight, as follows:

<table>
<thead>
<tr>
<th>Dog Weight (Pounds)</th>
<th>Chew per Month</th>
<th>Chew Size</th>
<th>Ivermectin Content</th>
<th>Pyrantel Pamoate Content</th>
<th>Praziquantel Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.6 to 12</td>
<td>1</td>
<td>Toy</td>
<td>34 mcg</td>
<td>28.5 mg</td>
<td>28.5 mg</td>
</tr>
<tr>
<td>12.1 to 25</td>
<td>1</td>
<td>Small</td>
<td>68 mcg</td>
<td>57 mg</td>
<td>57 mg</td>
</tr>
<tr>
<td>25.1 to 50</td>
<td>1</td>
<td>Medium</td>
<td>136 mcg</td>
<td>114 mg</td>
<td>114 mg</td>
</tr>
<tr>
<td>50.1 to 100</td>
<td>1</td>
<td>Large</td>
<td>228 mcg</td>
<td>228 mg</td>
<td>228 mg</td>
</tr>
</tbody>
</table>

IVERHART MAX Chew is recommended for dogs 8 weeks of age or older. For dogs over 100 lbs, use the appropriate combination of these soft chews.

Remove only one dose at a time from the packaging. Return the remaining chew(s) to their box to protect from light. The chew can be offered to the dog by hand or added, intact, to a small amount of dog food. Care should be taken to ensure that the dog consumes the complete dose. The treated dog should be observed for a few minutes after administration to confirm that none of the dose has been lost or rejected. If it is suspected that any of the dose has been lost, redosing is recommended.

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

When replacing another heartworm preventative product in a heartworm disease prevention program, the first dose of IVERHART MAX Chew must be given within a month (30 days) after the last dose of the former medication. A heartworm test should be performed prior to and 6 months after switching heartworm preventative products.

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

Warnings:

For use in dogs only. Keep this and all drugs out of reach of children and pets. In safety studies with ivermectin/pyrantel pamoate/praziquantel tablets, testicular hypoplasia was observed in some dogs that have circulating microfilariae. While some microfilariae may be killed by the ivermectin in IVERHART MAX® Chew at the recommended dose level, IVERHART MAX Chew is not effective for microfilariae clearance. A mild hypersensitivity-type reaction, presumably due to dead or dying microfilariae and particularly involving a transient diarrhea, has been observed in clinical trials with ivermectin alone after treatment of some dogs that have circulating microfilariae.

Adverse Reactions: In a field study with IVERHART MAX Chew, self-limiting adverse reactions, including vomiting, diarrhea, lethargy, difficulty swallowing, excessive salivation, increased water consumption, and coughing were reported. Self-limiting adverse reactions, including lethargy, limpness, salivation, shaking, diarrhea, decreased appetite, licking lips, and belching were reported between 20 minutes and 72 hours following treatment in a field study with ivermectin/pyrantel pamoate/praziquantel tablets.

In field studies with ivermectin/pyrantel/praziquantel pamoate tablets, vomiting or diarrhea within 24 hours of dosing was rarely observed (1.1% of administered doses). The following adverse reactions have been reported in dogs following the use of ivermectin products: depression/lethargy, vomiting, anorexia, diarrhea, mydriasis, ataxia, staggering, convulsions, and hypersalivation.

To report suspected adverse events, for technical assistance or to obtain a copy of the Safety Data Sheet (SDS), contact Virbac, Inc. at 1-800-338-3659 or us.virbac.com. For additional information about adverse drug experience reporting for animal drugs, contact the FDA at 1-888-FDA-VETS or www.fda.gov/reportanimalae.

Effectiveness: Prevention of the tissue larval stage of heartworm (Dirofilaria immitis) and the elimination of the adult stage of hookworms (Ancylostoma caninum, Uncinaria stenocephala, Ancylostoma braziliense, remonius, H.Uncinaria, Toxocara canis, Toxascaris leonina) infections in dogs was demonstrated in well-controlled laboratory studies.

Palatability: In a field study of 132 dogs, IVERHART MAX Chew was offered once monthly for 3 months. The dogs voluntarily consumed 86.3% of the doses from the owner’s hand or from a bowl with 18% (< 30% Intake) refusal. The at-home condition for redosing was 99% (oral soft chew, pilling), and 0.7% of the doses were unable to be administered.

Animal Safety: Studies with ivermectin indicate that certain dogs of the Collie breed are more sensitive to the effects of ivermectin administered at elevated dose levels (more than 16 times the target dose level of 6 mcg/kg) than dogs of other breeds. At elevated doses, sensitive dogs showed more adverse reactions which included mydriasis, depression, ataxia, tremors, drooling, paresthesia, recumbency, excitability, stupor, coma and death. No signs of toxicity were seen at 10 times the recommended dose (27.2 mcg/kg) in sensitive Collies. Data from these studies support the safety of ivermectin products in dogs, including Collies, when used in the label recommended dose.

Because ivermectin and praziquantel are approximately 30% more bioavailable in the IVERHART MAX Chew than in the ivermectin/pyrantel pamoate/praziquantel tablets used in the following target animal safety studies, the margin of safety is narrower than reported in these studies. The potential for adverse reactions may be greater in individuals dogs administered IVERHART MAX Chew than ivermectin/pyrantel pamoate/praziquantel tablets.

In a target animal safety study using ivermectin/pyrantel pamoate/praziquantel tablets, doses were administered to 8 week old Beagle puppies at one, three, and five times the maximum recommended dose of 12.5 mcg/kg ivermectin, 10.47 mcg/kg pyrantel and 10.47 mcg/kg praziquantel. The dogs were treated every 30 days for 6 months. Vomiting within 6 hours of dosing and soft or watery feces within 24 hours of dosing were observed. Other observations during the study were: ano-genital swelling, dyspnea, head movements, shallow or labored breathing, and salivation. One dog in the 5X group had tremors and decreased activity. All of these signs were transient. No treatment was required. Histopathology showed testicular hypoplasia in the 3X and 5X groups (see Warnings).

In a laboratory safety study using ivermectin/pyrantel pamoate/praziquantel tablets, 12-week-old Beagle puppies receiving 3 and 5 times the recommended dose once weekly for 13 weeks demonstrated a dose-related decrease in testicular maturation compared to controls. In this study, all treated puppies had significantly higher cholesterol levels compared to untreated controls.

In a reproductive safety study, adult males were treated at 37.5 mcg/kg ivermectin, 31.4 mcg/kg pyrantel and 31.4 mcg/kg praziquantel every 14 days during two full spermatogenic cycles (112 days). The quality of semen and reproductive health were not affected by treatment. Treatment related vomiting and soft feces were reported during this study.

In a study of the effectiveness of ivermectin/pyrantel pamoate/praziquantel tablets for the treatment of Toxocara canis, one 8 lb, 72-day-old puppy died 6 days after administration of the label dose. This puppy and many other puppies in the study had high worm burdens and were reported to have diarrhea, sometimes bloody, frequently before and after treatment. Dehydration and signs of anemia (pale mucous membranes) were the only abnormal gross necropsy findings observed. No definitive cause was determined. In a 90-day field study using ivermectin/pyrantel pamoate/praziquantel tablets, the most serious adverse reactions (lethargy, limpness, and salivation) were seen in dogs weighing less than 10 lbs (see Precautions).

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

How Supplied: IVERHART MAX Chew is available in four dosage strengths (see Dosage and Administration) for dogs of different weights. Each strength comes in a package of 6 chews.

Approved by FDA under NADA #141-441

Manufactured by:
Virbac, Inc.,
Fort Worth, TX 76137 USA
Phone: 1-800-338-3659

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302143-04
10/2020
Caution: Federal (U.S.A.) law restricts this drug to use by or on the order of a licensed veterinarian.

INDICATIONS: For use in dogs to prevent canine heartworm disease by eliminating the tissue stage of heartworm larvae (Dirofilaria immitis) for a month (30 days) after infection and for the treatment and control of ascarids (Toxocara canis, Toxascaris leonina) and hookworms (Ancylostoma caninum, Uncinaria stenocephala, Ancylostoma braziliense).

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

<table>
<thead>
<tr>
<th>Dog Weight</th>
<th>Flavored Chewable Per Month</th>
<th>Ivermectin Content</th>
<th>Pyrantel Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 25 lbs</td>
<td>1</td>
<td>68 mcg</td>
<td>57 mcg</td>
</tr>
<tr>
<td>26 to 50 lbs</td>
<td>1</td>
<td>136 mcg</td>
<td>114 mcg</td>
</tr>
<tr>
<td>51 to 100 lbs</td>
<td>1</td>
<td>272 mcg</td>
<td>227 mcg</td>
</tr>
</tbody>
</table>

IVERHART PLUS Flavored Chewables are recommended for dogs 6 weeks of age and older. For dogs over 100 lbs use the appropriate combination of these flavored chewables.

ADMINISTRATION: Remove only one flavored chewable at a time from the foil-backed blister card. Because most dogs find IVERHART PLUS Flavored Chewable palatable, the product can be offered to the dog by hand. Alternatively, it may be added intact to a small amount of dog food or placed in the back of the dog’s mouth for forced swallowing.

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

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

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

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

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

EFFICACY: IVERHART PLUS Flavored Chewables, given orally using the recommended dose and regimen, are effective against the tissue larval stage of D. immitis for a month (30 days) after infection and, as a result, prevent the development of the adult stage.

IVERHART PLUS Flavored Chewables are also effective against canine ascarids (T. canis, T. leonina) and hookworms (A. caninum, U. stenocephala, A. braziliense).

ACCEPTABILITY: In a trial in client-owned dogs, IVERHART PLUS Flavored Chewables were shown to be a palatable oral dosage form consumed at first offering by the majority of dogs.

PRECAUTIONS: All dogs should be tested for existing heartworm infection before starting treatment with IVERHART PLUS Flavored Chewables, which are not effective against adult D. immitis. Infected dogs must be treated to remove adult heartworms and microfilariae before initiating a program with IVERHART PLUS Flavored Chewables.

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

Keep this and all drugs out of the reach of children. In case of ingestion by humans, clients should be advised to contact a physician immediately. Physicians may contact a Poison Control Center for advice concerning cases of ingestion by humans.

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

Warnings: Use product on or before its expiration date. Discard or return unused tablets.

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

To report suspected adverse drug events, for technical assistance or to obtain a copy of the Safety Data Sheet (SDS), contact Virbac AH, Inc at 1-800-338-3659 or us.virbac.com. For additional information about adverse drug experience reporting for animal drugs, contact FDA at 1-888-FDA-VETS or http://www.fda.gov/reportanimalae.

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

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

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

HOW SUPPLIED: IVERHART PLUS Flavored Chewables are available in three dosage strengths (See DOSAGE section) for dogs of different weights. Each strength comes in a box of 6 tablets, packed 10 boxes per display box.

Approved by FDA under ANADA # 200-302

Manufactured by:
Virbac AH, Inc.
Fort Worth, TX 76137, USA

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lethargy, vomiting, and shock/death if untreated or sufficiently severe.

**Diseases, conditions, and symptoms related to hyperglycemia**

Hyperglycemia in veterinary medicine is most associated with diabetes mellitus. However, several other diseases and physiological conditions also elevate blood glucose levels to above normal parameters. Stress hyperglycemia commonly occurs in cats but may also be observed in dogs. Postprandial glucose levels also may show a temporary increase. Growth hormone–secreting tumors (pituitary in felines, and mammary and pituitary in canines), pheochromocytoma, hyperadrenocorticism, and hyperthyroidism can cause hyperglycemia. Each of these conditions can induce hyperglycemia through the unregulated/increased production of the hormones associated with the related organs and increase glucose production. Pancreatic disease, such as acute or chronic pancreatitis or neoplasia, can elevate blood glucose levels. Various drugs used in veterinary medicine may affect glucose production, including steroids, progestogens, β blockers, and α2 agonists. Furthermore, ethylene glycol and head trauma can lead to hyperglycemia. Symptoms of hyperglycemia may be nonexistent in acute or mild cases. Glycosuria occurs when hyperglycemia exceeds the renal threshold, followed by renal tubular osmotic diuresis, and subsequent polyuria and compensatory polydipsia. This threshold varies but is approximately 180 to 200 mg/dL in canines and 200 to 280 mg/dL in felines.

**Monitoring of glucose levels in canine/feline veterinary patients**

Patient-side glucose monitoring in the clinic or hospital is commonly performed because of the critical need of glucose for survival, its diagnostic value, and relatively low cost. Handheld glucometers use a small drop of blood and an algorithm for species-specific adjustment related to the red blood cells and distribution of glucose to determine blood glucose levels. One of the most common is the AlphaTRAK 2 glucose monitor with canine- and feline-specific settings, but other glucometers can also be used. The iSTAT analyzer has excellent accuracy and is commonly used in emergency and general practice settings. One caveat with hand-held glucometers is that hemoconcentrated patients may register artificially low glucose levels because of a higher red blood cell concentration on the algorithm associated with the actual measurement of glucose levels. Serum analyzers in the clinic or the test results of separate samples sent elsewhere for analysis can be used to confirm diagnosis and are less susceptible to artifacts. Chemical reaction sticks, used to screen for the presence of glucose in the urine, may confirm more persistent hyperglycemia and are commonly used in veterinary hospitals. Furthermore, in-house or outsourced testing of fructosamine can give further insight into the last 2 to 3 weeks of glucose regulation. Glucose can irreversibly react with plasma proteins to produce fructosamine. Assuming normal protein levels, abnormal glucose levels can also lead to altered fructosamine levels. However, this can be influenced by thyroid conditions, hyperlipidemia, hypoproteinaemia, and hemolysis, and it should not be used as a sole source of diabetes/insulin therapy management.

Sampling in the clinic is generally achieved through venipuncture. In pediatric, dehydrated, or debilitated patients, pricks of the paw pad, gums, tips, or ear margin also can be used to collect blood samples. Owing to the frequency of sampling needed in conditions such as sepsis and diabetic ketoacidosis, central lines/jugular catheters or intracatheters are preferred for patient comfort. Plotting glucose curves is a common method to determine the efficacy of insulin regulation in patients with diabetes. However, glucose curves also have the potential to give skewed results associated with stress hyperglycemia and may not reflect the typical blood glucose levels seen in a patient at home.

**At home**

Various tools are available to the owners of pets with a need for long-term glucose monitoring at home. Traditionally, urine reagent strips were used to check for any glycosuria. Such strips could indicate whether blood glucose levels exceed the renal threshold and can also detect ketosis, but they give little information about the duration or severity of levels outside of the normal range. In addition, hypoglycemia is not addressed if insulin dosing is high, and reagent strips are generally no longer in common use, particularly with the increased availability of modern and superior monitoring techniques. Glucometers with lancets or needle pricks of the ear veins, paw pads, or buccal mucosa can be used; however, some patients will not tolerate regular use.

**Patient-side glucose monitoring in the clinic or hospital is commonly performed because of the critical need of glucose for survival.**

Continuous glucose monitoring systems are becoming more common. They have been used routinely in humans and their application in pets generally allow a 1 to 2 week period of real-time monitoring of glucose levels in the intracellular fluid of subcutaneous tissues without the need for repeated needle pricks. Most dogs and cats tolerate these systems, but their accuracy at lower blood glucose levels (< 100 mg/dL) is reduced. Thus, their use in the clinic or at home is generally reserved for more stable patients. Application site reactions to the adhesive may occur but are uncommon, and the glucometer’s software/app stores data from sampling to give a more accurate glucose curve without the stress of restraint, venipuncture, or a veterinary visit. Many diseases can affect glucose regulation in pets, and there are several ways to monitor glucose levels that can facilitate correction or therapy changes. It is likely that glucose monitoring will continue to play a key role in patient wellness and care as less invasive, more-accurate tools and techniques are developed.

Kevin Kelley, DVM, is emergency service head at the BluePearl Pet Hospital in Clearwater, Florida. With more than 15 years of experience in emergency medicine, he helps oversee one of the busiest BluePearl emergency services in the United States.
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- Healthy Tracks for Pets™ Insulin Syringes (U-40 and U-100)

Visit www.healthy-tracks.com to learn more.

Test Buddy™ App

Allows pet owners to easily track, monitor and share their pet’s blood glucose results with their veterinarian.

Educational Material

Featuring Buddy and Keto
Clinical case study: Radiation therapy for facial mast cell tumor in a beagle

Patient presents with a large subcutaneous mass on the left rostral muzzle.

By David Lurie, BVSc; Diplomate, ACVIM (Oncology); Diplomate, ACVR (Radiation Oncology)

A 10-year-old castrated male beagle was evaluated by the oncology service at the Animal Referral Hospital in Sydney, Australia, in June 2020 for a large subcutaneous mass on the left rostral muzzle. The mass was first detected by the dog’s owner in May 2020. Subsequently, they noticed a waxing and waning of the swelling before the mass was evaluated by their family veterinarian.

In-house cytology had been performed by the veterinarian, and the cells were consistent with a mast cell tumor (MCT). Owing to its size, location, and extension into the oral mucosa, the mass was not considered to be surgically resectable, and the patient was referred to the Animal Referral Hospital for further assessment and discussion of treatment options.

Clinical examination

On presentation, the patient was bright, alert, responsive, and hydrated. The mass measured approximately 5 cm in diameter and was subcutaneous, with a significant component extending into the buccal and labial oral mucosa of the left rostral maxilla, as manifested by erythema and swelling. The ipsilateral mandibular lymph node was mildly asymmetrically enlarged. Other aspects of the clinical examination were unremarkable.

Procedures

A fine-needle aspirate of the left mandibular lymph node was performed, and the results of cytologic evaluation were consistent with metastatic MCT. A complete blood count and blood chemistry panel were performed, and all results were within normal limits. An abdominal ultrasound exam was then performed to complete staging; it was all clear. The patient was considered a good candidate for radiation treatment of the MCT, and the patient then underwent a CT scan for radiation treatment planning.

Treatment

A course of stereotactic radiation therapy was initiated to treat both the local MCT and the left mandibular node and was completed 2 days later. The mass received 3 × 9 Gy for a total of 27 Gy, and the mandibular node received 3 × 8 Gy for a total of 24 Gy.

When the treatment was completed, the patient was started on prednisolone 0.5 mg/kg once daily and continued on fexofenadine (Telfast) 180 mg twice a day. The prednisolone was weaned down over the next 3 weeks, but the patient remained on antihistamines throughout the course of treatment.

Adjuvant chemotherapy with single-agent vinblastine was started 2.5 weeks later and completed after 11 weeks. The patient received the first 4 doses (2 mg/m²) intravenously on a weekly basis, and the final 4 doses were administered every other week at the same dose. Restaging with abdominal ultrasound performed halfway through the chemotherapy regimen showed that the patient remained in clinical remission for local disease with no evidence of distant metastasis.

Outcome

The patient tolerated the radiation treatments very well and showed no obvious acute effects at the time of completion of therapy. However, some effects did start to manifest in the subsequent 2 to 3 weeks with alopecia in the treated field and mild to moderate oral mucositis with mild sloughing of the oral mucosa.

The mass went into complete clinical remission within 10 days following completion of the course of radiation therapy. The oral mucositis resolved within the next 3 to 4 weeks. A focal, 5-mm mucosal erosion persisted in the left upper lip for the next 3 months, after which it was completely healed.

The alopecia within the field became more extensive and significant dermal hyperpigmentation in the left rostral muzzle also became evident and persists.

The patient is in clinical remission and continues to do well 11 months after starting radiation therapy.

Discussion

MCTs are a common type of skin cancer in dogs. Many MCTs are considered locally invasive and can be difficult to completely remove surgically due to the extent of local disease and challenging anatomic locations involved.
Prolonged inadequate nutrition may be more detrimental to patients than the primary disease process triggering the weight loss. Mirataz lets you take control. As the first and only FDA-approved transdermal medication for the management of feline weight loss, Mirataz increases body weight by 3.9% in as little as 14 days in an easy-to-apply transdermal ointment. Learn more at www.Mirataz.com.

Important Safety Information
Mirataz® (mirtazapine transdermal ointment) is for topical use in cats only under veterinary supervision. Do not use in cats with a known hypersensitivity to mirtazapine or any of the excipients. Do not use in cats treated with monoamine oxidase inhibitors (MAOIs). Not for human use. Keep out of reach of children. Wear gloves when handling/applying, wash hands after and avoid contact between the treated cat and people or other animals for 2 hours following application. Use with caution in cats with hepatic and kidney disease. Cat’s food intake should be monitored upon discontinuation. Safety has not been evaluated in cats less than 2 kg, less than six months of age or in breeding, pregnant or lactating cats. The most common adverse reactions observed during clinical trials were application site reactions, behavioral abnormalities (vocalization and hyperactivity) and vomiting. For additional safety information, see brief summary of prescribing information on following page.

References:

Take control with Mirataz® (mirtazapine transdermal ointment).

For Veterinary Technical Support, contact Dechra Veterinary Products at:
866-933-2472   |   www.dechra-us.com   |   support@dechra.com
Mirataz®
mirtazapine transdermal ointment

For topical application in cats only. Not for oral or ophthalmic use.

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

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

INDICATION: Mirataz is indicated for the management of weight loss in cats.

DOSEAGE AND ADMINISTRATION: Administer topically by applying a 1.5-inch ribbon of ointment (approximately 2 mg/cat) on the inner pinna of the cat’s ear once daily for 14 days. Wear disposable gloves when applying Mirataz. Alternate the daily application of Mirataz between the left and right inner pinna of the ears. See Product Insert for complete dosing and administration information.

CONTRAINICATIONS: Mirataz is contraindicated in cats with a known hypersensitivity to mirtazapine or to any of the excipients. Mirataz should not be given in combination, or within 14 days before or after treatment with a monoamine oxidase inhibitor (MAO) or selegiline hydrochloride (L-deprenyl), amitraz, as there may be an increased risk of serotonin syndrome.

HUMAN WARNINGS: Not for human use. Keep out of reach of children. Wear disposable gloves when handling or applying Mirataz to prevent accidental topical exposure. After application, dispose of used gloves and wash hands with soap and water. After application, care should be taken that people or other animals in the household do not come in contact with the treated cat for 2 hours because mirtazapine can be absorbed transdermally and orally. However, negligible residues are present at the application site and the body of the cat at 2 hours after dosing. In case of accidental skin exposure, wash thoroughly with soap and warm water. In case of accidental eye exposure, flush eyes with water. If skin or eye irritation occurs seek medical attention. In case of accidental ingestion, or if skin or eye irritation occurs, seek medical attention.

PRECAUTIONS: Do not administer orally or to the eye. Use with caution in cats with hepatic disease. Mirtazapine may cause elevated serum liver enzymes (See Animal Safety in the product insert). Use with caution in cats with kidney disease. Kidney disease may cause reduced clearance of mirtazapine which may result in higher drug exposure. Upon discontinuation of Mirataz, it is important to monitor the cat’s food intake. Food intake may lessen after discontinuation of mirtazapine transdermal ointment. If food intake diminishes dramatically (>75%) for several days, or if the cat stops eating for more than 48 hours, reevaluate the cat. Mirataz has not been evaluated in cats <2 kg or less than 6 months of age. The safe use of Mirataz has not been evaluated in cats that are intended for breeding, pregnant, or lactating cats.

ADVERSE REACTIONS: In a randomized, double-masked, vehicle-controlled field study to assess the effectiveness and safety of mirtazapine for the management of weight loss in cats, 115 cats treated with Mirataz and 115 cats treated with vehicle control were evaluated for safety. The vehicle control was an ointment containing the same inert ingredients as Mirataz without mirtazapine. The most common adverse reactions included application site reactions, behavioral abnormalities (vocalization and hyperactivity), and vomiting. See Product Insert for complete Adverse Reaction Information. To report suspected adverse events, for technical assistance or to obtain a copy of the SDS, contact Dechra at 1-888-933-2472. 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

EFFECTIVENESS: The effectiveness of Mirataz (mirtazapine transdermal ointment) was demonstrated in a randomized, double-masked, vehicle-controlled, multi-site field study involving client-owned cats of various breeds. Enrolled cats were ≥ 1 year of age and had existing documented medical history of ≥ 5% weight loss deemed clinically significant. The most common pre-existing conditions included renal insufficiency, vomiting, and hyperthyroidism. Some cats had more than one pre-existing condition. Cats were randomized to treatment groups in a 1:1 ratio of Mirataz to vehicle control. A total of 330 cats were enrolled and received either Mirataz (115 cats) or a vehicle control (115 cats) containing the same inert ingredients without mirtazapine. The cats were 2.8-24.6 years of age and weighed 2.1-9.2 kg. The dosage was a 1.5-inch ribbon (approximately 2 mg/cat) mirtazapine or vehicle ointment administered topically to the inner pinna of the cat’s ear. A total of 177 cats were determined to be eligible for the effectiveness analysis; 83 cats were in the Mirataz group and 94 cats were in the vehicle control group. The primary effectiveness endpoint was the mean percent change in body weight from Day 1 to Week 2. At Week 2, the mean percent increase in body weight from Day 1 was 3.94% in the mirtazapine group and 0.41% in the vehicle control group. The difference between the two groups was statistically significant (p<0.0001) based on a two-sample t-test assuming equal variances. A 95% confidence interval on the mean percent change in body weight for the Mirataz group is 2.77; 5.11, demonstrating that the mean percent change is statistically different from and greater than 0.

STORAGE: Store below 25°C (77°F). Multi-use tube. Discard within 30 days of first use.

HOW SUPPLIED: Mirataz is supplied in a 5 gram aluminum tube.

MANUFACTURED FOR: Dechra Veterinary Products
7015 College Boulevard, Suite 525
Overland Park, KS 66211 USA

US Patent 15,603,272
Approved by FDA under NADA # 141-481
NDC 86078-686-01

Rev. August 2020
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MEDICINE | Oncology

As this patient’s tumor was subcutaneous as opposed to dermal in origin, traditional grading of the mass with biopsy would have been of limited prognostic value. However, reports have linked MCTs involving the oral mucosa with a more aggressive biologic behavior. Indeed, this patient was shown to have metastasis to the ipsilateral mandibular lymph node.

The patient tolerated the radiation treatments very well and showed no obvious acute effects at the time of completion of therapy. However, some effects did start to manifest in the subsequent 2 to 3 weeks.

However, as the disease had not progressed to involve internal organs, a combined chemoradiation treatment regimen was considered the best option. Mast cells are very sensitive to ionizing radiation and generally shrink rapidly and substantially with this treatment alone.

Although several new treatments for MCTs are available, such as tigilanol tiglate (Stelonta), the extensive tissue trauma and uncertainty of effective tumor margin coverage associated with intralesional injections made this a less desirable option for this patient.

Furthermore, given the lymph node involvement, it was considered prudent to treat with a systemic chemotherapy regimen as well. To date, the outcome for this patient has been as expected, but ongoing monitoring will be done to assess for any signs of relapse, as early detection can lead to the best outcomes.

David Lurie, BVSc, Diplomate, ACVIM (Oncology); diplomate, ACVR (Radiation Oncology), is a veterinary medical and radiation oncology specialist at the Animal Referral Hospital, in Sydney, Australia. He has worked in private practice, serving as the head of oncology at Miami Veterinary Specialists and Affiliated Veterinary Specialists in Orlando, Florida, before moving to Sydney, Australia. Lurie is a Diplomate of both the American College of Veterinary Internal Medicine and the American College of Veterinary Radiology.
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Designing better care.
How should your practice respond to client complaints?

4 key strategies for addressing client complaints, plus how to best handle bad reviews.

By Kellie Olah, SPHR, CVPM

Sometimes you know that a client is upset before a complaint is made. Other times, a complaint catches you completely off guard. Sometimes the issue is described factually, and other times sheer emotion spills out. Some complaints are about big issues, others are smaller in scope. In some cases, the complaint is made to you directly. Other times, you read about their unhappiness on social media.

Regardless of the specifics, the question remains the same: How should you respond?

**Step 1: Consider your overall goals**

Typically, your goals would include satisfying the complaint and restoring your relationship with your client. Another goal may be to avoid a potential lawsuit if a client claims that you did not meet the standard of care. Keep those goals in mind as you respond.

**Step 2: Listen carefully**

If you are speaking to a client directly, give them uninterrupted time to share specifics of their complaint. Sometimes the act of respectfully listening to and documenting what is being said can help significantly to calm a disgruntled client. This can be accomplished. This paraphrasing can help them see that you really were listening and confirm that you now have a mutual understanding of the issue.

Underlying problems can range from a client misunderstanding a diagnosis to a client hoping against hope for the best outcome. Sometimes your practice did all the right things, and other times you could have provided better service. No one is 100% on all the time.

**Step 4: Explain thoughtfully—but do not apologize**

It is important to help your client feel they were heard, but admitting to a mistake or otherwise apologizing can provide fodder for a potential malpractice suit. So, as tricky as it may seem, skip the apology and focus on providing a solution. As you discuss solutions, avoid medical jargon and answer their questions without rushing.

**Practice philosophies, policies, and procedures**

Explain to your staff that client complaints, even ones that may not be justified, are opportunities to communicate with the client and potentially improve the quality of the service your practice offers. Provide your staff with procedures for handling complaints and then role play and discuss the established guidelines until they become second nature.

When creating policies for responding to social media posts, it is important to have a timeline for your response. If a client posts on your Facebook page, for example, a lack of an initial response—if only for a few hours—provides the unhappy client more time to brood and gives others who see your Facebook page time to wonder about the quality of service you provide. Acting quickly can help keep things as calm as possible.

To proactively reduce the number of complaints, obtain informed consent from each client. Give them an estimate of your fees and what those fees will cover, answer their questions before moving forward, and give them helpful written material for services that they may want to consider.

**Suing a client for bad reviews**

Much of what has been discussed can help protect your practice against a malpractice lawsuit. Sometimes, though, your practice may be considering a lawsuit against a complaining client. When, if ever, does that make sense?

No one likes to read a bad review about their practice—and it can be tempting to want to sue a client over an especially unpleasant or unfair one. Is that possible? The answer is yes, it is often possible to sue another person, although some cases are more likely to have merit than others. But how difficult would it be and is it advisable?

Online reviews are largely covered by the First Amendment, which gives individuals the right of free speech. And about two-thirds of the states in the US protect consumers with anti-SLAPP (strategic lawsuits against public participation) laws. These laws make it more difficult for businesses, including veterinary practices, to successfully sue someone for negative comments made about them.

There are, however, limits to what someone can say about your practice, regardless of how angry they might be. For example, if a client includes factually incorrect information in an online review or accuses you of doing something you have not done, this may be

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**Clients who do not complain**

Studies have shown that certain individuals are more likely to lodge a complaint than others based upon their personalities. Those who do not complain to your practice could be satisfied with the service. This is likely true for many of them. Others, however, may be dissatisfied but because of their personality type—or because of the time and energy involved—may remain silent. In other cases, a practice may not have a culture of encouraging, honest exchanges between clients and the veterinary team, so a lack of complaints may simply reflect that culture.

Even if your practice is not receiving many complaints, it is recommended to continually work to maximize your service. Consider soliciting feedback from clients through surveys or another form so that you can have an accurate picture of client satisfaction and make improvements where necessary.
grounds for a defamation lawsuit. In other words, although stating factually correct information is covered under the First Amendment, falsehoods are not.

For example, if someone posts online that your practice charges too much, that would almost certainly be protected under the right of free speech because, in that person’s opinion, you do. However, if they falsely claim that you added a $200 surcharge to the bill because your practice does not like working with small dogs, that has the potential for a defamation lawsuit.

Defamation comes in 2 main forms: slander (spoken word) and libel (written word). Although states may have differing standards for what constitutes defamation, its main elements include false statements made that were claimed to be factual; these statements were relayed to a third party, which can include a social media platform; and you suffered harm because of the statements.

Note that the Communications Decency Act of 1996 would prevent your practice from suing the platform (such as Yelp or Google Reviews) for content that a client has written and posted.

If what someone has posted is causing you to consider taking legal action, first determine if the post would be covered by free speech. If it likely would not, then the next step would be to consider if a lawsuit would be worth the time and money needed to pursue the case. If the comments can be proved to be false and the statements made have caused significant harm to your practice, the answer may be yes. In many cases, however, the answer will be no.

If you decide not to sue, you can ask a platform, such as Yelp, to remove a review because it is factually untrue. They are not required to do so, but you can make the request. Some sites, such as Google Reviews, are fine with your business soliciting reviews as long as you don’t specifically ask for positive ones. However, you can ask satisfied customers to give honest feedback on these review sites. By taking that action, the positive reviews could end up overwhelming any negative ones.
Are vaccine-centered annual visits turning off young clients?

How to appeal to millennial pet owners in a postpandemic world.

By Bash Halow, CVPM, LVT

T
he post–COVID-19 pandemic world will usher in a new order of millennial moneymakers—tech-savvy and adaptive workers 25 to 34 years old. Recent data have revealed that these millennial pet owners are not always fond of the vaccine-centric approach to annual pet care.1

For many younger owners, offering vaccine titer as an annual service aligns more with their holistic notion of health care. To get these clients in the clinic, veterinarians should shift the focus from an annual visit for vaccinations to a more appealing approach spotlighting patient well-being.

Thoughts on pet care

Millennials are willing to spend big bucks on their pets. According to a 2019 pet industry study, this generation is considered the most engaged pet owners compared with other demographics: 40% had pet insurance and 40% had at least 1 type of pet-related subscription service.2 However, millennials tend to spend less on veterinary care compared with other pet-owner demographics.3

What’s the reason for this deficit in veterinary spending? It’s not a lack of money. In fact, millennials often spend other age demographics by double in nonveterinary, pet-related products and services. One answer may be that older people tend to own older pets and these geriatric animals require more veterinary care. However, data suggest that millennials don’t spend as much at the veterinary clinic because they don’t believe in the value they’re offered.

Seeking pet care that matches their own

Millennials may turn down regimented, vaccine-centric, annual visits and instead choose pet health care options that parallel what they pursue for themselves.1 Young people have cobbled together their own approach to good health that includes veganism; vegetarianism; cross fitness; health drinks such as kefir, kombucha, and coconut water; and Google’s search engine to learn about their various ailments. The highest sales growth in pet food has been in the natural category.

Pet owners who are circumspect about vaccines have likely trended away from traditional health care practices because they may have been alienated from it as patients themselves or because alternative and holistic health is now a mainstream concept.

Resisting regimented medical protocols

Young veterinary team members, like their counterparts in other fields, want to feel fulfilled at work. A 2016 study identified social consciousness, wanting to make a difference in the world, and a desire for autonomy in decision-making processes as important attributes of their ideal career.3 These young team members are likely to resist regimented approaches to health care and prefer guidelines, such as those reaffirmed by the American Animal Hospital Association in 2017 that endorse titers for core-vaccine diseases as an alternative to more traditional pathways to good health.4 As an added bonus, you encourage discussion and thoughtful evaluation of the patient and the client’s needs—the very thing that puts the focus on the medical consultation and underlines your expertise as your business’s competitive strength.

Retail stores: The struggle to regain foot traffic post pandemic

Your clients have learned that they can live, eat, work, and shop without leaving the comfort of their home. Online shopping has skyrocketed, and brick-and-mortar stores must continue to work hard post crisis to regain foot traffic.

Retail stores such as Tractor Supply Company and Walmart offer low-cost vaccination services to drive buyers to their locations. Low-cost vaccine services capitalize on the clients’ perception that the reason for an annual veterinary visit is the “shot,” not the examination and consultation. In response, veterinary practice teams have 2 choices: price match and continue to put the emphasis on the vaccine, or retool their image as providers of personalized care for dogs and cats.

Affordability no longer a hurdle

In the past, vaccine titers have been prohibitively expensive for some pet owners, but new in-house titer tests such as VaccCheck or Zoetis’ TiterCHEK CDV/CPV (canine distemper virus/canine parvovirus) antibody test kits keep costs down without compromising quality. These tests can be performed during patient visits just as we currently complete testing for tickborne or heartworm disease. They give clients what they want, underline your team’s sense of value, and keep your practice competitive.

Our postpandemic world will come with seismic changes. The age demographic that may be most capable of adapting and emerging as the major breadwinners in the new economy could also be your dream client: the millennial. They love their pets like family and have a proven track record of spending money to give them the best possible care. Let’s make sure we’re ready to meet them on the other side of this crisis with a business model that’s in line with their beliefs and their interests.

Bash Halow, CVPM, LVT, is a graduate of the College of William and Mary and of the Veterinary Management Institute series at Purdue University. During his 20 years as a veterinary professional, Halow has served as a practice manager, regional manager position, and hospital administrator before opening his practice management consulting business, Halow Consulting. Bash is also a regular Fetch dvm360® speaker and a dvm360® advisory board member.

REFERENCES

DESIGNED FOR PUPPIES

Announcing BRAVECTO® 1-MONTH Chews—essential flea and tick protection for puppies 8 weeks of age and older, and weighing 4.4 lbs or greater.

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IMPORTANT SAFETY INFORMATION:

BRAVECTO 1-MONTH Chews are for dogs 8 weeks of age and older. Side effects may include itching, diarrhea, vomiting, decreased appetite, elevated ALT, lethargy, and weight loss. Fluralaner 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. BRAVECTO 1-MONTH Chews are not effective against A. americanum in puppies less than 6 months of age. For complete product information refer to the product insert on page 62.

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Bravecto 1-Month (fluralaner) Chews for Dogs

Dosage Schedule

Bravecto 1-Month should be administered orally as a single dose monthly according to the Dosage Schedule below to provide a minimum dose of 4.5 mg/lb (10 mg/kg) fluralaner.

Bravecto 1-Month is not effective against A. americanum in puppies less than 6 months of age (see Effectiveness).

Dosage and Administration:

Bravecto 1-Month is indicated for the treatment and control of Amblyomma americanum (lone star tick) infestations for one month in dogs and puppies 6 months of age and older, and weighing 4.4 pounds or greater.

Dosage Schedule:

- 44.0 – 88.0 400 One
- >88.0 – 123.0* 560 One

*Alanine aminotransferase (ALT); alkaline phosphatase (ALP) and liver enzymes were not increased.

Adverse Reactions:

In well-controlled U.S. field study, which included 217 dogs (210 dogs were administered Bravecto 1-Month every 30 days), 30 dogs and 70 dogs administered an oral active control (on i onsulated) every 30 days, there were no serious adverse reactions associated with treatment. Over the 30-day study period, all observations of potential adverse reactions were recorded.

Adverse Reactions in the Field Study

Dosage: Adult dogs

<table>
<thead>
<tr>
<th>Body Weight (pounds)</th>
<th>Fluralaner (mg)</th>
<th>Chews</th>
<th>Administration</th>
</tr>
</thead>
<tbody>
<tr>
<td>≥4.4 – &lt;9.0</td>
<td>400</td>
<td>One</td>
<td>Oral</td>
</tr>
<tr>
<td>≥9.0 – 22.0</td>
<td>560</td>
<td>One</td>
<td>Oral</td>
</tr>
<tr>
<td>≥22.0 – 44.0</td>
<td>560</td>
<td>One</td>
<td>Oral</td>
</tr>
<tr>
<td>≥44.0 – 88.0</td>
<td>560</td>
<td>One</td>
<td>Oral</td>
</tr>
<tr>
<td>≥88.0 – 123.0</td>
<td>560</td>
<td>One</td>
<td>Oral</td>
</tr>
</tbody>
</table>

*The chemical name of fluralaner is (±)-4-[5-(3,5-dichlorophenyl)-5-(trifluoromethyl)isoxazol-3-yl]-2-methyl-5-((2,2,2-trifluoroethylamino)ethyl)benzamide.

Bravecto 1-Month is not effective against A. americanum in puppies less than 6 months of age (see Effectiveness).

The safety of Bravecto 1-Month has not been evaluated in breeding, pregnant and lactating dogs (see Animal Safety).

Mode of Action:

Fluralaner is for systemic use and belongs to the class of isoxazoline-substituted benzamide derivatives. Fluralaner is an inhibitor of the arylphorin nervous system. The mode of action of Fluralaner is the antagonism of the solder-potted chloride channels (gamma-aminobutyric (GABA) receptor and glycine-receptor).

Effectiveness:

Treatment and Prevention of F. Infestations:

In well-controlled laboratory studies in dogs 6 months of age and older, Bravecto 1-Month started killing fleas within 4 hours after treatment and was >90% effective by 12 hours after treatment or post-infestation for 30 days.

During the palatability assessment, four dogs coughed within 1 hour of dosing with Bravecto 1-Month. Palatability was not established a causal relationship to product exposure using these data.

The following abnormalities were noted in 7 pups from 2 of 10 dams in the only the treated group during gross necropsy examination: cryptorchidism (1 pup), enlarged heart (1 pup), enlarged spleen (1 pup), and cryptorchidism (2 pups). During veterinary examination at Week 7, two pups from the control group had inguinal testes, and two four pups from the treated group had inguinal and scrotal testes (respectively). No undescended testicles were observed at the time of necropsy (days 50 to 71). In a well-controlled field study Bravecto 1-Month was used concurrently with other medications, such as antibiotics, antifungals, antihistamines, immunosuppressants, anti-inflammatory agents, analgesics and anesthetics. No adverse reactions were observed from the concurrent use of Bravecto 1-Month with other medications.

Storage Conditions:

Dry at or below 59°F (15°C).

How Supplied:

Bravecto 1-Month is available in five strengths (45, 110, 200, 400 and 560 mg fluralaner per chew). Each chew is packaged individually into aluminum foil blister packs sealed with a protective paper coating to control light. Product may be packaged in 1, 3, or 4 chews per package.

Approved by FDA under NADA # 141-352

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Rev: 01/21
New and reinvented jobs are changing the veterinary market

COVID-19 forced a major shift in how practices work, but that doesn’t have to be a bad thing. Embracing change may reveal emerging career opportunities.

By Kelsey Gustafson

With technology taking the veterinary profession by storm, innovation and adaptability have become integral to most practices. Despite the accelerated rate of job consolidation within the field, Bash Halow, CVPM, LVT, owner of Halow Consulting and member of dvm360® Editorial Advisory Board, believes this is a golden age for career opportunities.

At a recent Fetch dvm360® virtual conference, Halow highlighted careers that may dissipate with a golden age for career opportunities.

Out with the old

Client service representatives

During the COVID-19 pandemic, a wave of online technologies designed for practices to adhere to social-distancing restrictions arrived. Virtual scheduling technologies and telemedicine apps have gained momentum, reducing the need for client service representatives (CSRs). “These telemedicine apps can eliminate time-consuming, less engaging parts of client service like appointment confirmation, the check-in process, collecting previous medical records, creating payment plans, and the length of time it takes to leave messages by replacing answering machine messages with 2 way texting,” said Halow.

Social media users

Most practices that rely on their employees for in-house social media are actually being limited in their online visibility, Halow said, especially with the increasing competition. “In order to get real traction on social media, you have to get a lot of visibility and a lot of followers, and 1 way to do that is by cross posting a lot of information across various platforms (such as Twitter, Facebook, and Instagram),” he added. As many practices do not have the staff with the ability to gain competitive results, Halow suggests outsourcing that responsibility to a social media expert.

In with the new

On-demand veterinary support trainers

Experienced veterinary professionals looking for a work-from-home position should consider utilizing their skills to produce a virtual training curriculum for client care representatives and assistants, Halow said. This position would provide training live or on-demand for veterinary teams on a broader scale.

 “[On-demand veterinary training] is already in existence, but a lot of you are trying to manage training in-house. If you’re building it from the ground up, I don’t recommend doing that. There are companies out there that are already providing excellent baseline education for team members, and you can even follow it through with checklists,” Halow advised.

Independent contractors

Practice managers who are looking to hone their management skills from home should investigate being a 1099 employee (self-employed independent contractor). “High-level oversight of small-to-medium veterinary practices is not a 40-hour-a-week job,” Halow said. He explained that going down the independent contractor route can be a very rewarding experience for practices. For managers experienced in reviewing key performance indicators and practice finances, Halow recommends working as a 1099 employee for other practices by checking in quarterly and offering a review of findings and recommendations.

Headhunters

For a practice to have a great team, they must first sift through a high volume of potential candidates, which can be difficult and time-consuming. Those with leadership experience and credentials, such as the Society for Human Resource Management Certified Professional or Professional in Human Resources, with backgrounds in the veterinary sector can also provide on-demand assistance with the recruitment process for practices.

“If this is a pathway for you, then being that headhunter (who) has relationships with veterinarians (who) work at other practices, you can pick out the ones who may be unhappy or are looking for new opportunities,” Halow said.

The takeaway

The job market is constantly evolving and changing, and when 1 door closes another will open. It’s essential to think outside the box because there are always new levels of wealth and job satisfaction right around the corner. “In this time of upheaval, there is an opportunity for us to either wring our hands about what’s going on or decide to calm ourselves and look around for opportunities,” Halow said.

Why use a telemedicine app?

Bash Halow, CVPM, LVT, owner of Halow Consulting and dvm360® Editorial Advisory Board member, says there are benefits to switching your practice to telehealth, including:

- Clients can send patient history forms electronically to the team before arriving.
- Staff can be notified via the app when a patient has arrived and is awaiting care.
- The team can have 2-way text conversations with clients.
- Virtual video conferences with clients can be arranged.
- Clients can schedule their appointments online.
- Client reminders, confirmations, and push notifications can be sent.
- Laboratory diagnostic results can be shared electronically with the veterinarian and client.

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How COVID-19 has changed telehealth: updates and new laws

Find out why telehealth is here to stay, plus what that means for your veterinary practice.

By Lauren Harris, DVM, DACVECC

The COVID-19 pandemic has undeniably reshaped the landscape for veterinary care. Telehealth, once considered a niche service primarily for emergency and critical care, has become the norm, providing a safe and effective alternative for routine care. This shift has not only allowed veterinary practices to adapt to the challenges presented by the pandemic but has also driven important discussions around the future of veterinary care delivery.

### How COVID-19 Changed Telehealth


Pet owners have turned to telehealth services at a higher rate due to the pandemic. The AVMA-Veterinary Telehealth Guidelines (AVMA, 2021) outline the need for a valid veterinarian-client-patient relationship (VCPR) to establish a telehealth encounter. Prior to the pandemic, federal law mandated that a VCPR could be established only by an in-person physical examination, and a VCPR was necessary to diagnose, prescribe medication, or otherwise treat a veterinary patient. However, during the pandemic, states have allowed a VCPR to be established through virtual means in order to balance the provision of veterinary care with observance of social distancing and quarantine or lockdown guidelines.

### Telehealth’s Impact on Veterinary Care

Telehealth has allowed veterinary practices to continue providing care during the COVID-19 pandemic, with many practices experiencing a 150% increase in telehealth visits compared to the previous year. Most of these visits were related to conditions other than COVID-19. The AVMA (2021) notes that despite these temporary suspensions in regulation, veterinarians would still need to follow VCPR requirements set by their individual states. Without a VCPR, telehealth is limited to the provision of educational content, general advice or opinion, and teletriage, which is a method of electronically assessing a patient’s condition to determine if referral to a veterinarian is warranted in times of urgency.

### Future of Telehealth

As the medical and technological landscape continues to evolve, telehealth is likely to remain a crucial component of veterinary care. The AVMA (2021) states that with the exception of emergency teletriage, including poison control services, the AVMA opposes remote consulting, including telemedicine, offered directly to the public when the intent is to diagnose and treat a patient in the absence of a VCPR.

### References


Lauren Harris, DVM, DACVECC, is the regional vice president of medicine at BluePearl Specialty + Emergency Pet Hospital. She received her DVM at Auburn University in Alabama in 2011 and completed a residency in emergency and critical care at BluePearl Specialty + Emergency Pet Hospital in 2015.
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Pruritus can dramatically affect quality of life for both patients and their owners. Pet owners have reported that as the level of itch in their pet increases, their pet’s quality of life decreases. Different types of allergies can look the same, and patients can have more than 1 type of allergy, both of which can complicate the diagnosis. But the allergic workup is essential to provide comfort and minimize future flares.

Many issues can add to the frustration of owners of allergic dogs, including odor and visible lesions. Good client communication from the entire veterinary team can help owners work through the reality of managing a chronic disease, which often includes a multimodal approach.

**WHY ATOPIC DERMATITIS OCCURS**

Atopic dermatitis (AD) results from an inherited predisposition to develop hypersensitivities to environmental allergens that do not induce a problem in nonallergic individuals. Allergens can include dust mites, pollens, dander, insect particles, and molds.

The paws, axillae, abdomen, and face are common areas to develop pruritus and secondary lesions. These areas also tend to have less hair and increased exposure to common allergens, making topical therapy important. Cutaneous absorption of allergens is the primary route of exposure in canine AD.

**SECONDARY INFECTIONS**

Infections are a secondary issue related to allergies. It can be confusing for an owner to understand how allergies and infections are different issues but impact one another. When owners have a clear picture of this relationship, they are often more willing to commit to multimodal therapy, including frequent bathing and ear flushes.

One of the biggest missteps when working up an allergic dog is neglecting to perform cytology to identify infection. Bacterial and yeast overgrowth on the skin or in the ears can increase the level of pruritus above the dog’s allergic itch. Performing cytology during an allergic workup and on rechecks is the foundation of allergic management. Areas of crusting, erythema, debris, alopecia, and lichenification should be sampled at every exam to identify the appropriate therapy and to prevent certain therapies from appearing to be ineffective due to presence of microorganisms.

**EPIDERMAL BARRIER FUNCTION**

Maintaining the stratum corneum (top layer of the epidermis) is essential for a healthy skin barrier. The stratum corneum contains corneocytes and intercellular lipid layers that serve as a border between a dog’s body and the dry environment. An abnormal epidermal barrier allows allergens to penetrate the skin and results in a cascade of cytokines and other inflammatory mediators causing pruritus. Therefore, a multimodal approach, including topical and systemic therapies to improve the epidermal barrier, is beneficial for dogs with AD.

**WHY TOPICALS ARE IMPORTANT**

Topical therapy should always be considered in management of canine AD. This includes during an active pyoderma event as well as for long-term maintenance to prevent recurrence. Topicals are particularly valuable for controlling chronic, recurrent cases of *Staphylococcus* infection to avoid development of methicillin-resistant *Staphylococcus* (MRSA).
resistance. Topical therapy may decrease the length of time systemic antibiotics are required or even eliminate the need for them altogether.

Certain topical therapies not only decrease bacterial populations and reduce surface recolonization, they help restore the epidermal barrier. The epidermal barrier has been shown to be abnormal in the skin of atopic dogs, even if it is nonlesional. This emphasizes the importance of utilizing restorative topical products even in well-controlled atopic patients. Used as a part of the maintenance protocol, these products can minimize the use of systemic allergy medications needed for management.

**LATHER UP YOUR ATOPIC PATIENTS**

Many topical formulations are available. However, bathing with high-quality shampoos is the preferred method if the dog will allow it and the client is able. Bathing removes allergens from the surface of the skin, and many ingredients include antimicrobial properties.

The most common antibacterial agent found in shampoos is chlorhexidine. It is important to use products that contain 3% to 4% chlorhexidine, such as DOUXO S3 Pyo (Ceva) if it is the sole active ingredient against *Staphylococcus pseudintermedius*. However, 2% chlorhexidine has been shown to have a synergistic effect with miconazole if a combination product is selected.

Bathing frequency depends on the severity of the case and the owner’s willingness or ability to bathe the pet. If you have a proactive owner, then many cases of pyoderma (even if resistant) can be managed with a bathing protocol alone. Cases of pyoderma typically benefit from frequent bathing (every 1 to 2 days) initially, followed by weekly maintenance. Contact time is another important aspect of a bathing protocol. Instruct owners to leave the shampoo on the skin for at least 5 to 10 minutes before rinsing thoroughly. If an owner is unable to bathe or additional topical therapy would be beneficial, alternate formulations such as mousses, sprays, and wipes are available.

**DIET FOR EPIDERMAL BARRIER FUNCTION**

To avoid the use of more systemic medications, diets are available that can improve barrier function of atopic dogs through the use of nutrition. Diets include Royal Canin Skin Support, Hill’s Prescription Diet Derm Defense Canine and Hill’s Prescription Diet Derm Complete. These diets are high in fatty acids and contain various vitamins that have been clinically proven to improve the epidermal barrier and decrease pruritus in dogs with AD. It is also easy for owners to implement at home if they are overwhelmed by the therapeutic plan.

**IMMUNOTHERAPY AND ANTIPRURITICS**

Allergen-specific immunotherapy (ASIT) is the best long-term treatment for AD. It is formulated based on the results of intradermal or serologic allergy testing. ASIT consists of administering gradually increasing quantities of an allergen extract to a patient to improve the signs associated with subsequent exposure to the allergen. ASIT can take up to a year for full effect, and 60% to 70% of dogs have a positive response. When effective, therapy is usually life-long.

The use of systemic antipruritics is necessary in most cases of canine AD. This can range from keeping dogs comfortable while ASIT has time to become effective, managing seasonal flares, or long-term care in cases that require it. Systemic antipruritic options include oclacitinib (Apoquel; Zoetis), canine allergic dermatitis immunotherapeutic (Cytopoint, Zoetis), cyclosporine (Atopica; Elanco), or corticosteroids. It is important to weigh the benefits and risks of each therapy and to recognize that every patient has a unique response to different drugs.

**HOW TO MAKE THE BEST PLAN**

Each multimodal plan is different depending on the owner and patient. With so many treatment options available for canine AD, the importance of addressing the epidermal barrier should not be overlooked. The use of topical therapy and nutritional supplementation should be considered with traditional antipruritic therapies to maximize the comfort and maintenance of dogs with AD.

**REFERENCES**


Ashley Bourgeois, DVM, DACVD, practices at Animal Dermatology Clinic in Portland, Oregon. She is an owner/shareholder and on the board of directors for the practice group, which has locations in California, Kentucky, Indiana, Georgia, Australia, and New Zealand. Bourgeois is passionate about educating veterinarians about dermatology and work-life balance through her podcast, speaking engagements, and social media presence (@TheDermVet).
Demystifying SEO
Understanding how to utilize search engine optimization can help amplify your veterinary practice’s digital marketing strategy and strengthen your online presence.

By Robert Sanchez, CEO of Digital Empathy

The topic of search engine optimization (SEO) is often met with skepticism from veterinary practitioners. It isn’t difficult to see why. SEO is frequently leveraged as a buzzword instead of a rigorously explored topic with established first principles. The topic can seem dense and unapproachable, but it doesn’t have to be. SEO should fit into your broader marketing strategy. We’ll start with the story of how SEO was developed, why it exists, and what you need to know about it to help your practice succeed. From PageRank to content marketing and everything in between, this is SEO demystified.

Let there be…data
The year is 1998. The world has a wonderful, but perplexing, new problem. We have started to accumulate massive amounts of data from the internet but have no effective way of sorting and searching through this information. The public uses a mix of first-generation search engines. Remember Ask Jeeves? AltaVista? Yahoo?

These search engines evaluated a page’s relevance and authority for a search term based on the keywords on that page. For example, if you had a veterinary practice with a website in 1998 and the word “veterinarian” was used a dozen or so times on your home page, you’d have a pretty good shot at ranking well. However, 2 Stanford University PhD students spotted the obvious problem with this: anyone could stuff keywords onto their website. It doesn’t mean they’re the most trusted resource for a given search query. Larry Page and Sergey Brin knew there had to be a better way.

That better way, and the pioneering insight that catapulted Google from an unknown startup to one of the most powerful companies in human history, was PageRank. At its core, the idea was elegant and appealing. PageRank didn’t look to the website itself to determine its relevance and trustworthiness. It looked at what other websites were linking to that particular website. The theory was that if you link to another website, it’s a vote of confidence that this is a trusted resource. And by developing a clever and reciprocal system, a new and better way of searching the web was born.

From backlinks to Google My Business
Earning inbound links (or backlinks) to your website is still an important component of SEO today. However, there are now multiple categories that will account for your website’s search ranking. This is because internet behavior evolved, and Google’s tools and strategies have evolved along with it. We’ll start exploring these categories by first going through a quick lesson on the anatomy of the search engine results page (SERP), explaining a major change that happened a couple years ago, and then providing actionable steps to take within each major category.

Anatomy of the SERP
The basic architecture of Google’s SERP has undergone significant changes over the past 20 years. In fact, if you want to learn a nifty trick to see just how far we’ve come, type in “Google in 1998” into your address bar or directly into the Google search box.

The previous years had seen a slow (but occasionally sudden) shift from a long, homogenous list of organic links to the modern reality for which there are 3 major components to the SERP: local, paid, and organic. Local is the most recent addition, first appearing in 2017, and some studies suggest that local pack spots (the collection of 3, sometimes 4 nearby local business listings to the map on Google) earn about 50% of the traffic on the page.

And here’s the kicker…the local pack rankings have different rank factors than organic links. So now we have 2 kinds of SEO to address. I’ve always found that the most successful strategy is to look for low-hanging fruit first. Understand the highest-weighted rank factors and look for the easiest ways to beef those up. One wonderful resource is the Moz search rank analysis study (it comes out every couple of years). Refer to the chart on the right showing the top 8 rank factors for the local pack and localized organic links.

The modern landscape
You’ll notice a few major things in the figure. First, for traditional SEO, link signals still dominate. Second, for the local pack (which earns more traffic), the new kid on the block is Google My Business (GMB). I’d recommend focusing on 3 categories of signals when starting out: GMB, Link signals, and technical SEO or on-page signals.

Google My Business
GMB is Google’s business directory system. They obviously are incentivizing you to help them to make this an important part of the web, as this rank signal is almost twice as effective as anything else for local pack SEO (from which you often see 50% of the page’s traffic).

A big part of ranking first in the local pack is proximity to the searcher. Not much you can do here; if someone is 2 blocks from your practice, you will have a much better chance at ranking #1 than if your practice is 2 miles away, all things being equal. More interestingly, there are parts of the GMB profile that are usually ignored by veterinary practices but are quite valuable to optimize.

Business Info
This is the basic information about your business. In “Categories,” you should claim all categories relevant to your services (such as veterinary, boarding, grooming). In the description, give your best-value proposition and include keywords for all of your services. These keywords can help you show up in searches within the local pack.

Many business owners are unaware that anyone can edit a GMB page, so it’s important to monitor your page, correct mistakes, and make sure that notifications are going to the right email address.

Posts
GMB Posts are miniature advertisements that you can publish on your page. Many veterinary practices don’t know about this option, and it improves your ability to rank in the local pack for searches. This is some of the most obvious low-hanging fruit within SEO, and every practice should do it. Good topics for posts include:

• an event (at the hospital or within the community)
• a promotion for one of your services
• a link to a recent blog post (along with a short summary of why the post is helpful)
• important updates or hospital news

Q&A
If you look at your GMB page, you may already see questions posted there. If you don’t take the initiative, members of your community may answer these questions for you. Take a look at the Question & Answers module of your GMB page, ensure all questions are appropriately answered, and then start posting more questions. Ask your team what the most common client questions are, and then publish those questions and answers on your page. This helps you rank in a wider range of searches and provides potential clients with a better experience on their journey to your practice.

Reviews
Reviews are a major signal within the local pack, and they are also heavily used by searchers to determine who to investigate further and who to avoid. Encourage thoughtful reviews from your best customers and respond to every review you get, positive or negative.
Link signals
Getting links to your website has been the foundation of SEO for a long time. It is still the main driver of traditional SEO and is a major component of local pack SEO. Nowadays, the main way to earn links to your website is by regularly publishing valuable content on your blog and marketing that content on social media. When you create valuable content, others will share your posts, which counts as an earned link.

The first step is to create a content calendar and map out the next 12 months. We typically recommend at least 2 blog posts per month, but if that’s not realistic, aim for 1. Blog posts should be 500 to 1500 words and educational in nature, although it’s fine to tie in a promotion. Write about topics that will be valuable to pet owners and fill an important compliance gap, such as periodontal disease, training a new pet, or nutritional guidance. This is your opportunity to educate your community, build brand equity, and improve SEO.

On-page SEO
On-page SEO (commonly referred to as technical SEO) refers to how the content of your webpage is optimized for the search engines. It includes page load speed, metadata, page titles, keywords, and other on-page factors.

Speed
It’s important to have a well-coded website that optimizes images and media files for speed. This is a highly technical job, so it’s best to work with a developer to ensure that your website loads quickly.

Page titles
Within your content management system, such as WordPress or Squarespace, you have the ability to edit page titles. These show up on the page tab of the web browser and are an easy way to improve SEO.

Local Pack/Finder Ranking Factors

![Pie chart showing Local Pack/Finder Ranking Factors]

**5.88%** Personalization

**5.88%** Social signals (google engagement, Facebook engagement, Twitter engagement, etc.)

**9.56%** Behavioral signals (click-through rate, mobile clicks to call, check-ins, etc.)

**10.82%** Citation Signals (IYP/aggregator NAP consistency, citation volume, etc.)

**13.82%** On-Page signals (presence of NAP, keywords in titles, domain authority, etc.)

**15.44%** Review signals (review quantity, review velocity, review diversity, etc.)

**25.12%** Google my business signals (proximity, categories, keyword in business title, etc.)

**16.53%** Link signals (inbound anchor text, linking domain authority, linking domain quantity, etc.)

**26.03%** On-page signals (presence of NAP, keywords in titles, domain authority, etc.)

**27.94%** Link signals (inbound anchor text, linking domain authority, linking domain quantity, etc.)

**3.47%** Social signals (google engagement, Facebook engagement, Twitter engagement, etc.)

**6.47%** Review signals (review quantity, review velocity, review diversity, etc.)

**7.32%** Personalization

**8.41%** Citation signals (IYP/aggregator NAP consistency, citation volume, etc.)

**8.85%** Google my business signals (proximity, categories, keyword in business title, etc.)

**11.5%** Behavioral signals (click-through rate, mobile clicks to call, check-ins, etc.)

**26.02%** On-page signals (presence of NAP, keywords in titles, domain authority, etc.)

**27.94%** Link signals (inbound anchor text, linking domain authority, linking domain quantity, etc.)

**26.03%** On-page signals (presence of NAP, keywords in titles, domain authority, etc.)

**Robert Sanchez is the founder and CEO of Digital Empathy, an award-winning web design and marketing firm for veterinary practices. He frequently lectures at national conferences, leads a team of wonderful employees, sits on the board of VetPartners, and shares his home with two very spoiled dogs—Cole and Lula.**

**References available at dvm360.com**
Nonverbal communication in the pandemic era

Because COVID-19, fist and elbow bumps have replaced handshakes and hugs. Find out how to cope with the ever-evolving communication in veterinary medicine.

By Brad Maroneyak, CVT, CVPM

COVID-19 has drastically changed the way we communicate. From striking candid one-on-ones and group conversations among friends and colleagues to communicating through video calls, texts, cell phone calls, and emails, we have witnessed what seems to be a major shift overnight.

How do we adapt to this “new normal”? For centuries, most of our communication has been, and still involves, nonverbal interaction. We routinely use nonverbal communication to emphasize our viewpoints, complement words, and convey emotion. Nonverbal communication has been, and still is so deeply rooted in our everyday emotion. Nonverbal communication involves, nonverbal interaction. We have witnessed what seems to be nonverbal communication in day-to-day life.

What is nonverbal communication?
Nonverbal communication comprises of facial expressions, body language, eye contact, special distance (proxemics), and touch, among other forms of expression, instead of words to convey a message.

In the COVID-19 era, fist bumps and elbow bumps have replaced handshakes and hugs. As the pandemic continues to push us to a more online- and digital communication-oriented lifestyle, we are struggling to find substitutes for nonverbal communication in day-to-day life.

Masked communication
When we communicate with a mask or by video, text, email, or phone, we lose a critical component of communication that allows us to interpret nonverbal cues. Some of the previous forms of interaction are no longer practical, as our faces are now covered up during communication.

Adapting to the changes
In these evolving times, how do we adapt to the challenges of speaking and communicating while wearing a mask or sitting behind the screen of a technological device?

At the beginning of the COVID-19 pandemic, some doctors began wearing badges on their scrubs that displayed their lively and cheerful pictures. Because the patients could not see the doctor’s face, the badges were a sign of reassurance. This was a simple gesture that helped ease the stress and anxiety of the patients.

Even though your facial expressions are not exposed when wearing a mask, there are other ways to convey feelings and gather insights, such as hand movements, body posture, and feet position. To ensure a complete communication experience, complement the body language with verbal communication. For example, make statements such as “I am happy to hear that;” Wow, I am surprised!” or “This makes me sad.”

Use the exposed region of the upper face, such as the eyebrows, eyes, and upper cheeks in your everyday communication. For example, closing the eyes and nodding can indicate agreement. Raising the eyebrows can express disapproval or opposition.

There are 2 types of eye actions that help clearly communicate emotions.

Squinted eyes – What might squinted eyes mean? They can convey feelings such as, “I don’t like what’s going on;” “Something doesn’t feel right,” or “I disagree with what you’re saying.”

Arched eyebrows – Arched eyebrows can mean several things such as, “I’m happy to see you!” “I’m pleasantly surprised,” or “That’s an intriguing point of view.”

If someone greets you with arched eyebrows (also called an “eyebrow flash”), it typically means they’re pleased to see you. This expression can also be used to show recognition when someone makes a good point in a conversation.

Maintaining good eye contact is also essential, as it shows that you are listening and paying attention. Use your eyes and eyebrows to express yourself. You can spot happiness in raised eyebrows, raised cheeks, and crow’s feet. Pinched eyebrows with drooping eyes can indicate sadness. Eyebrows in a “V” shape can express anger, annoyance, or frustration.

Even though your facial expressions are not exposed when wearing a mask, there are other ways to convey feelings and gather insights, such as hand movements, body posture, and feet position.

There are several other forms of nonverbal communication that you can tap into while wearing masks.

Touching the neck – Touching the neck can mean various things, such as, “I’m struggling with something;” “This situation is stressing me out;” or “I’m concerned about this situation.”

If someone is touching the neck, it could mean they are distressed or insecure. Communicating with more empathy may offer comfort or ease their anxiety.

Tilted head – A tilted head can indicate interest and attentiveness. It can convey: “I’m interested in what’s going on;” “I’m listening and fully present;” or “I agree with what you’re saying.”

Head movements can go a long way in showing whether someone is fully engaged in the conversation, especially during video conference calls. A slightly tilted head displays awareness and attentiveness. When combined with a few nods, it can indicate approval.

Talking loudly in quiet settings – Tone plays a highly essential role in communication. Clearly articulating your speech and increasing volume in a quiet environment can help overcome the sound muffling that results from wearing a face mask.

In addition, make use of pauses when speaking. Proper pausing gives your listener the time to process the existing information before moving on to the next point.

Enunciate, hit your consonants, slow down, and be as clear as you can be.

Smile! – This is crucial to communication, even while wearing a mask. Just as a smile can be heard on the phone, a smile can be seen in your eyes. When you smile, laugh lines appear around your eyes and your cheekbones rise. If you don’t smile, you may come across as cold or angry.

Stay focused on the interaction – Be present in the moment. It’s easy to get distracted and assume others are not paying attention. Listening attentively and staying present can help overcome the barriers of communication when mouths cannot be seen.

Ultimately, in a mask-wearing world, we have to convey our thoughts and emotions clearly and empathetically. Practicing these communication tips will be beneficial today and even in the days after the masks are no longer required. dvm360.com
7 common financial mistakes practice owners make

If you’re considering practice ownership, here’s what you need to know to help you succeed.

By Tom Seeko

Practice owners typically have 2 main desires: to help provide the best quality of care to animals and eventually sell the practice to maintain their lifestyle after retirement.

The problem? When these owners are veterinarian first and practice owner second, they often have minimal experience actually running a practice.

Below are 7 common mistakes that practice owners often make, and how to avoid them.

1. Not having an exit plan

A lack of an exit plan is costly for practice owners. Everyone should have an exit plan as soon as they get into a business. The end goal is financial independence. When you're a veterinarian first, it can be easy to overlook critical decisions that can help you determine whether ownership is appropriate for you.

When you're ready to retire, you’ll have to ask yourself, “How much money do I need to maintain my current lifestyle?” This question will drive your decision-making today and into the future.

2. Not compensating employees properly

You might have a decent compensation package with each person receiving a salary based on their expertise and role. Compensation perks and benefits should satisfy one of the following 3 “Rs”:

- Recruiting – What are you using to bring talent to your hospital?
- Rewarding – When short-term goals are accomplished, what are you offering to reward each person involved?
- Retaining – Some employees will impact your time and income if they leave. Compensation agreements can help keep them around long term.

You must understand the significance of each of the 3 Rs when searching for high-quality talent. For example, if your practice doesn’t provide a retirement account like a 401(k) but your competitor does, it may cause potential hires to seek employment elsewhere.

Some practice owners provide annual cash bonuses to employees to reward the practice’s performance, not the employee’s performance. Each reward program should assign a goal to each person or group to qualify. The reward doesn’t have to be monetary.

Finally, you have to consider the impact on your practice when veterinarians, practice managers, or head technicians leave. There are compensation programs available to help motivate employees to stay at your practice long term and through the future sale. These programs would fall under the umbrella of a retention program.

Retention programs should answer the following questions:

- Is it substantial in value?
- Is it emotional to the employee?
- Is the benefit deferred for a set period?
- Can the practice recover costs if that person leaves?

3. Not paying yourself through the practice

Your practice should not be your net worth. Instead, it should help build your net worth.

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You have to ask yourself tough questions every day. Should money be allocated towards marketing? Employees? Upkeep? There is a certain amount of money that you should put aside for operational expenses. Then there is “dead cash,” which is money that serves no purpose.

When you are a pass-through entity such as an LLC or S-Corp, all the profits transfer through to your tax return. You are paying taxes on the profits of the practice, and any money remaining is available. What does this mean to you? The dead cash inside the practice can then be transferred to your finances.

Over time, your mindset should be to build the value of your practice and your wealth. Best practice is to establish a systematic savings plan from your practice to your finances and identify any dead cash sitting around every quarter.

4. Being a veterinarian first and a practice owner second
When you own a practice, the goal is to be an owner first, veterinarian second. But you should never sacrifice the quality of your effort by working around the clock; delegate responsibilities to practice managers, another veterinarian, and head technicians. If these roles don’t exist at your practice, then now might be a good time to strategize a way to add them.

5. Not taking a vacation
Everyone needs time away. Practice owners tend to be overworked with no time to rejuvenate. It’s crucial for your overall health, well-being, and the longevity of your practice to take time for yourself.

6. Not knowing your numbers
Profit loss statements, balance sheets, and tax documents should be updated regularly. These documents are created by accountants who could provide chief financial officer-type services. If you want to create a well-balanced plan to sell your practice, these numbers will be crucial for ensuring you’re getting the most bang for your buck. These documents help provide clarity when you balance the transfer of money from your practice to your finances.

7. Purchasing things for tax write-offs
The last and final mistake is buying things that you think will be perceived as tax savings.

For example, if you were to purchase new equipment to replace a perfectly working piece of equipment, how much are you really saving in taxes?

The answer is simple. You’re giving up all that cash for new equipment, and in return, you could reduce your taxes by a few thousand dollars. But now, all that cash is gone when you could have just paid the taxes and kept the money. Imagine this happening over and over each year. You could be spending thousands with no real return to the practice or you, the owner.

Every decision should be well thought out and never made on a whim without truly understanding the short-term and long-term impacts on your practice. After all, understanding the caveats that come with practice ownership will expand your horizon and set you up for success.

Tom Seeko is the co-founder of Florida Veterinary Advisors, a financial firm based out of Tampa, FL, that works with veterinarians throughout the United States. He is also co-founder and co-host of the Smarter Vet Podcast, a podcast to help simplify finances for veterinarians to gain clarity, get confidence, experience control, and experience contentment.

3 common exit plans
The following are the most common exit strategies:
- Selling to an associate or employees.
- Selling to a third party like a consolidator.
- Closing the doors.
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For more information, visit [petreleafpro.com](http://petreleafpro.com)

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**FIRSTtract Urine Culture**

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Zarasyl offers equestrians a steroid- and antibiotic-free barrier cream for horse skin and wound treatment. Featuring a patented silicate technology initially designed for humans, over a decade of research has been dedicated to the science behind Zarasyl. It helps manage skin infections such as pastern dermatitis, lacerations, and other similar injuries by moisturizing the skin to promote wound healing. It also contains proprietary amorphous silica with a molecular structure, which offers a sustained release of orthosilicic acid (a bioavailable form of silicon associated with healthy connective tissue growth) to the skin.

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For more information, visit vetriscience.com
A promising job outlook for new veterinary school graduates

New veterinarians are expected to have higher starting salaries compared with last year’s graduates.

By Bridgette Bain, PhD

The good news for this year’s veterinary graduating class—the economic outlook as they enter the profession looks promising. Demand for veterinary services is high and still growing, the job market for new veterinarians looks optimistic, and the overall economic landscape is rebounding as more and more individuals get vaccinated against COVID-19.

As veterinary practices field an increase in client demand, the profession’s newest veterinarians are likely to be welcomed eagerly into the workforce, with starting salaries higher than those of last year’s graduates.

Class of 2021: An unprecedented experience

With their final year of education accomplished entirely in the pandemic, the class of 2021 has had an experience like no other class before. COVID-19 has affected everything from clinical experiences to externships and even graduation itself.

We know from our annual survey of fourth-year veterinary students that many of last year’s graduates worried about how COVID-19 might affect their job and career prospects. Fortunately, their fears largely didn’t come to fruition. Results from research conducted by the American Veterinary Medical Association (AVMA) showed that only 6.3% of 2020 graduates had offers reduced or withdrawn because of the pandemic. Overall, employment rates and salaries for the class of 2020 kept pace with what would have been expected in a nonpandemic year.

AVMA’s survey of the class of 2021 graduates is still under way, so there are no hard data yet on their job offers, their salaries, or any anxiety they might feel. However, it is clear that the profession still needs new veterinarians to fill positions amid growing demands for patient care.

Demand for veterinary services

As pet owners have been spending more time with their animals during the pandemic, they have also been spending more money on their animals. According to the American Pet Products Association, in 2020, Americans spent $103.6 billion on pet care and products, up from $97.1 billion in 2019 and $90.5 billion in 2018. That number is projected to increase again to $109.6 billion in 2021. $32.3 billion of that is expected to go to veterinary care and product sales—up from $31.4 billion in 2020.

In keeping with that trend, revenue at veterinary hospitals over the last 12 months has gone up 13.6%, and visits up 3.6%, compared with the previous 12 months. These data are updated daily at avma.org/IndustryTracker. In some states, the year-over-year revenue increase was more than 18.0% and the increase in visits higher than 8.0%.

This increased spending on pet products and services could suggest an optimistic landscape for veterinary graduates beginning their careers this year.

Greater likelihood of employment and a strong salary outlook

Several factors suggest that the job and salary prospects for the class of 2021 look promising. First, as a baseline, there have been over 93% of graduates securing either full-time employment or a continuing education position at least 2 weeks before graduation every year since 2016. With the current high demand for veterinary services, this year’s graduates might hope to see starting pay higher than last year’s, when the mean starting salary for graduates securing full-time jobs was $91,892.

Plus, 2020 data from the AVMA Veterinary Career Center showed more job postings than jobseekers over the course of the year. Given the economic outlook, it seems likely that ratio could increase in 2021, improving the outlook for jobseekers.

Unemployment numbers also look promising, getting closer to prepandemic levels. As of mid-April, new unemployment insurance claims were at their lowest level since the start of the pandemic and continue to drop. Not only does this bode well for job-hunting veterinarians, but more people employed also means more people are able to afford needed health care for their pets. Looking to the future, the US Bureau of Labor Statistics projected the United States would add 6 million jobs between 2019 and 2029.

High hopes for economic recovery

As a key to eventually resuming prepandemic routines, the United States rolled out COVID-19 vaccines in mid-December 2020. By the end of April 2021, approximately half of all eligible Americans had received at least 1 vaccine dose, and nearly 30% of the total US population had been fully vaccinated. As that number rises, the economy should continue to expand.

In fact, there are already signs of growing consumer confidence and spending. By late March, consumer spending showed the first signs of year-over-year growth since the onset of the pandemic. Additionally, results from a March survey by McKinsey & Company found that more than half of US consumers expect their spending to increase later in the year as they “splurge” and “treat themselves” in celebration of expected recovery. Higher-income millennials intend to spend the most.

Best wishes, Class of 2021

This profession is welcoming a new wave of promising veterinarians into the workforce as it perseveres through the pandemic. Fortunately, it seems the economic outlook can offer hope to these newly minted veterinarians as they launch their careers. As long as these trends persist, this year’s new veterinarians can expect to hit the ground running amid high demand for pet care, steady job growth, and an improving economy. As the future of our profession, I can’t wait to see all you’ll accomplish.

References available at dvm360.com

Bridgette Bain, PhD, is the associate director of AVMA’s veterinary economics division.
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Antibiotics for UTIs in dogs and cats?: When to say no

A bacterial culture, the gold standard for detecting urinary tract infections, can take days to produce visible results, causing doctors to prescribe antibiotics in the interim for pet symptom relief. Antech’s new FIRSTract produces results in just hours, helping to reduce overuse of antibiotics.

Imagine that a client pops into your clinic and says their dog just peed inside the house or their cat urinated outside the litter box and says their pet “needs an antibiotic.” The reflex assumption is urinary tract infection (UTI). “Sometimes, even if we know better, we give in and offer the antibiotic,” says Jen Ogeer, DVM, MSc, MBA, MA, vice president of medical affairs at Antech Diagnostics.

What the data show

Studies have revealed that 10% to 14% of dogs experience a UTI at some point in their life and over 4% of dogs with a UTI continue to have recurrent or persistent UTIs throughout their lives.1 Healthy cats have traditionally been considered more resistant to UTIs than dogs, partly because of their high urine concentration and high urine osmolality.2 Most studies evaluated the prevalence of bacterial UTIs in cats with clinical signs of idiopathic feline lower urinary tract disease (FLUTD).3-4 The estimated frequency varies from 1% to 4.9% to 8% to 33%.5-9

Put simply, veterinarians know FLUTD likely does not equate to a UTI because UTIs are typically rare in healthy and middle-aged cats and uncommon in dogs. Veterinarians also better understand the role stress plays in UTI-like symptoms, allowing us to correctly identify the signs as pandler’s syndrome,10 in which stress and an environment void of enrichment play a significant role. “We also know we’re arguably dispensing too many antibiotics unnecessarily and contributing to the one health problem of antimicrobial resistance,” Ogeer adds.

Antech’s rapid urine culture

According to Michelle Frye, DVM, SM, owner of Echo Lane Animal Clinic, in Houston, Texas, veterinarians must gather a detailed history report from pet owners. She recommends asking questions about the duration, the frequency and location of the accidents, and urine color.

If it’s a suspected UTI, the next step begins with Antech’s FIRSTract test, the first reference laboratory automated assay for quick urine culture, delivering accurate and reliable results within hours.10

FIRSTract utilizes 500 µL of urine inoculated into a proprietary culture broth optimized for aerobic bacterial pathogen growth and incubated in a controlled and fully automated setting. During the incubation process, the samples are temperature-controlled and continuously mixed, minimizing sedimentation, flotation, and growth anomalies typical of several microorganisms. Interference from erythrocytes, leukocytes, and dead cells is minimized by obtaining an initial baseline reading of turbidity. Light scatter is measured and assessed from the sample turbidity of the inoculated broth. Measurements are taken every 5 minutes and continually monitored for an exponential increase in turbidity that is consistent with the presence of any viable bacteria replicating in the patient urine sample.

Finessing the urine sample

Urine samples can be challenging to obtain, especially in frisky cats or nonadherent dogs. A sterile sample obtained by cystocentesis is the sample of choice for urine culture. If the animal recently voided or cystocentesis is not possible, a sample by urinary catheterization in males or a clean-catch, midstream voided sample are permissible.

“Traditional urine culture takes days to grow on an agar plate,” says Frye. “This is a long time for a pet to be suffering. Now I get the result in hours instead of days. I can figure out what the problem is much faster.”

Supplementary to this, Frye recommends using an ultrasound for collecting the urine sample by cystocentesis to visualize the bladder. Additionally, she advises using a sterile urine sample to check for bacteria, crystals, overall health, kidney disease, and endocrine disorders. Obtain specific urine gravity to potentially find cancer cells. There is also an additional benefit of using the ultrasound to quickly assess the bladder wall and look for any urinary stones or masses.

And, of course, simultaneously, perform a routine physical exam on the pet and blood work when needed.

“If the animal is urinating more frequently, I need to understand why,” says Frye. “I see concurrent disease sometimes, for example, UTIs with other conditions such as diabetes or kidney disease.”

Bottom line

For clients who want the instant antibiotic, Frye says it’s imperative that you to educate them about the increasing problem of antibiotic resistance and how the “inappropriate use of antibiotics can contribute to the creation of ‘superbugs’ or multidrug resistant bacteria that can require hospitalization and a very expensive treatment plan.”

“I think these conversations with the pet owner are critical and part of our jobs as veterinarians,” Frye adds. “I am so thankful that the urine culture has evolved to provide necessary results in a timely manner—that makes this discussion with the client much easier. And owners appreciate that infectious diseases are no longer trivial. Particularly with pandemic, everyone knows infectious diseases haven’t just disappeared.”

Steve Dale, CABC, writes for veterinary professionals and pet owners, hosts 2 national radio programs, and has appeared on TV shows including Good Morning America and The Oprah Winfrey Show. He is on the dvm360 Editorial Advisory Board as well as the boards of the Human-Animal Bond Association and EveryCat Foundation. He appears at conferences around the world. For more information, visit stevedale.tv.

References available online at dvm360.com
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The dilemma: Lessons learned during the COVID-19 pandemic

Should you assess your veterinary team’s performance before transitioning to a postpandemic world?

Park Animal Hospital, like many veterinary facilities, had a challenging year. But there is finally light at the end of the tunnel. Dr. Hays, the clinic’s owner, was strategizing how to transition her team back to pre–COVID-19 normalcy and decided to perform a detailed assessment of staff performance during the pandemic.

Mistakes were made, innovations were created, and policies were changed, all topics Hays decided to discuss in 3 separate “COVID-19 exit meetings.”

**Assessing mistakes**

There was no shortage of mistakes presented by the staff to the clinic administration in a “mistakes” meeting. Staff members also expressed their concerns about mandating COVID-19 vaccination. Hospital leadership decided that they would strongly recommend vaccination, but refusal was not grounds for termination.

Staff members also noted that they were overwhelmed by the increased client load during the pandemic and suggested that hours be shortened and new clients temporarily suspended to ease the burden.

**New innovations**

During the “innovations” meeting, team members highlighted the benefits of pandemic protocols on their overall health and safety. For example, all team members were assigned a pen for their personal use. Additionally, on-duty staff was given personal cell phones, and social distancing was maintained in the breakroom and lunch area at all times. Anyone with a non–COVID-19 illness was also encouraged to self-quarantine.

Curbside innovations were the most dramatic, according to hospital staff. Parking spots were enhanced with signage with specific instructions for client check-in. The team also offered amenities and frequent updates to clients who had to remain in their cars for extended periods. Some euthanasia procedures were performed in larger vehicles such as SUVs and vans so that family members could still be present. The goal of these innovations was to maintain staff safety without compromising compassionate pet owner and pet care.

The “new normal”

The final meeting focused on “new normalcy policies.” This new normal would never equate to pre–COVID-19 normal. Although the pandemic would eventually get better, the threat would not fully disappear. That’s why Hays and the team created several new normalcy policy practices, all of which would be incorporated into existing practice procedures.

These policies are as follows:

- CDC guidelines will remain the primary directive for health and safety practices.
- Clients will be able to enter the clinic with their pets but be given the option of curbside service upon request.
- Even if no longer required by CDC guidelines, staff members can elect to wear a mask while on duty if they want.
- Staff cell phones will not be shared, and clear partitions between all staff workstations will remain.
- Finally, if a staff member becomes ill for whatever reason, even if vaccinated, COVID-19 testing would be strongly encouraged.

Hays thought these meetings and decisions were great first steps for navigating the postpandemic world.

**Rosenberg’s response**

Although the COVID-19 pandemic has presented unique challenges to the veterinary profession, because we face crises and emergencies every day, we were able to be resilient and continue to provide a high quality of care to our patients. Hays responded like most of her colleagues and became a “wartime” leader. What I found most impressive was her foresight. She knew that a “peacetime” was coming, and she wanted her clinic to be prepared. Planning is the best way to prepare for future success. My hat goes off to Hays.
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Xoran is passionate about supporting veterinarians and helping animals.
Persnickety is a word I’ve come to know quite well. The dictionary defines it as “placing too much emphasis on trivial or minor details,” and in my 20 years of practicing veterinary medicine, I’ve learned that my personal definition of “trivial details” has changed.

Clients and their lists
I have quoted the life cycle of heartworm and the pathogenesis of navicular disease so often that I am bored to death with it. However, this is not that type of minor detail that drives me nuts. It’s the client who comes in with a list. Oh my, how I hate lists. When I see a client pull one out, I know there is about to be a 20-minute question and answer session. How can I compete with their fact-checked list of Dr Google’s advice?

The list-bearing poodle-owning banker
I had a list-bearing banker walk through the doors reeking of persnickety. I dispensed some antibiotic tablets to be given to his poodle twice a day. He called me the very next day and said, “Yes, ah Dr. Brock, ah, I was just calling with a question on the dosing of the antibiotic you sent home with my poodle yesterday. I hate to be a stickler, but according to the dosage schedule on the manufacturer’s website, Missy should be getting 13/32 of a tablet twice a day, and I believe you had us giving half of a tablet.”

Are you kidding me?! This guy got on the internet, found the manufacturing website, got the dosage schedule, calculated the dose, and came up with a fraction of a tablet with the number 13 and 32 in it?

At first, I was going to try and justify my “overdosage” by using a big medical diatribe and trumping his Google research with my education. However, I opted to play along instead and told him to hang on a minute as I recalculated the dose.

Calculating a ruse
After pretending to recalculate the dose, I told the fact-checking owner he was correct and that he needed to break each tablet into 32 equally sized portions and give the dog 13 of those portions twice a day. I then apologized for being off in my calculation and that the slight overdose was not dangerous to the dog in any way.

There was a long pause. I wasn’t sure what was going through his mind, but I was on the edge of my seat waiting for the result. What prompts a person to hang on to such a detail? Had he not even considered for a minute the absurdity of such a calculation? Did he just call and show me how “smart” he was, or did he think I was an idiot that could not calculate a dose?

Who gets the last laugh?
Instead of admitting defeat, the banker asked, “How would one go about breaking up one of those small tablets into 32 equal portions?”

“It’s the client who comes in with a list. Oh my, how I hate lists. When I see a client pull one out, I know there is about to be a 20-minute question and answer session.”

“I have no idea. Maybe you should just break it in half and pretend 6/32 of the thing flaked off when it broke,” I replied.

This made him laugh. He laughed and laughed until I began to get uncomfortable. Finally, after what seemed like a solid 2 minutes of fake laughter, he said, “I guess that brings us right back to where we started. Wow, I guess that is why I am a banker and not a doctor, huh.”

Right as he began another round of strange laughter, I thought to myself, “You got that right you persnickety sounding rascal.” Then it hit me. I had just spent 10 minutes on the phone placing too much emphasis on trivial details. Maybe we all can be a little persnickety.

The persnickety side of veterinary medicine
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