BE A HERO WITH CLARO®
(florfenicol, terbinafine, mometasone furoate) Otic Solution

Guarantee compliance and make ear infections easier
Treat your patients’ most common otitis externa infections with one dose administered by you.

SAVE THE DAY. USE CLARO® FOR YOUR MOST COMMON OTITIS CASES.

Claro® is indicated for the treatment of otitis externa in dogs associated with susceptible strains of yeast (Malassezia pachydermatis) and bacteria (Staphylococcus pseudintermedius).

CAUTION: Federal (U.S.A.) law restricts this drug to use by or on the order of a licensed veterinarian. CONTRAINDICATIONS: Do not use in dogs with known tympanic membrane perforation. CLARO® is contraindicated in dogs with known or suspected hypersensitivity to florfenicol, terbinafine hydrochloride, or mometasone furoate.

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CLARO® (florfenicol, terbinafine, mometasone furoate)
Otic Solution

Antibacterial, antifungal, and anti-inflammatory
For Otic 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:
CLARO® contains 16.6 mg/mL florfenicol, 14.8 mg/mL terbinafine (equivalent to 16.6 mg/mL terbinafine hydrochloride) and 2.2 mg/mL mometasone furoate. Inactive ingredients include purified water, propylene carbonate, propylene glycol, ethyl alcohol, and polyethylene glycol.

INDICATIONS:
CLARO® is indicated for the treatment of otitis externa in dogs associated with susceptible strains of yeast (Malassezia pachydermatis) and bacteria (Staphylococcus pseudintermedius).

DOSEAGE AND ADMINISTRATION:
Shake before use.
CLARO® should be administered by veterinary personnel.
Administer one dose (1 dropperette) per affected ear. The duration of effect should last 30 days:
1. Clean and dry the external ear canal before administering the product.
2. Verify the tympanic membrane is intact prior to administration.
3. Remove single dose dropperette from the package.
4. While holding the dropperette in an upright position, remove the cap from the dropperette.
5. Turn the cap over and push the other end of the cap onto the tip of the dropperette.
6. Twist the cap to break the seal and then remove cap from the dropperette.
7. Screw the applicator nozzle onto the dropperette.
8. Insert the tapered tip of the dropperette into the affected external ear canal and squeeze to instill the entire contents (1 ml) into the affected ear.
9. Gently massage the base of the ear to allow distribution of the solution.
10. Repeat with other ear as prescribed.

Cleaning the ear after dosing may affect product effectiveness.

CONTRAINdications:
Do not use in dogs with known tympanic membrane perforation (see PRECAUTIONS).
CLARO® is contraindicated in dogs with known or suspected hypersensitivity to florfenicol, terbinafine hydrochloride, or mometasone furoate.

WARNINGS:
Human Warnings: Not for use in humans. Keep this and all drugs out of reach of children. In case of accidental ingestion by humans, contact a physician immediately. In case of accidental skin contact, wash area thoroughly with water. Avoid contact with eyes. Humans with known hypersensitivity to florfenicol, terbinafine hydrochloride, or mometasone furoate should not handle this product.

PRECAUTIONS:
Do not administer orally.
The use of CLARO® in dogs with perforated tympanic membranes has not been evaluated. The integrity of the tympanic membrane should be confirmed before administering the product. Reevaluate the dog if hearing loss or signs of vestibular dysfunction are observed during treatment. Use of topical otic corticosteroids has been associated with adrenocortical suppression and iatrogenic hyperadrenocorticism in dogs (see ANIMAL SAFETY).
Use with caution in dogs with impaired hepatic function (see ANIMAL SAFETY). The safe use of CLARO® in dogs used for breeding purposes, during pregnancy, or in lactating bitches has not been evaluated.

ADVERSE REACTIONS:
In a field study conducted in the United States (see EFFECTIVENESS), there were no directly attributable adverse reactions in 146 dogs administered CLARO®.
To report suspected adverse drug events and/or obtain a copy of the Safety Data Sheet (SDS) or for technical assistance, contact Bayer HealthCare at 1-800-422-9874.
For additional information about adverse drug experience reporting for animal drugs, contact FDA at 1-888-FDA-VETS or online at http://www.fda.gov/AnimalVeterinary/SafetyHealth.

PHARMACOLOGY:
CLARO® Otic Solution is a fixed combination of three active substances: florfenicol (antibacterial), terbinafine (antifungal), and mometasone furoate (steroidal anti-inflammatory). Florfenicol is a bacteriostatic antibiotic which acts by inhibiting protein synthesis. Terbinafine is an antifungal which selectively inhibits the early synthesis of ergosterol. Mometasone furoate is a glucocorticosteroid with anti-inflammatory activity.

MICROBIOLOGY:
The compatibility and additive effect of each of the components in CLARO® solution was demonstrated in a component effectiveness and non-interference study. An in vitro study of organisms collected from clinical cases of otitis externa in dogs enrolled in the clinical effectiveness study determined that florfenicol and terbinafine hydrochloride inhibit the growth of bacteria and yeast commonly associated with otitis externa in dogs. No consistent synergistic or antagonistic effect of the two antimicrobials was demonstrated. The addition of mometasone furoate to the combination did not impact antimicrobial activity to any clinically significant extent.
In a field study (see EFFECTIVENESS), at least 10 isolates from successfully treated cases were obtained for S. pseudintermedius and M. pachydermatis.

EFFECTIVENESS:
In a well-controlled, double-masked field study, CLARO® was evaluated against a vehicle control in 221 dogs with otitis externa. One hundred and forty six dogs were treated with CLARO® and 75 dogs were treated with the vehicle control. All dogs were evaluated for safety. Treatment (1 mL) was administered once on Day 0 to the affected ear(s). Prior to treatment, the ear(s) was cleaned with saline. The dogs were evaluated on Days 0, 7, 14, and 30. Blood work and urinalysis were obtained on Day 0 pre-treatment and Day 30 at study completion. Four clinical signs associated with otitis externa were evaluated: erythema, exudate, swelling, and ulceration. Success was based on clinical improvement at Day 30. Of the 183 dogs included in the effectiveness evaluation, 72.5% of dogs administered CLARO® solution were successfully treated, compared to 11.1% of the dogs in the vehicle-control group (p=0.0001).

ANIMAL SAFETY:
In a target animal safety study, CLARO® was administered aurally to 12-week-old Beagle puppies (4 dogs/sex/group) at 0X, 1X, 3X, and 5X the recommended dose once every 2 weeks for a total dosing period of 28 days (3 times the treatment duration). No clinically relevant treatment-related findings were noted in hearing tests, body weight, weight gain, or food consumption. CLARO® administration was associated with post-treatment ear wetness or clear aural exudate, increased absolute neutrophil count, decreased absolute lymphocyte and eosinophil counts, suppression of the adrenal cortical response to ACTH-stimulation, decreased adrenal weight and atrophy of the adrenal cortex, increased liver weight with hepatocellular enlargement/cytoplasmic change, and decreased thymus weight. Other potentially treatment-related effects included mild changes to AST, total protein, inorganic phosphorus, creatinine, and calcium.

STORAGE INFORMATION:

HOW SUPPLIED:
CLARO® solution is supplied in a single-use dropperette in a blister. Each dropperette contains one 1 mL dose.

Manufactured for
Bayer HealthCare LLC, Animal Health Division
P.O. Box 390 Shawnee Mission, Kansas 66201 USA.

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LV1802
Preventing errors in veterinary practice

Most medical mistakes boil down to one thing—communication. It turns out that discussing a hospital’s medical errors could be the key to preventing them.

By Amanda Carrozza

By all accounts, it was a pretty average day at the veterinary hospital where Beth Davidow, DVM, DACVECC, was treating patients. Then, a dog suffering from an allergic reaction arrived. There was nothing abnormal about the diagnosis. The veterinarian assigned to the case knew exactly what to do: administer an appropriate dose of diphenhydramine to alleviate the clinical signs. It was all very straightforward until the veterinarian mistakenly grabbed phenylephrine instead of diphenhydramine. Rather than receiving the intended antihistamine, the dog was given a vasoconstrictor and sent home.

This wasn’t a case of negligence or inexperience, Dr. Davidow says. “This error

Advanced dental care for pets: What’s possible?

Flap surgeries, root canals and orthodontic techniques are all legitimate alternatives to extraction in many veterinary dental cases. We owe it to our clients to let them know their options.

By Benita Altier LVT, VTS (dentistry)

As veterinary practices have become more modern, sophisticated and technologically advanced, so has our ability to perform veterinary dentistry at a much higher level than previously thought possible. As veterinary professionals, we need to be completely aware of the dental treatments available and understand when to offer a referral for advanced dentistry.

In this article, we’ll cover some of the many options for advanced dental care for pets. Let’s get started.

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See page 17>

Parasitology: How to conquer flea infestations
Rehabilitation: Working with owners of canine athletes
Infectious disease: New retrovirus guidelines released
Ophthalmology: Acute blindness in cats and dogs

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Powerful protection can also be gentle:

✓ Safe for puppies as young as 8 weeks of age weighing 4 lbs or more
✓ Over 140 million doses of afoxolaner have been prescribed¹
✓ And it’s the only flea and tick control product indicated for the prevention of *Borrelia burgdorferi* infections as a direct result of killing *Ixodes scapularis* vector ticks

**IMPORTANT SAFETY INFORMATION:** **NexGard** is for use in dogs only. The most frequently reported adverse reactions include vomiting, pruritus, lethargy, diarrhea and lack of appetite. The safe use of **NexGard** in pregnant, breeding, or lactating dogs has not been evaluated. Use with caution in dogs with a history of seizures or neurologic disorders. For more information, see the full prescribing information on page 7 or visit www.NexGardClinic.com.

¹Data on file.
Exploring what's possible in oral health for pets

As you've no doubt experienced in your career as a veterinary professional, the reaction of many people when they learn about the advanced medical capabilities possible in veterinary medicine is one of shock. Chemo-therapy for cats? MRI for horses? Surgery for goldfish? Yes, you've likely responded. All that and more.

Into that same category fall advanced dental procedures for pets. In honor of Pet Dental Health Month, we've focused in this February issue on what's possible in the world of veterinary oral health, so that you can be fully prepared to discuss these options with your clients—even if the thought of performing a canine root canal or a pedicle flap surgery makes you shudder.

Of course, aesthetic considerations are not a factor in pets the same way they are in people. Many human dentists trade on the promise of a "perfect smile," while veterinarians simply seek to create a pain-free mouth for their patients (something far too few pet owners are even aware should be a priority). For this reason, the simplest, most cost-effective solution to problematic teeth in veterinary patients is often extraction. Eliminate the source of the pain; eliminate the pain—problem solved.

Not so fast, says dental technician specialist Benita Altit, author of this month's cover story. What if that tooth is strategically important in the pet's oral function? What if the client would be willing to explore further options with a specialist before opting for a mouthful of extractions?

That's where this overview comes in. Even if you would refer all one of these advanced procedures to a veterinary dentist, you owe it to yourself, your clients and your patients to be able to discuss the full complement of options knowledgeably. "Braces for dogs?" your client may very well ask.

No, you're not going to put braces on a dog's teeth to give him a "perfect smile," you explain, but if a round of orthodontics would correct a malocclusion in a young dog that would set him up for healthy dentition for the rest of his life, well, that option should be on the table.

We hope you benefit from this month's issue of dvm360, whether you hop on the Pet Dental Health Month train or emphasize oral health year-round. Either way, we trust many of your patients enjoy pain-free mouths as the result of your involvement—even if you get there performing mostly extractions.

—Mike Hennessy Sr., Chairman

HD tips: Don’t fight your dental equipment

If you have a little cash to remodel, renovate or build a new dental suite in your hospital, Ashley Shoults, AIA, with Animal Arts in Boulder, Colorado, is here to help. She told HospitalDesign360 conference attendees recently in a sponsored session that your space should say, "This is important." With your design choices, you can help clients understand that oral health is a priority for your veterinary patients. Here are a few tips to keep in mind, courtesy of Shoults and Danielle Heberle, CVT, VT, BS-H (Dentistry), with Midmark.

> Only got an alveo? In an ideal world, you'd have a dedicated room for dental procedures. But if an alveo is all you have, Shoults says nine feet across (the length that will include the long end of your procedure table) is the minimum. You're hoping for five feet on both sides of the table near the head, where the action happens, and at least three feet around the rest of the table. Don't forget the space for the basics: dental delivery unit, monitor, anesthesia unit, lighting, seating and room for staff members to move. If you're strapped for space, keep those units mobile or stick them to a wall where they won't interfere with procedures on the table.

> Watch your ergonomics. Heberle talked up the need for room for the knees of the team. That means a space cut away at the head of the table or an adjustable lift table that can make that space. "We want both feet to be planted on the floor," Heberle told attendees, not split uncomfortably in a corner. And, folks, "eye loupses are starting to be a must," she says. If your veterinarians and veterinary technicians are still hunching over dental patients, get your team used to the better posture that comes with magnifying and lit loupes.

> But what about safety? Heberle reminded attendees that AAHA guidelines call for full-mouth radiographs on every dental patient. That means radiograph safety comes into the picture. Shoults says your best bet—and a requirement in some states—is a study by a physicist for roughly $500. That expert will need to know the layout, the radiograph volume in your practice and your unit's model and specifications. He or she will tell you whether you need no shielding, a little shielding or a lot of shielding.

No matter how you configure your dental space, remember to make it easier on team members to perform dental work so they're more enthused and less frustrated.
Sign up today for the best rates.

By attending a Fetch dvm360® conference, you can earn up to 28 hours of RACE and NYSED-approved continuing education credit while having the opportunity to network, brainstorm and learn from expert speakers and other leading veterinary professionals.

Registration is now open! fetchdvm360.com/Baltimore
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Court rules against Dr. Pol

Attorney says popular celebrity veterinarian will continue to challenge the Michigan veterinary board’s decisions. By Erica Tricarico

Last month, the Michigan Court of Appeals ruled against celebrity veterinarian Jan Pol, DVM, thus upholding the state’s decision to place the 77-year-old star of Nat Geo Wild’s The Incredible Dr. Pol on professional probation for negligence, according to court records.

The court’s decision affirms a 2018 order by the state Department of Licensing and Regulatory Affairs (LARA), which placed Dr. Pol on probation for negligence when performing surgery on a dog and when treating a wounded horse.

In 2015, the state received another complaint from a horse’s owners stating that Dr. Pol was not wearing a cap, gown or gloves when treating a cut on their horse’s leg and that he had also failed to trim the horse’s hair near the laceration.

The administrative law judge who reviewed both complaints concluded that the state had failed to prove that Dr. Pol was negligent or incompetent in his care of the dog or horse. But LARA officials rejected part of the judge’s proposed decision and placed Dr. Pol on probation for “failure to intubate the dog during the procedure, failure to wear a surgical mask and gown during the procedure, and failure to clip the hair around the horse’s wound prior to suturing the wound,” according to court records.

Dr. Pol was ordered to serve a probationary period, pay all costs incurred in complying with the terms of that order, and complete continuing education “in the areas of small animal surgical preparation and monitoring, and small/large animal aseptic technique.”

Dr. Pol appealed LARA’s order, but the appeals court affirmed the decision in its Dec. 19 ruling.

Dr. Pol’s historical fight against LARA’s decisions

This is not the first time Dr. Pol has been accused of negligent practices. Back in 2012, he was put on probation for an April 2010 incident in which he failed to read a canine ultrasound accurately. And in 2014, a veterinarian filed a different complaint against Dr. Pol stating that when performing surgery on a Boston terrier that had been hit by an automobile, Dr. Pol didn’t wear sterile surgical attire. LARA ordered Dr. Pol to pay a $500 fine and serve a year of probation in response to this complaint. However, the Michigan Court of Appeals overturned LARA’s disciplinary action in 2016, stating that the evidence provided against Dr. Pol was not sufficient.

What’s next for the ‘The Incredible Dr. Pol’?

Dr. Pol, who has been treating pets and livestock in rural Michigan since the 1970s, has seen more than 20,000 patients, according to IMDb. On his TV show, Dr. Pol travels across rural Michigan providing care to animals of all shapes and sizes, from puppies to cows to snakes. The show is currently in its 16th season.

Despite the recent ruling, Dr. Pol has many supporters and several disciplinary actions against him have been reversed in the past. That’s why his attorney, Christopher S. Patterson, JD, isn’t worried. Patterson told dvm360 that the appeals process will not have a negative impact on the TV show. “This case demonstrates how the Michigan Veterinary Board makes arbitrary decisions. The Board even agreed that Dr. Pol’s care was competent,” he said. “We have had these issues with the Board previously, which resulted in the Michigan Court of Appeals reversing the Board for arbitrary and capricious decision-making. Dr. Pol will continue to challenge the Board until a fair and rational process is used for review of veterinary care.”
AVMA releases new euthanasia guidelines

Standards intended to support veterinarians when making end-of-life decisions.

The American Veterinary Medical Association (AVMA) has released an updated version of its Guidelines for the Euthanasia of Animals, according to a press release from the organization. Lauded worldwide as representing best practices for humane euthanasia, the guidelines were first published in 1963 and last updated in 2013.

Shepherded by a host of expert veterinarians and shaped by AVMA member input, the 2021 page document offers “science-based and practically sound guidance for relieving the suffering and pain of animals to be euthanized,” according to the association release.

Specifically, the guidelines include details on euthanasia for companion animals, lab animals, farm animals, equids, birds, fish and aquatic invertebrates, and zoologic and free-ranging nondomestic animals. According to the release, information is included about “animals’ physiological and behavioral responses to euthanasia, euthanasia’s effects on those performing and observing it, and the feasibility and impacts of various euthanasia approaches.”

Significant updates, according to the guidelines, include the following: “Methods, techniques, and agents of euthanasia have been updated and detailed descriptions have been included to assist veterinarians in applying their professional judgment. Species-specific sections have been expanded or added to include more guidance for terrestrial and aquatic species kept for a variety of purposes and under different conditions. Where possible, appropriate flowcharts, illustrations, tables, and appendices have been used to clarify recommendations.”

The guidelines are part of the AVMA’s Humane Endings policy series, which also includes guidelines for humane animal slaughter and animal depopulation. dvm360
Feline Retrovirus Testing and prevention and treatment of retrovirus infections in cats. By Amanda Carrozza

The Americaon Association of Feline Practitioners (AAFP) kicked off of the new year by introducing a comprehensive update to its Feline Retrovirus Testing and Management Guidelines. Published in the Journal of Feline Medicine and Surgery on January 9, the guidelines provide veterinary professionals with the most accurate and up-to-date information on feline retrovirus infections.

This release is the first official update to the document in 12 years. According to Susan Little, DVM, DABVP (Feline), co-chair of the guidelines, the report was written by an international panel of experts that included both researchers and veterinarians. Based on numerous studies published since the AAFP’s last iteration, the panel felt that although guidelines for the prevention of infection have been available for decades, there remained a need to improve compliance with testing and vaccination recommendations.

The 2020 guidelines offer a great deal of new information about feline leukemia virus (FeLV) and feline immunodeficiency virus (FIV) infections, Dr. Little explained in a press release announcing the new guidelines. “We hope these guidelines will be of practical use for all veterinarians,” she said. “The panel is especially proud to have endorsement of the guidelines by the International Society of Feline Medicine.”

Current reports indicate that about 3% to 5% of tested cats in North America are infected with FIV, according to the release. The virus is more common in males and in cats prone to fighting with other cats. It is seen less frequently in kittens and neutered adults. To date, no marketed vaccines are available to protect cats against FIV infection. The absence of a vaccine—coupled with a positive spike in veterinary practices and shelters testing for retroviruses—underscores the importance of increased education on the topic.

“Young and healthy cats can greatly assist in the treatment and prevention of retrovirus infections in cats,” said Dr. Little.

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“Education and early testing can greatly assist in the treatment and management of feline retrovirus infections,” said AAFP CEO Heather O’Shean, CAE, in the release. “Routine veterinary care, when cats are well and when they are sick, can lead to better care and decrease the spread of infection.”

FeLV infection rates are similar in a population of tested cats in North America. In North America are infected with FIV, according to the release. The virus is more common in males and in cats prone to fighting with other cats. It is seen less frequently in kittens and neutered adults. To date, no marketed vaccines are available to protect cats against FIV infection. The absence of a vaccine—coupled with a positive spike in veterinary practices and shelters testing for retroviruses—underscores the importance of increased education on the topic.

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Street medicine in action: Providing veterinary care for San Diego’s homeless

My experience with the Street Dog Coalition during the Fetch dvm360 conference provided insight, experience and ideas for my own community. By Kyle Palmer, CVT

John Geller, DVM, DACVB, isn’t a flashy speaker. But two of his sessions at the 2019 Fetch dvm360 conference in San Diego—“A hard life made harder: Life on the streets for the homeless and their pets” and “Solutions that work: The art and science of street medicine”—drew me in completely.

During one of those sessions, Dr. Geller mentioned that his nonprofit Street Dog Coalition was putting on a three-hour street medicine clinic for pets belonging to homeless or near-homeless people in the area and mentioned that anyone was welcome to come observe or participate. Half a dozen attendees took him up on that offer Dec. 14, driving or taking an Uber almost eight miles to the Episcopal Church Center in Ocean Beach. I was one of them.

This was only the second clinic by the Colorado-based organization in the area (they operate in several states), but another dozen volunteers showed up to help—DVMs, RVTs and general members of our profession and beyond. The clinic’s attending doctor, Jeanne Potter, DVM, got some assistance from Leeann Limburg, DVM, one of the recruits from Dr. Geller’s lectures, as well as several others.

They had a full spectrum of vaccines, flea treatments and dewormers available as well as the equipment necessary to perform basic exams and some treatments on the pets that showed up. Some of the supplies were donated and some purchased outright. The clinic was staged at the same time as a regular free breakfast provided at the church, so there were a lot of citizens present who had come just for that.

During Dr. Geller’s lectures, he hit on a number of societal myths about the homeless and their pets (I suppose to go hand in hand with society’s many myths about the homeless in general). Many feel that someone who isn’t sheltered has no business having a pet. On the contrary, for some homeless individuals, their pet gives them a reason to keep going.

> Pets provide value and purpose—what greater responsibility is there than caring for another being?
> Pets provide companionship—sometimes the only companionship they can depend on to keep them from sliding into the darkness of isolation and feeling discarded by society.
> Pets also provide a little security—helping them judge whether the people they meet can be trusted.

And that’s just what these human beings get from the pets. As is the case for all pet owners, it’s a reciprocal relationship. Every one of the pets we saw that day was happy and completely devoted to their humans. They were also mostly easy for the team to handle (save a calico juvenile that couldn’t escape her destiny)—at least as easy as any group you’d see in your hospital most days. These pets and their humans need each other deeply.

It wasn’t clear if the veterinary professionals participating had any background in Fear Free care or if they’d simply had some training with street pets, but they did everything right. Bags of bacon treats (and canned food for the cat) were used to make friends and provide a distraction during procedures pets typically detest. Assuming many street pets have a heightened sense of protectiveness, it was a smart move on the veterinary team’s part.

Several of the clinic patrons hung around well beyond the time needed for their pet’s services. Their gratitude for the care was obvious.

In addition to my role in the veterinary profession, I also happen to be the mayor of the town of 10,000. For several years our community has been pushing to address the needs of our homeless citizens. We have an amazing nonprofit organization, Sheltering Silverton, that provides a warming shelter in the winter and a year-round day center as well as layers of case management designed to help people back to stability.

That said, except for a free day of care provided by my former veterinary clinic, our community hasn’t explored this area of compassionate assistance. After spending time at Fetch dvm360 in San Diego and at this street medicine clinic, that’s sure to change soon.
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Clients click, we ship to their home and your clinic gets the sale

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Conquering canine anxiety in the clinic

Veterinary behaviorist Dr. Marie Hopfensperger shares tips for helping combat stress in dogs that visit your hospital. By Erica Tricario

For many dogs, the veterinary clinic can be the source of much fear, anxiety and stress. “About 10% of puppies show some evidence of fear at their first vet visit, and 60% to 80% of adult dogs show signs of fear or apprehension at the clinic,” said Marie Hopfensperger, DVM, DACVB, at this year’s Veterinary Meeting & Expo (VMX) in Orlando, Fla. “We are all doing this because we love animals, but somehow 10% [of patients] start out being sketched out by us and then we increase it,” she said.

Dr. Hopfensperger, who runs the Michigan State University Veterinary Medical Center’s Behavior Service, shared with attendees a few tips and techniques she uses to help combat canine anxiety and fear in the clinic.

It starts with navigating the lobby
Anxiety can start at home, on the ride to the clinic or in the parking lot, and can escalate when your patient finally gets into the lobby. “The lobby gets pretty wild and crazy,” said Dr. Hopfensperger, so she tries to tackle anxiety before the exam by:

› Moving anxious dogs directly into the exam room or a holding room
› Having owners check in and out without their dog
› Empowering client service representatives to recognize stress and intervene

For food-motivated dogs, use treats
Trying to take an anxious patient’s temperature or weighing it on the scale can be challenging, so for your food-motivated patients, treats can be useful, Dr. Hopfensperger said. Here are her suggestions:

› Try spreading peanut butter on a yoga mat, which can easily be put in the washing machine after each use.
› Treat-dispensing toys can be good “especially for those fast lickers.”
› Spread cheese and/or peanut butter on a dry erase board, which is easy to clean.
› Bite-sized treats can also help with dogs that have issues with resource guarding.

Ask instead of command
Just like people, Dr. Hopfensperger said, dogs can comprehend questions—although her theory is unproven. “They understand what the context of a question is, that it’s an option, not a demand, not a command,” she said. “I’m really asking a question and the pet has a choice. ... I ask, ‘Are you ready?’ or ‘Do you wanna?’” She says this form of consent training can take just a few minutes for patients to learn, especially food-motivated dogs. For patients that aren’t food-motivated, you can try petting as a reward and, if that doesn’t work, drugs may be necessary for your more anxious patients.

NAVOC launches national pet advocacy program

In conjunction with its annual Veterinary Meeting & Expo (VMX) Jan. 18-22, the North American Veterinary Community (NAVC) announced the launch of Embrace, an advocacy program that provides veterinary professionals and pet owners with a platform to advocate for animals everywhere.

Embrace members will receive emails with updates on proposed legislation, rules and regulations impacting animal health, such as a bill designating the first Saturday in October as National Animal Rescue Day; the Puppies Assisting Wounded Service Members (PAWS) Act, which seeks to reduce suicides among veterans and connect them with service dogs as a form of therapy; and the Strengthening Support for Veterans with Service Animals Act, which protects veterans’ access to airplanes with their service dogs.

Often these emails will include a call to action such as signing a petition, emailing policymakers, tweeting representatives and making phone calls. Members will also have exclusive access to advocacy webinars, training and in-person meetings with government officials.

“What makes Embrace ... so unique is we bring together all members of the pet-loving community—veterinary professionals and pet owners—to advocate on behalf of animals everywhere,” said NAVC interim CEO Eugene O’Neill in a release from the organization. “Through the NAVC’s global community of 500,000 veterinarians and other animal healthcare leaders, Embrace provides a powerful platform for us to work together to build a better future for animals.”
Food trial nuggets gleaned from VMX

Performing an elimination diet trial is easier said than done. A veterinary dermatologist offers insight into boosting compliance so your patients can get some relief.

Itchy and scratching veterinary patients, and those with frequent ear infections or poor coat quality, may be suffering from a food allergy. But definitively diagnosing a cutaneous adverse food reaction in dogs and cats remains a challenge, and the only way to an accurate diagnosis is to perform an elimination diet trial.

Jennifer Schissler, DVM, MS, DACVD, who lectured on several dermatology topics during the Veterinary Meeting & Expo (VMX) in Orlando, Florida, Jan. 18-22, says when it comes to elimination diets, Royal Canin’s Canine Ultamino Dry Dog Food, an ultra-hydrolyzed diet, is an excellent choice.

“The hydrolysis is such that it’s down to very small short-chain or single amino acids. When dogs are chicken allergic, they actually don’t react when they eat Ultamino,” she said, noting that this diet should work in a vast number of patients with food allergies.

Once you’ve decided which novel protein is appropriate for the test and you’ve prescribed the elimination diet, you’ll then need to counsel the owner on what to avoid feeding, and that includes treats and protein-based supplements.

Although there is no cure for food allergy in veterinary patients, identifying—and eliminating—the culprit protein(s) or carbohydrate(s) will improve the pet’s quality of life and reduce or prevent skin and ear problems in the future. dvm360

Veterinary students attend VMX for free

Compassion-First Pet Hospitals cover VMX student registration costs.

Over 1,000 veterinary students were able to attend this year’s Veterinary Meeting & Expo (VMX) in Orlando, Fla, all thanks to Compassion-First Pet Hospitals’s partnership with the North American Veterinary Community (NAVC).

According to an organizational release, Compassion-First Pet Hospitals partnered with NAVC to cover registration costs for veterinary students, thus increasing VMX student attendance by 35% this year.

“We are thrilled to support the educational growth of the next generation of veterinarians and technicians by learning from the profession’s very best at the largest conference in the U.S. We also hope to expose students to as many new career opportunities as possible when they graduate,” according to a Compassion-First news release.

Ryan Buck, chief operating officer and executive vice president of Compassion-First says many veterinary students carry significant debt (between $77,000 and $277,314), making conferences like VMX unaffordable. “By providing free registration to VMX, our goal is for every veterinary student to feel empowered to expand their learning into new and innovative areas, expand their knowledge of the profession as a whole and spend time with thought leaders in animal medicine,” Buck said.

Compassion-First Pet Hospitals is a family of nearly 50 hospitals across 14 states, including the most recent addition of three renowned Florida hospitals: Specialists in Companion Animal Neurology (SCAN) in Clearwater and Naples, and First Coast Veterinary Specialists and Emergency of Jacksonville Beach. dvm360
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Medical errors > Continued from cover

occurred because we stored the two medications right next to each other on the shelf and the bottles look identical. They are exactly the same size and each contains just 1 ml of a clear liquid.”

Upon realizing the mistake, the veterinarian drove to the client’s home when phone calls went unanswered. Thankfully, the patient experienced no adverse effects. But the unfortunate mixup made the hospital realize that something as simple as where medication is placed on a shelf could have catastrophic consequences.

Although this was one of the more dramatic instances Dr. Davidow has observed over the years, it is certainly not an isolated one. No practice is immune to errors. On her website, The Veterinary Idealist (vetidealist.com), Dr. Davidow recounts other medical errors she has witnessed in her tenure, including patients that received multiple doses of cefazolin when technicians forgot to sign the treatment sheet and a cat that was accidentally sent home with a canine carprofen prescription.

“We have the potential to make errors every day in every practice, and they can happen in so many different ways,” she says. “I don’t think it is because people are careless or inept; it’s because we are busy and what we do is super complex.”

Of course, medical errors are not limited to veterinary medicine. The authors of the 1999 book, To Err Is Human: Building a Safer Health System, estimated that as many as 98,000 Americans die in hospitals each year as a result of medical errors. A related 2016 study highlighted the potentially fatal consequences of errors in human medicine, noting that mistakes are the third leading cause of death in the U.S. (after heart disease and cancer).

With statistics like these, the medical profession had no choice but to take pause. In response to these revelations, Medicare and Medicaid revised funding parameters to mandate that healthcare institutions track medical errors and provide proof that progress is being made.

“That same ‘eureka’ moment has not really happened in veterinary medicine because there has been very little research around this subject,” she says. “I don’t think it is because we are busy and what we do is super complex.”

Fixing the problem: 6 steps for responding to medical errors

1. Care for the patient always comes first.
2. Notify the client of the medical error right away.
3. Support the team member involved.
4. Investigate what factors led to the incident.
5. Circle back to the client.
6. Work to fix systems internally to avoid a recurrence.

While the CVM has a voluntary reporting system in place, Putnam says there is generally limited information about veterinary medical errors and that the agency itself is challenged with the limitations of spontaneous reporting. In addition, the CVM does not have the authority to regulate the practice of veterinary medicine. This, coupled with the lack of widespread and detailed reporting, underscores the need for individual practices to take a closer look at internal errors.

Cornell’s study, which analyzed 560 incident reports, showed very few instances of sentinel events, defined by U.S. healthcare accrediting organizations as “‘any unanticipated event in a healthcare setting resulting in death or serious physical or psychological injury to a patient or patients, not related to the natural course of the patient’s illness.’”

When mistakes do happen, Dr. Fletcher notes that it’s good to have a system in place to evaluate and strategize immediately about what you can do to prevent those errors in the future. “We have certainly had that happen in our hospital where we have changed protocols or put extra safeguards in place in response to an error like that,” he says.

One such example included a patient that suffered a magnesium overdose. Immediately afterward, Dr. Fletcher explains, a new multichannel system was established that now requires two people to calculate dosing independently before a drug is administered. It also prompted the university’s veterinary teams to consider other drugs that could have similarly confusing dosing and apply the new system to those as well.

Hospitals can also benefit from addressing flaws in their systems and protocols that produce minor medical errors. For an error reporting system to be successful, however, the goal is not to start a witch hunt. Instead, these reports should be used to shine a light on how current processes can be improved to avoid repeat mistakes.

Blaming a single person as the cause of the error rarely solves the problem, because when you look closely at most of these situations, anyone else might have made the same mistake in the same circumstance, Dr. Davidow says. Placing blame also reduces the likelihood that individuals will report future incidences. For the unfortunate times when errors do happen, she recommends a six-step guide for responding (see sidebar above).

Similarly, Dr. Fletcher says his study has opened avenues of discussion with other institutions that have implemented incident reporting systems. He sees potential value for the entire veterinary industry as more open and honest discussions take place. If two large universities or hospitals find similar problems with the same drugs, then making that information more accessible to smaller practices that lack the bandwidth for robust internal reporting would allow them to make changes and avoid similar mistakes, he says.

“The only way to reduce medical errors is to talk about them,” he says. dvm360.com

References


The most common veterinary medical errors

Although research in this area is scarce, it’s not absent. Upon learning of the statistics in human medicine, Daniel J. Fletcher, PhD, DVM, DACVECC, an associate professor at Cornell University College of Veterinary Medicine, wondered how veterinary medicine compared. The root cause of most medical errors in veterinary hospitals, he explains, can be traced to the same cause as in human hospitals—miscommunication or lack of communication among medical teams. With little reporting established on the most common types of errors in veterinary medicine, Dr. Fletcher created an incident reporting system that was adopted by Cornell’s three veterinary hospitals.

Dr. Fletcher and his colleagues cataloged three years’ worth of data, the results of which were published last year: “The most common types of errors we found in our work—and it is also true in human medicine—were drug errors,” Dr. Fletcher explains. “I can’t imagine that anyone who has spent any time in a veterinary practice hasn’t seen a drug error of some kind.”

Drug errors in veterinary medicine also caught the attention of the FDA’s Center for Veterinary Medicine (CVM). In October, the CVM released a report detailing the agency’s role in preventing medical errors. According to spokesperson Juli Putnam, the most common types of medication errors involve drug prescribing, preparation, dosing and administration, as well as data entry. “These errors have occurred in veterinary clinics and at pharmacies,” she explains.

One of the examples highlighted by the CVM was that of a veterinarian who injected a patient with 5 ml of an antibiotic that has known toxic adverse effects. The next day, the veterinarian realized that the patient had received a 10-fold over-dose of the antibiotic because of a poorly placed decimal point. The agency pointed out that if a trailing 0 is used, what is written as 5.0 mg may be misread as 50 mg. Alternatively, if a leading 0 is not used, what is written as .5 mg may be misread as 5 mg, as was the case in this incident.

Don’t play the blame game

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The veterinary teams to consider other drugs that might have made the same mistake in the same circumstance, Dr. Davidow says. Placing blame also reduces the likelihood that individuals will report future incidences. For the unfortunate times when errors do happen, she recommends a six-step guide for responding (see sidebar above).

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References

Advanced dental
> Continued from cover

Preparing for advanced periodontal therapy

Statistics show that periodontal disease is the most prevalent dental disease in dogs and cats. Left undiagnosed and untreated, it can progress until we have no other option but to extract affected teeth. However, if patients are diagnosed early, teeth can be salvaged through periodontal surgical techniques and home care, and we can benefit patients over the long term by retaining important teeth for their function.

When we examine teeth and the surrounding bone through clinical observation and full-mouth dental radiographs, we must assess the true extent of the pathology, noting bone loss, attachment loss, and tooth mobility. Radiographs and clinical findings help the practitioner determine which teeth are good candidates for therapy, and when extraction is the best option. A tooth with significant bone loss (> 50%) on the root’s surface may have a poor prognosis even with advanced therapy, especially if the bone loss is around the root, or what’s called a four-walled defect. If the bone is lost from the furcation (the area between a multirooted tooth’s roots), this reduces the chances for success even further.1,2

Evaluating total attachment loss. Total attachment loss is the sum of the measurement of any gingival recession on the root’s surface, as well as any pocket depth beyond that recession. If gingival recession is not present, then it’s just the measurement of any periodontal pocket depth beyond what may be considered a normal sulcular depth for that specific tooth in that particular pet’s mouth. Normal sulcular depths range from 0 to 1 mm; however, normal can differ depending on the size of the animal, size of the tooth and length of the tooth root.

A periodontal probe with clearly marked 1-mm increments is used to measure from the marginal gingival edge to the bottom of the sulcus or periodontal pocket if there is attachment loss.1,3 The bottom of the sulcus is attached to the tooth’s surface at or very near the cementoenamel junction.1 Attachment loss at this point creates a periodontal pocket and a pathological process.

Using a gentle hand and holding the periodontal probe in line with the vertical axis of the tooth, the clinician walks the probe around the tooth’s structure and takes measurements in four to six places around each tooth root. Whenever these measurements are greater than what would be considered normal for that particular tooth, they’re recorded on the patient’s dental chart.1 Note that conditions such as gingival enlargement can create a false pocket depth and not actual attachment loss, so excess gingival tissue must be measured carefully; take note whether the bottom of the sulcus is at the cementoenamel junction to determine the extent of attachment on these teeth.1

If the combined loss of bone and soft tissue attachment is less than 50% and the furcation loss of bone is less than halfway through, it may...

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be possible to “save” important or strategic teeth through advanced periodontal surgical techniques, frequent follow-up care (possibly under anesthesia) and a commitment to daily home care by the client.

For a periodontal pocket depth greater than 5 mm, it’s recommended that open root planing and subgingival curettage be performed with the use of flap surgery to facilitate visualization of the bony defect and exposed root surface (more on flap surgery to come).

Open root planing allows the practitioner to treat the area to the best of her ability to get the best possible outcome from periodontal therapy.1

Obtaining dental radiographs.

Besides measuring attachment loss, the veterinary team must obtain radiographs to assess the extent of any suspected bone loss. Evaluating a full set of intraoral dental radiographs will help predict the success of any proposed procedure and also provide a baseline for monitoring treatment progress. If your veterinary practice cannot obtain those dental radiographs and the client is interested in advanced dental care and saving teeth rather than extraction, consider a referral from the onset—it may be in the best interest of the patient.

Advanced periodontal flap surgeries

Techniques to perform flap surgeries are fully described in several dental textbooks and can be learned at labs taught by veterinary dentists on the subject. However, if surgical procedures are indicated that are beyond the practitioner’s skill level, referral may be the best option.

Apically repositioned flap.

This technique can be used to help the attached gingiva lie over any remaining alveolar bone; it requires at least 2 mm of gingiva to extend toward the crown.1 This surgery moves the gingiva down onto the root surface after the area is cleaned of unhealthy bone, granulation tissue and debris; then the area is allowed to heal.1 This procedure can be performed on mandibular incisors to allow for a reduction in periodontal pocket depths, easier cleaning of furcation exposure areas on multirotted teeth, and daily cleaning by the client.2

Contraindications include more than 50% bone loss (especially on a four-walled defect), grade 3 tooth mobility and the presence of less than 2 mm attached gingiva before surgery.1

Laterally positioned (pedicle) flap. When the root surface of a single tooth is exposed significantly due to a cleft of bone and soft tissue loss that extends to or near the mucogingival line, a laterally sliding flap surgery may be indicated.1 This procedure requires carefully planned and executed vertical releasing incisions, as well as the creation of a donor flap that’s moved laterally over the area and sutured.1 The goal is to partially cover the exposed root surface and allow for at least 2 mm of attached gingiva to help preserve the health of this particular tooth; the area of exposed tissue from the donor site will heal by second intention.1,2

Contraindications for this procedure include tooth mobility due to loss of bone on more than one wall of the alveolar socket, furcation bone loss and lack of commitment on the client’s part to daily home care and more frequent follow-up professional dental care.1

Free gingival graft. This technique is indicated in specific individual teeth with a cleft-like defect that is free of endodontic disease and where tooth mobility is not present.2 A gingival graft is obtained from a donor site separate from the site to be treated, often the buccal surface of attached gingiva over the maxillary canine—this site offers the largest expanses of tissue.2 The donor graft is carefully harvested using a template, employing a precise technique to avoid damage to the peristemeum.2 The donor tissue is then carefully grafted over the recipient site using specific surgical techniques.2

This procedure is contraindicated if endodontic disease is present and not treated first.2 Concurrent periodontal disease must also be treated and controlled; if there is tooth mobility, this technique is unlikely to have a good outcome.2 Success will also depend on the client’s willingness to comply with daily recommended home care and follow-up veterinary treatment.2

Guided tissue regeneration. The goal of guided tissue regeneration is to help facilitate the development of cementum on the root’s surfaces and the regeneration of healthy periodontal attachments.2 Once the tooth root surface has been cleaned and treated, barrier membranes that are either absorbable or nonabsorbable are positioned to prevent granulation tissue from invading the area. The goal is to encourage bone induction behind vertical bone walls and periodontal ligament cells to develop in areas where they’ve been destroyed by periodontal disease.1

The use of bone inductive materials can assist in such procedures where significant bone has been lost in two- and three-walled bony defects and areas of class 2 furcation bone loss in multirotted teeth.

Endodontics

Endodontics is the dental discipline that treats disease involving the internal tissues of a tooth.1 These inner tissues are highly neurovascular and susceptible to trauma, which can cause significant inflammation and lead to irreversible damage, including tissue necrosis and death.1,2 Concussive injury to a tooth can cause the pulp to bleed inside the tooth into the dentinal tubules or expose the pulp to the oral cavity, as in the case of a complication crown or crown-root fracture.1 Other causes of endodontic disease are near-pulp exposures such as in an uncomplicated tooth fracture into the porous dentinal tubules, a carious lesion or cavity, severe abrasion or attrition, or bacterial invasion through the animal’s bloodstream through the apical delta into the root canal and pulp chamber of the tooth.1,2

Root canal procedures are performed to retain important strategic teeth in their alveolar bony sockets to maintain function. The vital or once-vital endodontic tissue is removed and replaced with an inert filling material; the access and fracture sites, if applicable, are also filled with a composite material.1,2 The tooth is not restored to its original height because the weakened tooth would be more prone to further damage or fracture. Annual monitoring is recommended after root canal treatment, and dental radiographs should be obtained to evaluate the continued success or failure of the procedure.1,2

Restoration of teeth affected with carious lesions

True carious lesions are not common in dogs and especially not common in cats; however, if they are found, they can be restored with cavity preparation and restoration material after careful evaluation of dental radiographs.1 Some carious lesions involve the pulp and should not be restored without conventional endodontics.1 If concurrent periodontal disease is also present, the prognosis for these teeth may be significantly worse.1

Restoration of enamel defects

Enamel defects can be acquired from tooth wear due to abrasion or attrition or a congenital condition that prevents enamel from forming correctly before adult tooth eruption.4 Trauma, infection, hypocalcemia or the use of certain drugs during the enamel-forming period can also cause defects or malformations on the enamel of unerupted permanent dentition.5 Amelogenesis imperfecta is an inherited defect that is fairly rare in dogs and also rare in people. It is most common in remote areas where the genetic pool is less. >>
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Orthodontics

Orthodontics deals with the correction of malocclusions or abnormally positioned teeth that are causing trauma to teeth or soft tissues. Trauma results in either tooth-on-tooth wear and damage (attrition) or tooth-on-soft tissue trauma. These ongoing traumas cause patient pain and can lead to tooth damage and endodontic disease.1 It’s important to become familiar with the basic skull types, how these occlusions are evaluated and categorized, and what constitutes a comfortable, pain-free occlusion for our patients.

Orthodontic abnormalities should be recognized by the general practitioner early on in the pet’s life. During the primary, mixed or early eruption of permanent dentition phases, the teeth should be carefully evaluated and any abnormalities noted. Persistent primary or retained deciduous teeth can further exacerbate occlusion problems. At-risk breeds are those with jaw relationships outside the normal limits associated with mesocephalic skull types. These dogs and cats should be monitored closely for any signs of malocclusion, and early intervention through interceptive orthodontics should be performed if indicated. If the practitioner diagnoses a malocclusion, referral to a veterinary dentist may be the best option. Common malocclusions in dogs and cats are:

Lingually displaced mandibular canines (MAL/LV). When this occurs, the cusps of the canines are tipped too far lingually and may cause soft tissue trauma to the hard palate.1 Occasionally this condition occurs due to the lack of space, or diastema, between the lateral maxillary incisors and the maxillary canine teeth either bilaterally or unilaterally.

Rostral crossbite (MAL/CB/R). In this condition, some or all of the mandibular incisors are positioned in front of or rostral to the maxillary incisors rather than the preferred scissor bite.1

Caudal crossbite (MAL/CB/C). When one or more of the mandibular premolars or molars occlude buccally to the maxillary teeth above them, a caudal crossbite has occurred. A more extreme example is when the maxillary fourth premolar occludes palatal to the first molar of the mandible on that same side of the mouth.1

Level bite (MAL1). In this condition, the maxillary incisors and the mandibular incisors occlude right on top of each other, causing attrition to the crown cusps over time.1 A malocclusion could also occur when the maxillary premolars occlude with the mandibular premolars on the same side of the mouth, which can cause potential problems with mouth closure and pain.1

Mesioversion of maxillary canine teeth (MAL/MV). In these patients, the maxillary canine teeth are tipped too far forward, causing a reduction in the diastema between the maxillary third premolar and the maxillary canine tooth on that side.1 The crown tip can also cause trauma to the patient’s lip.

Orthodontic movement should not be undertaken by untrained professionals, but a basic understanding of occlusion can assist veterinarians in making recommendations for treatment rather than disregarding these conditions as unavoidable and untreatable. Early and careful intervention may be required even when only primary dentition is involved in preventing more complicated and costly orthodontic intervention later on in life.

Summary

Keeping the patient’s best interests in mind helps veterinary teams make the proper observations, and then recommendations, for advanced dental treatment and procedures. Developing a working relationship with a referral veterinary dentist can be very helpful as advice and insights are exchanged via consultations on specific cases. Having a financial quote ready for clients who choose referral for more advanced treatment options will also be important when they need to make treatment decisions. Open communication with clients increases their understanding of your findings and diagnoses and helps them feel more comfortable with your recommendations and referral.

References


Benita Alther LVT, VTS (dentistry), is the owner of Pawsitive Dental Education in Easton, Washington, and a frequent speaker for the Fetch dvm360 conferences.
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The time to act on student debt is now

There are many changes we could make to lower our veterinary school graduates’ student loan burdens. Let’s start by raising more money and cutting preveterinary requirements. By Peter Eyre, DVM&S, BSc, BVMS, PhD

The veterinary profession is operating in a rapidly evolving socioeconomic environment. This offers exciting new opportunities, including leadership in One Health. However, economic changes can bring hazards, such as high educational costs and student debt. By any objective measure, veterinary medicine is a successful enterprise that serves society well. Nevertheless, historically, the profession has not responded well to change.

As a college administrator, I have attended a variety of conferences and consulted on numerous books and papers about leading change. I was inspired by Harvard business professor John Kotter.1 He states that many organizations fail to complete needed changes because of their success. This seems contradictory, but Kotter explains that a major cause of institutional inertia is complacency—comfortable feelings of self-satisfaction induced by prior accomplishments. I am convinced that a hidden barrier to change in the veterinary profession is its own success!

Attempting to address the many components of a complex problem all at the same time becomes part of the problem. There have been many forward-thinking analyses of veterinary medicine, where the need for change was clearly identified.2 Some of the needs were debated repeatedly, yet the change efforts largely failed.3 Based on extensive research involving diverse organizations, Kotter concludes that “the single biggest error people make when trying to change is that they do not create a high enough sense of urgency among enough people to set the stage for the challenging leap into some new direction.”4 Kotter also describes false urgency: unfocused, anxiety-filled, unproductive busywork (such as creating a task force) without clear goals and timelines.1 Agonizing about the student debt crisis is false urgency. The challenge seems overwhelming: The median veterinary student debt is $174,000 and growing.4 If tuition continues on its current path, this figure will exceed $200,000 by 2025. We know we’re in trouble; the economic drag on veterinary graduates is undeniable. The feeling of being overwhelmed prevents action instead of encouraging it, and attempting to address the many components of a complex problem all at the same time becomes part of the problem. A more rational strategy would be to choose just one or two potentially productive ideas that are relatively easily implemented and start them immediately.

I suggest that we begin by vigorously expanding college fundraising efforts to create more and bigger scholarships and grants. At the same time, we can reduce the median veterinary student debt is $174,000 and growing.4 If tuition continues on its current path, this figure will exceed $200,000 by 2025. We know we’re in trouble; the economic drag on veterinary graduates is undeniable. The feeling of being overwhelmed prevents action instead of encouraging it, and attempting to address the many components of a complex problem all at the same time becomes part of the problem. A more rational strategy would be to choose just one or two potentially productive ideas that are relatively easily implemented and start them immediately.

When enhanced fundraising and two-year preveterinary education are under way, a veterinary college could then explore more difficult and contentious budgetary actions such as program reductions, administrative downsizing, DVM curriculum restructuring and so on. The specifics will vary from college to college.

We cannot predict how and when the veterinary student debt crisis will be fully resolved. However, we can decide to take action. Can we gather a sufficient sense of urgency to start now? Failure is not a viable option. We can do better.

References

Dr. Peter Eyre is a professor and dean emeritus at Virginia-Maryland College of Veterinary Medicine in Blacksburg, Virginia.
Readers object to column on assistance dogs

Referring to the article “Will the real assistance dog please stand up?” in the December issue of dvm360, it’s clear that neither Dr. Kay, his client, nor the author understand assistance animals.

Service animals are covered under the Americans with Disabilities Act (ADA). They are specifically trained to mitigate a disability. Businesses must provide access. No paperwork is required, nor can it be requested. A business may ask if the animal is required to mitigate a disability and follow up with asking what the animal is trained to do.

Emotional support animals do not have specific training and are permitted in housing, but they do not have public access except in places that allow animals in general. Therapy animals have no specific training but may provide comfort to one person or many. They have no right to public access.

No veterinarian should sign any papers of the sort described in the article. The biggest issue genuine service dog handlers have in public besides people distracting their dog is untrained dogs attacking or distracting the working dog. At the least this behavior could ruin a well-trained, valuable dog. At the worst, it could cost a handler his or her life. In addition, people with pseudo service dogs with paperwork make it harder for the genuine article to exercise their rights.

I would like to see a follow-up article with the important facts outlined. If anyone is interested, I can provide more information if needed, although I am not an expert.

—Sara Thornton, DVM
Schuylkill Veterinary Hospital, Pottsville, Pennsylvania

Veterinarians are neither qualified nor authorized to certify that an animal is a service animal or that an individual is in need of one. We can certify only that an animal appears healthy and shows no evidence of parasitic or zoonotic infection. We are also on very thin ice making any comment on an animal’s behavior since our interaction with the animal is very limited and in an artificial environment.

Only medical doctors or therapists can prescribe the need for an assistance animal, and only certain organizations can provide screenings, training and certifications. Our examination can in no way classify a dog as a service animal. As veterinarians we can only document and provide record that an animal appears healthy and does not present a risk to human health. What is done with that information then is up to others.

I don’t see where “attesting to the health” of the animal is contributing to any deception that the client is involved with. Regarding attesting to the disposition of an animal, we actually should never be asked to do that. In cases I have been involved with, I will only state that “the animal did not demonstrate any undesirable behaviors in my presence or during my exam.”

—Robert M. Mason Jr., DVM
Jefferson Road Animal Hospital
Kokomo, Indiana

Thoughts on vaccination sites

The January dvm360 includes an article titled “What’s new in veterinary vaccinology,” with a picture showing a kitten receiving a vaccine in the intrascapular/neck region. There is a problem, first described in the early 1990s, where cats develop cancers at the sites commonly used for vaccines. These came to be known as vaccine-associated sarcomas, then injection-site sarcomas. They are highly aggressive and often result in the death of the cat. A task force encompassing the AAFP, immunologists and members of the pharmaceutical community joined together to study this problem, presenting recommendations to deal with this veterinary-induced patient death. Among those statements was the idea that wide surgical excision was required for therapy and to deal with this veterinary-induced patient death. Among those statements was the idea that wide surgical excision was required for therapy and to never vaccinate a cat in the intrascapular space. Vaccines are to be given as distally as possible far down a limb in case amputation is needed to save a life. The task force recommendations were accepted and made the standard of practice years ago. To show a cat receiving a vaccine in the intrascapular space is not according to the acceptable standards of good practice.

—Sandra Whaley, DVM, Albuquerque, New Mexico

Editor’s note: When we choose a stock photograph to accompany a clinical article, our usual process is to have a veterinary expert approve the use of such images with the content. We regret that we did not follow our own protocol in this instance.

Feedback | COMMUNITY
COMMUNITY | Feedback

Whitest profession in America inappropriate

One reader thinks this phrase describing veterinary medicine is damaging, not inspiring.

I would like to respond to the article, “What it would take to change the whitest profession in America?” from the December issue of dvm360.

I feel the terminology “whitest profession in America” is inappropriate. This is at least the second time I have seen this statement published in veterinary journals. This statement implies that somehow our profession has historically, intentionally discriminated against under-represented minorities, which I do not believe is the case.

Such terminology is unwarranted and does a disservice to the many generations of dedicated, hard-working and compassionate veterinarians who have spent most of their lives building up our profession to the level of respect it enjoys today. Survey after survey of the general public consistently ranks veterinary medicine as one of the most admired and trusted professions in America.

Using the statement “whitest profession in America” does nothing to promote diversity and in my opinion only serves to alienate a large segment of our colleagues, like myself, who happen to be Caucasian but support diversity initiatives across our profession. I would be willing to suggest that most of us have quietly encouraged, mentored, worked with and served underrepresented minorities throughout our careers, without fanfare or expectation of praise for doing so.

We should welcome all who are qualified to our profession, equally, regardless of minority status, not because of it, and not to just make our profession “less white.”

—Paul Clemente, DVM
Fort Wayne, Indiana

Commentary: Working moms need to breathe

When we’re caught between family and career, guilt can overwhelm us. Let’s stop letting it.

You roll out of bed after hitting snooze three times, start the coffee, and medicate your allergy-ridden schnauzers. You almost forget to throw some food to your needy outdoor cat, but he reminds you of his presence by battering away at the window. You finally make it—coffee in hand—to the mirror to apply some quick makeup to hide the bags under your eyes. Your hair goes up in the same old messy bun. Just then your “Don’t be late to wake the little one!” timer goes off. You realize her lunch isn’t packed and her folder from school isn’t checked. You rush around for another 15 minutes only to realize you’re still running late. You drop off your daughter at school and arrive at work. You check your schedule to find you have five drop-offs and you’re fully booked: a blocked sinus, a possible pancreatitis case, cranky Mr. Smith, a 75-lb lab spay, and a 12-year-old poodle for a grade 4 dental. It’s only 8 a.m. and funny, you feel drained already.

Like many of you, I’ve always had a passion for animals and as long as I can remember I wanted to be a veterinarian. I loved to learn and still love to learn. My passion for animals got me through nine years of college, an internship and numerous associate positions. Then came a little blonde-haired, blue-eyed girl who stole my heart. Before I knew it we had dance classes, gymnastics, swim lessons, school programs, parent lunches and all the fun things that come along with being a mom. Along with all these wonderful things also comes the mom guilt: Am I missing out on doing things with my daughter while I’m doing what I love at work? Do I have enough love in my heart for both passions? Are there enough hours in the day and energy to spare for both?

You’re not a bad mom—you’re a working mom. I say it’s OK to be overwhelmed, and it’s okay to want to do it all—be a great mom and a great vet.

If you don’t make it to an event, you’re not a bad mom—you’re a working mom (often with a lot of student loan debt to pay off). If you don’t take that extra appointment or come in for that emergency, you’re not a bad vet. You can’t do it all (even though you may want to). You’re only one person. Don’t let mom guilt bring you down. We all experience it at one time or another.

Our clinic motto was strategic—“Where friends are family, and family is first.” I made the decision to buy a practice so I could do just that: put my family first! As much as I love my job, my family is forever. This job will end (hopefully around the age of 60, if I’m lucky). Buddy won’t remember the time I couldn’t squeeze him in, but my daughter will remember every dance recital I missed.

But that’s me. What’s truly important to you? That’s for you to decide. For me, the choice is easy: It’s my family. Does that make me a bad veterinarian or a bad business owner? No, it makes me a human with a new passion that squeezed into my heart, but I’ve found that my heart is big enough for both.

Just because family comes first doesn’t mean I’m a failure as a veterinarian.

I still wake up in the middle of the night worrying about my patients and challenging cases. I pour my heart and soul into my practice and strive every day to be a better, more educated and more compassionate veterinarian. Being a good vet is about caring for your patients and their owners, empathizing with their needs and educating your clients. You learn new things and admit when you’re wrong or don’t know something. That’s what being a good vet is all about. It’s not about how many cases you can see in one day, how many emergencies you take, how many cases you can see in one day, how many surgeries you perform.

The only thing any client is going to remember is how compassionate and caring you are. As a mom, this comes naturally to you, so you will instinctually be not just a good vet, but a great vet and a great mom.

Dr. Shana Bohac is the owner of Navarro Small Animal Clinic in Victoria, Texas. She has a passion for surgery as well as compassionate wellness care. She has a husband, Brandon; daughter, Aiden; three crazy cats; two dogs and a handful of horses.
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No more badmouthing clients

Dealing with pet owners can be inspiring, exciting and also frustrating. Do you agree with this practice owner who told her staff members they need to develop a thicker skin and more understanding when working with the pet-owning public?

Dr. Lisa Stone is a true professional, with a five-doctor practice she’s built from scratch and a 38-person team of mature, high-performing employees she’s proud of. But recently she heard from one of her assistant managers about some disconcerting chatter in the break room. Staff members had asked one another if they’d worked with several clients in particular and referred to these owners as “real a-holes.” Some felt that they shouldn’t need to deal with pet owners like these and that they should be told to take their pets elsewhere.

Dr. Stone felt that the talk warranted a staff meeting. She could then hear their perspectives and reasons and restate her policy concerning difficult clients.

She started the meeting by expressing her understanding of the challenge of dealing with inappropriate client behavior. She went on to say, however, that the clinic’s primary directive is to assist pet patients, and that can’t be achieved without pet owner compliance.

“I would never think to allow a client to be physically aggressive or verbally profane to you without taking action,” she said. “But a nasty demeanor, impoliteness or a challenge to our competence should be dealt with professionally.” In certain circumstances, she explained, excellent customer service requires thick skin, emotional control and professionalism. Times such as these, she told them, require everyone to wear their “professional hats.”

It was at this moment that one of Dr. Stone’s associate veterinarians spoke up to disagree.

“We are veterinary professionals, and it’s not too much to ask to be treated with respect,” said the associate. “People showing up an hour late for appointments or rudely criticizing our medical recommendations must have these problems brought to their attention.”

Dr. Stone explained that she understood her colleague’s frustration, but just as not every dog is easy to handle, pet owners can be tough too. Nevertheless, she reiterated, each team member’s job was to assist these pet patients, and that meant not alienating owners.

“Unpleasant conversation is not a reason to kick an owner to the curb,” Dr. Stone told her veterinary team. “When someone truly crosses the line, I’ll be there to help.” But the practice’s success and reputation had been built on both competence and tolerance, she explained. The badmouthing of clients had to stop.

“I know it’s a form of venting,” she explained, “but it’s not productive or good for morale.” Dr. Stone wrapped the meeting by making sure they knew they could talk to her: “My door is always open when you have a need to discuss any challenging situations.”

The staff got the message. Most were happy; some were not.

Do you think Dr. Stone communicated the necessary staff support, or would you have done this differently? Email us and let us know at dvm360news@mmhgroup.com.

Dr. Rosenberg’s response

Being a practicing veterinary clinician is rewarding, but also frustrating. Not everyone is cut out to deal with the pet-owning public. I’ve always told my colleagues that entering the exam room is similar to stepping onto a stage: You assume the persona necessary to allow your client to comfortably understand your medical message so that the patient gets adequate home care.

In addition, I agree with Dr. Stone’s urging team members to put on their “professional hats” at work. If a client becomes agitated or confrontational, team members and doctors should never escalate the situation. I know this is easier said than done, but it’s absolutely necessary to enjoy our work in a clinical setting. The key to successfully helping our pet patients depends on our successful interactions with their owners.

Dr. Marc Rosenberg is director of the Voorhees Veterinary Center in Voorhees, New Jersey. Although many of the scenarios Dr. Rosenberg describes in his column are based on real-life events, the veterinary practices, doctors and employees described are fictional.
There’s a lot of confusion about CBD use in pets – plenty of anecdotes, hundreds of products, but very little data. Canopy Animal Health is working hard to change that by replacing confusion with facts. We’re using a multimillion-dollar R&D budget to conduct rigorous safety and efficacy studies and support investigations by leading university researchers. To date, more than 20 studies have been completed or are underway. Eventually we will launch products, but not until we know more about how CBD may improve the lives of animals and how it may affect them in the short- and long-term. Meanwhile, we offer this brief primer to help foster good communication and to keep the conversation going.

Today, there is enormous interest in exploring the potential of CBD in veterinary medicine. However, while the pace of research is accelerating, it is still in its early stages. Even so, the scarcity of safety and efficacy data hasn't stopped countless pet owners from giving widely available CBD chews and oils to their cats and dogs. Others who have not yet used CBD products turn to their veterinarians for guidance.

Are CBD products safe for pets?
Safety is a primary concern for pet owners and veterinarians. Margins of safety for CBD for pets have not yet been determined – a particular concern for chronic dosing. Canopy Animal Health is currently conducting escalating dose studies to evaluate the short- and long-term use of CBD in pets and will publish the data when available.

Is it legal?
Laws vary state to state, so please check with your local Veterinary Medical Association before dispensing CBD or discussing its use with your clients. Even in states where recreational use of marijuana is approved, veterinary use of CBD may be prohibited and discussions between veterinarians and their clients about CBD may not be allowed. However, laws regarding CBD are evolving. Please consult the Canopy Animal Health website regularly for updates.

What is the quality of current products on the market?
Quality assurance standards for CBD have not yet been set. Some CBD products being offered may be contaminated. The biological nature of the Cannabis sativa plant makes products susceptible to pesticide and heavy metal contamination, as well as inconsistent formulation. Some CBD products on the market do not contain the levels of CBD claimed on the package. In fact, some products made from hemp seeds don't contain any CBD at all. Clear regulations are needed to guarantee safe, pure and accurately labeled products.

What’s the difference between marijuana and hemp?
Many pet owners don’t understand the difference between marijuana and hemp, especially because both are classified as Cannabis sativa. The distinction is legal. Hemp contains less than 0.3% tetrahydrocannabinol (THC) – the psychoactive component of the Cannabis sativa plant. Many veterinarians have seen THC toxicosis and how dogs respond much differently to exposure than humans. One reason for their greater sensitivity may be that dogs have a higher number of CB1 receptors, which mediate the effects of THC. CBD contains so little THC that exposure is not an issue. Researchers are still establishing appropriate CBD dosing for both dogs and cats.

What are the indications for CBD?
There are no approved CBD drugs for animals and no efficacy claims can currently be made for their use. Current and planned studies are investigating the effects of CBD on osteoarthritis pain, appetite stimulation, seizure disorders and other conditions. Publication of these studies may eventually provide valuable insight into the safety and efficacy of the compound.

More information
The Canopy Animal Health website offers additional helpful information for veterinarians and veterinary technicians: https://www.canopyanimalhealth.com/en

A RACE-approved continuing education course is also available on Canopy’s website: https://connect.canopyanimalhealth.com/ce/primer-for-cannabis-and-pets/
People are living longer, and that means we need more money when we decide to quit working as veterinarians. It’s time to take this retirement planning thing seriously.

**Getting our retirement ducks in a row**

Retirement—the practice of leaving one’s job and ceasing to work elsewhere—has been around since the 18th century, when life expectancy hovered between ages 30 and 40. But that number has doubled since the early 1800s. Today, life expectancy in most industrialized countries is more than 75 years.

The good news is that we will live longer. The bad news is that because we live longer, we’re more vulnerable to age-related diseases such as coronary artery disease, certain cancers, diabetes and dementia.

In the past, people worked until they died or were physically unable. Today’s retirement age, approximately 65, was adopted during the late 19th and early 20th centuries. Work no longer was defined as one’s existence. Instead, work became a means to an end characterized by achievement, fulfillment and accomplishment. Today, retirement is the ultimate goal for many of us as we look forward to recreation, travel and rediscovery.

**How long do you need to plan for?**

Males born this year can anticipate a life expectancy of 76 years; women can expect to live to age 81. When I was born in 1948, the anticipated life expectancy in the U.S. was 64.6 years and the social security/retirement age was 65. Not surprisingly, the length of time spent in retirement was quite limited for those born in that era.

Today, a life span of 90 years or longer is a reality for many people. This longer life span requires a good deal of financial planning and flexibility. How will we spend a retirement that may last 35 years? How much money will it take to sustain us?

Our grandparents and parents anticipated that social security would support them in their retirement, but that won’t work in our era. The average social security benefit is $1,422 monthly, which equates to $17,532 annually. The maximum benefit for high-dollar contributors is $3,770 monthly. That is the range of payment a retired veterinarian can anticipate. Could you live and support your lifestyle on $3,770 per month? Remember, medical expenses, quality-of-life costs and taxes are not included. Long-term care is expensive, and long-term care insurance is not full care.

**Could you (financially) survive retirement?**

As we plan for retirement, there are many variables to consider, including our health and longevity, the size and quality of our investments, the return on those investments, living expenses, and lifestyle. Simply put, how much money do you have? How is it invested? How will you spend your money, and how long will you live? Can you start planning now?

Fifteen years ago, I met a university economics professor in an airport lounge. At the time the concept of "FIRE" was popular: financial independence, retire early. In our conversation, the professor explained that early retirement would necessitate a bankroll in the neighborhood of $5 million—a pretty expensive neighborhood. Most FIRE planners look to pretty simple retirements (small homes, rustic travel, restricted spending, part-time work and lower expectations). Only time will tell if FIRE is a viable option for retirement.

How can you estimate your likelihood of retirement success? To start, how much do you currently spend? Let’s say you anticipate spending $100,000 a year. Most planning experts advise having 25 times your annual spending in your retirement funds. That means you would need $2.5 million to support your desired lifestyle. I know $100,000 sounds like a big number, but just having a lot of money doesn’t mean it will be enough.

How much are you spending now and how will that change? What expenses come out of your paycheck that you’ll have to pay out of pocket once you retire—like health insurance? What extra expenses—like travel—do you want to budget for during retirement? A recent study that analyzed the gap between spending and income found that the median spending-to-income ratio among single, retired individuals was a whopping 112%.

**The 4% rule of thumb**

There’s a rule of thumb that says you can withdraw 4% of your portfolio value each year in retirement without incurring a substantial risk of running out of money. Using this rule, for every $100,000 you have, you’d withdraw $4,000 a year. That does not take into account unanticipated expenses like major dental procedures, uninsured medical expenses, unexpected declines in investments, taxes, or significant declines in home value. In addition to your 4% draw, consider an emergency fund for unexpected expenses. It’s often recommended that you save three to six months’ salary and don’t touch it except in an emergency. That would go for retirement too.

**So, are we going to reach these goals?**

Americans tend to earn the most money between their late 30s and their early 60s, making this a crucial period for socking away extra income. Yet only 36% of Gen Xers (ages 39 to 54 this year) are saving in some kind of retirement account. "I don’t earn enough money to save for retirement" is often cited as a major reason for not participating in a retirement plan. And many of those who do participate aren’t saving enough.

Obviously, there are two ways to save. Pretty much anyone in personal finance agrees that the best way to get ahead financially is to increase the difference between what you earn and what you spend. This means you can do one of the following—or both:

1. Spend less. Stop spending money right now and that money will sit in your bank account, building up your net worth over time. But, of course, there’s a limit to how much you can cut your spending.

2. Earn more. Earning more income has a huge advantage—it theoretically has no cap. You can always earn more by working more, right? Or you can consider “windfall revenue”—like inheritances, tax refunds, settlements and bonuses—as growth savings rather than free fun money. You can always increase your income with second jobs, enough effort, enough good choices and enough luck.

The overall goal is to help you build and spend your savings for a successful retirement.

Regardless of how much you save—whether it’s $5 or $5,000 a month—it’s crucial to begin saving toward retirement as soon as possible and to maximize contributions to tax-deferred accounts. It’s never too early—or too late—to start.
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Noncompetes:
The landscape is changing

Corporate consolidators will be affected if more states limit the duration of these agreements and take into account the financial capacity of those bound by them.

Noncompetes are no surprise to anyone. And in today’s market of venture capital groups and multinational corporations buying veterinary hospitals, they nearly always insist that the hospital seller either assign (transfer) or obtain a noncompetition agreement from most, if not all, of the associates working there. The buyer is paying an outsized price and doesn’t want to contend with a former doctor who elects to “go rogue” and join a competing facility nearby.

In my dealings with consolidators and corporate buyers, the noncompete is a fundamental element of the corporate veterinary clinic “roll-up” business model. I don’t say this necessarily as a disparagement—in decades past, the same trade restraint technique was part and parcel of hospital sales between veterinarians. The only difference today is that buyers are more likely to be MBAs than DVMs.

The laws of noncompetition, however, are changing rapidly in this country. Let’s take a deeper look at where this complex and evolving area of legislation stands today and how it’s changing.

The essence of enforceability

The essence of noncompetition law is the concept of enforceability, but guessing at enforceability beforehand has always been tricky. An employee would challenge her noncompete. The boss would sue for enforcement. Briefs would be presented to the appropriate court in support of both sides, explaining what had been done in previous litigation over noncompetes faced by, oh, medical supply salesmen, automotive executives, periodontists and, occasionally, even a veterinarian. The judge would take all that in and decide whether the noncompete was reasonable, unreasonable or reasonable with court-imposed tweaks.

Courts have been deciding enforceability with minimal guidance since James Herriot delivered his first calf. Now what?

The legislative wrinkle

It’s hard to say why it hasn’t happened before now, but numerous state legislatures are getting into the “restraint of restraint-of-trade” business. Enforceability guidelines and mandates are coming down from Boston, Trenton, Providence and—just recently—Olympia, Washington. Many of the new rules are not as broad as the noncompete limitations heretofore imposed in California, but the latest statutes are clearing up a whole lot of doubt in a whole bunch of states.

Why a new law in Washington ...

There’s a unique case unfolding in the West. General practice veterinarians may soon be getting raises in Washington state—at least if their bosses want them to continue to be covered by a noncompetition covenant.

The new law, which became effective Jan. 1, 2020, prohibits enforcement of noncompetition agreements for employees (not independent contractors) who earn less than $100,000 per year (inflation adjusted). It’s not hard to see what impact that may have on new veterinary school graduates as well as corporate hospital chains—assuming you buy into my view that noncompetes are vital to a typical practice consolidator’s business plan.

The law also introduced procedural instructions to judges and arbitrators stating that covenants longer than 18 months post-employment are presumed unreasonable and unenforceable. That means the burden will be on employers to prove the necessity of a longer noncompete—say, two or three years in duration—vs. the traditional burden on the employee to prove that a period was unfairly long.

... changes who can sue

Frequently, when I review employment agreements for veterinary associates, I ask whether they can afford protracted litigation against a potential employer if they violate a seemingly unreasonable noncompetition covenant. Can they tolerate the cost to prove they’re right about the noncompete terms being unfair? Clients usually say they can’t.
Washington State’s new law addresses this issue and the often wide economic disparity between an individual veterinarian and a well-financed employer involved in a costly legal scuffle. The state now provides specifically for a “private right of action” by an individual whose noncompete covenant does not comply with the new law. This means an aggrieved employee (for example, an associate who’s subject to a noncompete but who doesn’t get paid $100,000 or more) can sue the employer, and, if successful, receive up to $5,000, plus—probably more importantly—reimbursement for attorneys’ fees, expenses and costs of litigation (or arbitration, if the case is decided by an arbitrator).

Who will win?
Be sure that the veterinary corporations are looking very closely at this law and others in states debating similar legislation. Here are my predictions about how these bills will affect veterinary consolidators and their employees:

- Employers of veterinary associates will need to think harder about striking a balance between the cost of hiring an associate at a salary high enough to permit the use of a noncompetition covenant vs. simply leaving the covenant out of some contracts.
- Employers may need to raise “base salary” amounts under some salary-plus-production formulas to remain in compliance with laws mandating pay floors.
- Veterinary practices may need to expand their use of locum tenens veterinarians operating as independent contractors. These practitioners may be less likely to build strong bonds with clients and therefore be less of a risk of future competition.

When it comes to noncompete agreements, the legal concept of restraint of trade bears on our profession more profoundly every day. For us, government intervention into commerce manifests itself as telling market participants what they can’t do (declaw cats in some states) and what they can (own hospitals as nonveterinarians). Hospital owners may rightly view noncompetition agreements as a necessary protective measure for their business. But employed veterinarians (and civil libertarians) will continue to fight these covenants because they restrict the right of doctors to practice their craft when, where and how they please. Bottom line? I predict we are far from done hearing from the courts and the legislatures on this subject.

Dr. Christopher Allen is president of Associates in Veterinary Law PC, which provides legal and consulting services to veterinarians. Call (607) 754-1510 or email info@veterinarylaw.com.
Here’s what you need to know about examination, assessment and differential diagnosis in the blind veterinary patient. By Ron Oflri, DVM, PhD, DECVO

A
cute blindness in a pet is distressing for both the animal and the owner. Fortunately, in many cases vision can be restored. However, veterinarians and pet owners should bear in mind that acute blindness can be, and often is, a manifestation of systemic disease. Therefore, all patients that present with blindness—even those that do not regain vision—should undergo a comprehensive examination to reach an ophthalmic and systemic diagnosis, as the latter may have profound and long-term implications for the animal’s health.

History
As with any patient, begin by taking a history. Ask whether the blindness came on abruptly or gradually. Owners often report sudden loss of vision in their pet, even though the ophthalmic examination reveals changes associated with chronic disease. Questioning will likely reveal that the blindness was noticed when the animal’s environment was changed (e.g. while visiting friends). We can assume that even though an animal has been blind for some time, the gradual onset of the disease enabled it to learn to navigate at home. The change in environment causes the animal to bump into objects, misleading the owners into believing that the blindness is acute.

Inquire whether the blindness was associated with preferential loss of night vision. One of the first behavioral signs of inherited, degenerative diseases of the outer retina (commonly known as progressive retinal atrophy) is loss of night vision, as rods are affected before cones. Be careful of how you phrase your questions and do not “lead” the owners—that is, ask whether there is a difference between the pet’s daytime and nighttime vision rather than “is your pet seeing worse at night?” Other rod functions (such as detection of moving objects or objects in the peripheral visual field) are also affected before cone functions (color vision and detection of objects in the central visual field). However, these changes are usually too subtle to be detected by owners.

Next, ask about the animal’s overall health and other signs of illness. Blindness may be caused by numerous systemic or neurologic diseases that frequently are accompanied by additional clinical signs. Therefore a complete (non-ophthalmic) history of the patient is required. Furthermore, a complete physical examination...
and a thorough neurologic assessment are part of the workup of every case of blindness. Finally, perform a comprehensive ophthalmic examination, and evaluate the patient’s visual system.

**Assessing the visual system in blind animals**

Here are several tests you can perform to determine the status of your patient’s vision:

**Menace response.** This involves making a sudden threatening gesture that is supposed to elicit a blink response. It’s important to note that the menace response involves cerebral cortical integration and interpretation and thus is not a reflex. Rather, it is a cortical response that requires the entire peripheral and central visual pathways, as well as the visual cortex and the facial nucleus of cranial nerve VII, to be intact.

To avoid false-positive responses from the visual, contralateral eye (in cases of unilateral blindness), evaluate the menace response in one eye while the other eye is covered. False-positive responses can also result from touching the patient’s eyelashes or hair, or causing air movement near the patient’s eyes. False-negative responses may be caused by facial nerve paralysis. Therefore, in the absence of a menace response, always test the blinking reflex by touching the skin at both the lateral and medial canthi. Note that the menace response is absent in animals younger than about 10 to 12 weeks and may also be affected by the patient’s mental state.

**Obstacle course.** Vision also can be assessed using an obstacle course navigated by the patient in both light and dim environments and with one eye patched. Be consistent in the obstacle course you construct, and make sure it can be navigated by normal animals.

**Visual placing response.** This test is useful when results of the obstacle course and menace response are equivocal. Lift the animal toward the table, allowing it to see the approaching surface. A normal animal will extend its legs toward the surface before its paws touch the table (Figure 1).

**Cotton ball.** Vision can be assessed in young puppies and kittens that may not yet have learned the menace response, and occasionally in stoic older animals, by...
throwing cotton balls in the air in front of the animal. A normal, alert animal that may not respond readily to a menace gesture will follow the cotton ball. Avoid throwing heavier objects that cause air movement or noise, because the animal may respond to these stimuli. Some animals, especially cats, will follow the red light of a laser pointer.

The pupillary light reflex. Unlike the menace response, the pupillary light reflex (PLR) is a subcortical reflex. Therefore, it does not test vision, and a normal PLR may be found in a cortically blind animal. Furthermore, as the PLR does not require much afferent input, it is usually present (although it may be diminished or slow) in animals suffering from progressive retinal atrophy, cataracts and other causes of subcortical blindness. Nevertheless, the PLR is a very important test that helps localize the lesion that is causing blindness.

Pupil size and reaction to light are assessed after the menace test. First, evaluate the size of the pupils at rest (without stimulation) in normal room light. Next, evaluate pupil size and dilation symmetry in dim light, without stimulating the eyes. Unless a cataract or some other opacity is present in the ocular media, the pupils will be retroilluminated by the tapetal reflection. Assess the size of each pupil and compare them to determine whether anisocoria (unequal-sized pupils) is present. If anisocoria is noted, determine which pupil is abnormal by comparing the degree of anisocoria first in the light and then in the dark.
Vision can be assessed in young puppies and kittens, and occasionally in stoic older animals, by throwing cotton balls in the air in front of the animal. A normal, alert animal that may not respond readily to a menace gesture will follow the cotton ball.

The abnormal pupil is the one that changes less in response to the change in stimulus. In other words, if the degree of anisocoria decreases in the dark, then the mydriatic pupil is abnormal; if the degree of anisocoria increases in the dark, then the miotic pupil is abnormal.

Next, test the animal’s reaction to strong light. Because of the decussation in the optic chiasm and pretectal nucleus, stimulating the retina of one eye with a bright source of light causes constriction of both pupils. First, evaluate the direct PLR by shining a bright light into one eye while observing the reaction of its pupil. To evaluate the indirect (or consensual) PLR—constriction of the pupil in the unstimulated eye—shine a bright light into one eye while observing the reaction of the contralateral pupil.

Dazzle reflex. The dazzle reflex is another subcortical reflex. It is manifested as a partial blink reflex in response to a bright light. The anatomic pathway responsible for this reflex is poorly understood. However, this test is a very useful substitute for the PLR in cases when the pupil can’t be seen, such as in cases of severe corneal edema or hyphema (Figure 2).

Localizing the lesion in the blind patient

Based on the results of the ophthalmic examination and PLR, the patient may be categorized into one of five general groups:

> **Light does not reach the retina.** The most common causes of blindness in this category are inherited retinopathies and chorioretinitis (or posterior uveitis). The diseases are often diagnosed based on ophthalmoscopic signs. Patients with inherited retinopathy frequently present with attenuation of the retinal vasculature and tapetal hyperreflectivity (Figure 4); the diagnosis may be confirmed with an electroretinographic recording (Figure 5). In chorioretinitis, inflammatory changes are evident in the fundus. The PLR is often normal, since (as noted previously) it requires little afferent input.

> **Retinal disease with a normal/diminished PLR.** The two leading differentials in this category are inherited retinopathies and chorioretinitis (or posterior uveitis). The diseases are often diagnosed based on ophthalmoscopic signs. Patients with inherited retinopathy frequently present with attenuation of the retinal vasculature and tapetal hyperreflectivity (Figure 4); the diagnosis may be confirmed with an electroretinographic recording (Figure 5). In chorioretinitis, inflammatory changes are evident in the fundus. The PLR is often normal, since (as noted previously) it requires little afferent input. The blindness is due to central lesions affecting the visual pathways from the lateral geniculate nucleus to the contralateral visual cortex. These may be congenital, metabolic, infectious, inflammatory, toxic or neoplastic central nervous system disease.

> **Retinal disease with no PLR.** Common causes of blindness in this category include glaucoma, retinal detachment and optic neuritis involving the proximal optic nerve. Glaucoma is discussed in more detail elsewhere. A detached retina can be visualized as a vascular gray veil floating behind the lens (Figure 6), and the diagnosis may be confirmed with ultrasound. Proximal optic neuritis can be confirmed ophthalmoscopically, as the optic nerve head appears congested, elevated and blurry (Figure 7).

> **In patients with a normal ophthalmic examination and an absent PLR, blindness is most often caused by sudden acquired retinal degeneration syndrome (SARDS), optic neuritis involving the distal optic nerve, or neoplasia compressing the optic nerve or chiasm. SARDS is diagnosed using electroretinography, while advanced imaging (Figure 8) and a neurologic workup are used to diagnose optic nerve and chiasm disease.**

> **Blind patients with a normal ophthalmic examination and PLR are usually neurologic cases.** The blindness is due to central lesions affecting the visual pathways from the lateral geniculate nucleus to the contralateral visual cortex. These may be congenital, metabolic, infectious, inflammatory, toxic or neoplastic central nervous system disease.

Conclusions

Glaucoma, retinal detachment, optic neuritis and SARDS should be considered in patients presenting with acute blindness and fixed, dilated pupils. In many cases, especially when posterior uveitis, retinal detachment or optic neuritis is present, a systemic disease may be the underlying cause. Therefore, patients should undergo a comprehensive physical examination. Successful diagnosis and treatment of the primary cause may lead to restoration of vision and may even save your patient’s life. dvm360

Dr Ron Ofri is a professor of comparative ophthalmology at the Koret School of Veterinary Medicine, Hebrew University of Jerusalem in Rehovot, Israel.
Fleas: How to conquer these blood-feeding, egg-laying machines

Dr. Michael Dryden discusses what it takes to eliminate infestations—and why residual speed of kill is what matters most. By Kristi Reimer Fender

Michael Dryden, DVM, PhD, has studied flea infestations in a number of Florida homes, where the heat and humidity create the perfect conditions for snowbirds ... and blood-feeding ectoparasites. Spending time in those infested homes has reinforced a concept that veterinarians know—but many pet owners do not.

“Fleas don’t care how much money you’ve got,” Dr. Dryden told attendees at a recent Fetch dvm360 conference. “They don’t care if you’re in a gated community. All they care about is if there’s someone with blood in that house.”

Dr. Dryden, who has recently retired from a career of teaching and research at Kansas State University College of Veterinary Medicine, has been known as “Dr. Flea” (as well as “Dr. Tick”) over the years due to his expertise with ectoparasites that feed on companion animals. A major research focus for his lab has been analyzing residual speed of kill for various parasite prevention compounds. And speed of kill is everything when it comes to eliminating an infestation.

“By the time a pet owner notices fleas, immature stages have been developing in the home for one to two months,” he told veterinary professionals during his lecture. “If a cat has fleas, those fleas are laying eggs, and they’re rolling off like ping pong balls into the carpet and the cracks between the sofa cushions. This biomass of immature flea stages provides an ongoing source of new adult fleas that will continually reinfest pets.”

That means modern flea control is all about preventing reproduction, or “breaking the life cycle at the host level,” according to Dr. Dryden. And this requires residual speed of kill—zapping fleas quickly after they’ve been acquired from the biomass. “If I kill fleas fast enough, they can’t lay an egg, and this prevents reproduction,” Dr. Dryden said. “If I don’t, the infestation rolls on.”

Every flea control product has a natural period of decay, or half-life, that affects its residual speed of kill. When the concentration in or on an animal drops low enough, the speed of kill is too slow to prevent fleas from laying eggs before they die. This is what Dr. Dryden calls the “reproductive break point.” Research has shown that the earliest of the modern flea control products (those introduced in the mid-1990s) have a reproductive break point prior to 30 days. Manufacturers have added insect growth regulators to enhance efficacy throughout the application period, but heavy infestations can still take months to resolve.

“In ‘redline’ homes, fleas tend to get worse before they get better,” Dr. Dryden explained. Eggs laid before treatment started continue to emerge as pet activity stimulates their development. Eventually traditional products do wipe out the infestation, but in the meantime pet owners often think they’re not working. And they have to be convinced to stay the course and not switch from product to product. It can be an uphill battle, especially when pet owners grow increasingly frustrated.

But all of this has changed with the introduction of the isoxazoline class of flea and tick control products. Dr. Dryden said. These include afoxolaner (NexGard—Boehringer Ingelheim), loralaner (Bravecto—Merck), sarolaner (Simparica—Zoetis) and lotilaner (Credelio—Elanco).

“The residual speed of kill in the isoxazolines is stunning,” he said. “Their ability to wipe fleas out is unlike anything we’ve ever seen before. These fleas aren’t laying eggs, and we’re driving populations to extinction in these homes.”

Dr. Dryden explained that these products are so effective in part because they provide systemic coverage—even the formulations that are applied topically. Because of the way they work, there is no part of the animal where the compound is less effective due to uneven distribution or diminishing concentration. “With isoxazolines, the reproductive break point occurs after the date of the next application or administration,” Dr. Dryden said. “There are absolutely no eggs on these animals.”

Dr. Dryden discussed the implications for patients with flea allergy dermatitis (FAD), which can remain a problem for affected pets as the biomass gets wiped out in an infested home. The classic working hypothesis for FAD, he said, is that a single flea bite will produce a clinical reaction in a hypersensitive animal.

“If this is accurate, flea products must kill all fleas before they can bite and feed in order to manage FAD; therefore systemically active adulticides cannot manage FAD because fleas have to bite and feed to be killed,” he said.

Does that mean isoxazolines, which work systemically, are ineffective at preventing FAD?

In a word, no. The reality is that they are highly effective.

“The classic single flea-bite hypothesis is not correct,” Dr. Dryden said. “FAD is not like anaphylaxis. It’s more similar to atopy; it’s an additive threshold disease. More exposure means more clinical sings, and every animal is different in terms of where its threshold is.”

Once again, effectiveness comes down to speed of kill. “Speed of kill prevents enough allergen from being injected into an animal to cause symptoms,” Dr. Dryden said. “Wiping the fleas out rapidly diminishes pruritus scores rapidly.”

In a study of fluralaner and afoxolaner, dogs with FAD had nearly normal pruritus scores within two weeks of administration. Plus, “their skin disease as assessed by a dermatologist improved 80% in two months,” Dr. Dryden said. “Lotilaner and sarolaner were similar—the dogs were normal at two months.”

The bottom line is that it’s possible to both prevent reproduction and manage flea disease with rapid-speed-of-kill products, and no products on the market have higher speed of kill than the isoxazolines.
No matter which of our models best fit your practice, you can be assured a Summus Medical Laser will improve your efficiency, broaden the therapy options you offer and provide safe, rapid relief resulting in happy, retained patients.
Quick tips for GPs: Treating canine athletes

Repetitive injuries mean lots of care for canine athletes and lots of interaction with this specific breed of dog owner—who, lucky for you, make great partners.

There are many advantages for general veterinary practitioners in treating canine athletes and working dogs. For one, they’re owned by clients who’ve invested a significant amount of time, emotion, effort and money into raising, training, and working or competing with their canine partners. These clients want the absolute best care and best outcomes for their dogs, creating an opportunity to practice state-of-the-art medicine.

Many of these clients are highly compliant and will do exactly as you say. In fact, they long for a veterinarian to listen to them and give them recommendations to improve the healing process; they want to be involved.

Here are a few tips for general practitioners who find themselves treating canine athletes, courtesy of David Dycus, DVM, MS, CCRP, DACVS-SA, an orthopedic surgeon in Annapolis Junction, Maryland.

Always, always listen
Never blow off a patient with a “sound dog” finding when the owner or handler says something’s off. Many times these owners think we believe they’re crazy. And many of them get blown off by other veterinarians. This is the fastest way to lose a client—and these clients are very vocal to other pet owners.

Take it slow
To find many of the injuries that afflict a canine athlete, a more comprehensive orthopedic and rehabilitation examination is needed. Rushing through an orthopedic examination will likely miss the issue (psst, don’t forget about the toes!).

Ask the owner...
Remember, these dog owners know their dog better than anyone else does. The great thing is, they tend to film everything—or if they have a film of their dog running an event or during periods of pathology, make sure to watch it. dvm360
Let’s face it, pilling cats isn’t for everyone. Fortunately, there’s Profender® – a broad-spectrum, topical dewormer for cats.

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Would you believe?
Internet myths in veterinary toxicology

There are some doozies floating around cyberspace about household items that can hurt (and help) pets. No one knows this better than a toxicologist with the Animal Poison Control Center. By Tina Wismer, DVM, DABVT, DABT

Old wives’ tales have always been prevalent in veterinary practice. But in this internet age, rumors and misinformation can spread like wildfire, leaving pets at risk for harm by owners who only want to do what’s right for them.

Often written in story form to be as believable as possible, these rumors sometimes contain precautionary advice about keeping pets safe, and they tend to be embellished over repeated tellings. Internet rumors in particular have a way of going dormant for some time and then rearing their ugly heads again months or years after the initial distribution, spreading the falsehoods far and wide.

Here are some of the humdingers I’ve heard.

And the universal antidote is …
Some of these supposed antidotes are actually helpful for certain problems, but there simply is no universal antidote that will address every type of toxin that every dog or cat ingests.

Milk. Milk can help dilute caustic substances (acids, alkalis) and irritants (detergents), and it can help dissolve the insoluble calcium oxalate crystals found in some plants. The calcium in milk may also decrease the absorption of certain pharmaceuticals (bisphosphonates, tetracyclines). But that’s about it.

Atropine. Atropine can be helpful in reversing the muscarinic signs (salivation, lacrimation, urination, dyspnea, drooling, emesis) from organophosphate and carbamate insecticides, but it’s not going to affect other intoxications. This misconception likely arose many years ago when most insecticides were organophosphates or carbamates, compounds rarely encountered today.

Burnt toast. This myth likely arises from the use of activated charcoal to treat poisonings. Unfortunately, the black parts on burnt bread are not absorbents like activated charcoal.

Weak tea. Tea does contain tannins, which can be helpful in treatment of some intoxications (rhododendrons, azaleas), but it does nothing to treat other poisons.

Cleaning products or pet killers? While household chemicals are obviously not great for pets (or people) to ingest, many of the specific rumors surrounding these products are based on myth, not truth.

Febreze. When Febreze first came to market in 1999, an extensive internet email rumor implicated it in the deaths of many dogs. I still see the email floating around. Febreze can cause respiratory issues in birds and allergic reactions in some dogs, but it has not been linked to any dog deaths.

Swiffer WetJet. Another internet rumor purports that “Swiffer WetJet contains a compound that is ‘one molecule away’ from antifreeze and caused liver failure and death in a German shepherd dog.” The fact is that none of the WetJet’s ingredients pose a risk for hepatotoxicity. Anyway, if antifreeze (or a closely related glycol) were involved, we would expect renal, not liver, damage. Oh, and any molecule is “one molecule away” from antifreeze.

Ultra Clorox. Per the internet, Ultra Clorox bleach should not be used in households with pets because it contains sodium hydroxide (lye), a substance that’s not present in "regular" bleaches. The truth: All bleaches contain sodium hydroxide, and Ultra Clorox does not pose an additional hazard to pets when used as directed.

Paper towel tubes. This myth states that the glue used in the cardboard found in paper towel rolls and toilet paper contains enough zinc to poison an animal. This is untrue.

Food fallacies This selection of food-related rumors is a mixed bag containing some myth, some fact. Here’s a closer look.
Almonds and other nuts. The myth that almonds contain cyanide and will kill pets does have some truth behind it. Bitter almonds do contain cyanide, but we eat sweet almonds, which contain no cyanide. Bitter almond essential oil may be purchased, but there is no poisoning risk because it has been processed.

Rumors about poisonous pistachios also abound online. There is no basis to this myth. Nuts certainly can cause gastrointestinal upset, but they are not considered poisonous.

Chocolate. This particular old wives’ tale states that you shouldn’t give your dog chocolate—not because it’s poisonous, but because it will give them worms. This one may stem from the fact that dogs may vomit or have diarrhea after eating chocolate, and roundworms already present in the dog may be seen in the vomit or stool.

Ice cubes. Some believe that if you give a dog ice to cool off on a hot day, the dog will develop bloat (gastric dilatation-volvulus). Absolutely not true.

Garlic. Garlic is a natural way to get rid of fleas, or so some pet owners believe. Wanting to use “safe” flea control on pets is understandable, but owners may equate natural with safe, which is not always the case. The simple fact is that garlic is not efficacious in treating fleas. It can, however, cause hemolytic anemia and methemoglobinemia in dogs. For pets, 10 g/kg of fresh garlic (or its equivalent) may be a problem.

Miscellaneous misperceptions
And here’s a final set of dire internet warnings to round out our selection of toxin rumors.

Tennis balls. The myth that tennis balls can explode fatally is, unfortunately, true. In 2000, a dog in Portland, Oregon, picked up a tennis ball during a walk and it exploded, killing the dog—because the ball had been made into a bomb. Per the Portland police, tennis ball bombs are not uncommon and information on how to make them can be found on the internet. Pet owners should leave found tennis balls alone, especially if they are wrapped in electrical or duct tape. Tennis balls are also said to contain lead, which is poisonous to both pets and people. In fact, the balls themselves do not contain lead, but some inks used to print logos on the balls have tested high in lead.

Rawhide manufactured overseas. There is a bit of truth to this one, only because many years ago a batch of rawhides from Thailand was indeed contaminated with arsenic. Keep in mind, however, that rawhide, no matter the source, can be contaminated with Salmonella or other bacterial toxins.

Hostas. The theory is that since hosta plants contain saponins, and saponins are used to make soap, soap bubbles will form in the stomach of a pet that ingests the plants. That, according to the rumor, leads to bloat. While it’s true that saponins are used to make soap, it’s not true that soap or soap bubbles are produced in a pet’s stomach if saponin-containing plants are ingested. Pets will commonly vomit after ingesting hostas.

Keeping it all in perspective
Of course, pet owners are to be commended for any level of concern or vigilance related to protecting their pet’s health. But if you arm them with the proper information, they can direct that concern into the right channels.

Dr. Tina Wismer is medical director of the ASPCA’s Animal Poison Control Center.
An introduction to reading ECGs in veterinary patients

Understanding the basic electrical principles of the heart is essential for interpreting this valuable diagnostic test. By Meg Sleeper, VMD, DACVIM (cardiology)

Electrocardiography is the recording at the body surface of electrical activity in the heart. It is a record of the average electrical potential generated in the heart graphed in voltage and time. Specific waveforms represent stages of myocardial depolarization and repolarization.

The electrocardiogram (ECG) is a valuable diagnostic test in veterinary medicine and is easy to acquire. It is the most important diagnostic test to perform in animals with an auscultable arrhythmia (other than sinus arrhythmia in dogs). The ECG is the initial test of choice in the diagnosis of cardiac arrhythmias and may also yield useful information regarding chamber dilation and hypertrophy. However, the ECG does not record cardiac mechanical activity, so it does not yield information regarding cardiac contractility. It’s also important to remember that the ECG may be normal even in the face of advanced cardiovascular disease.

The bipolar triaxial lead system we use today was developed by Dutch physiologist Willem Einthoven in the early 20th century, along with the P-QRS-T terminology that describes the ECG waveform complexes. A lead consists of the electrical activity measured between a positive electrode and a negative electrode. The orientation of a lead with respect to the heart is called the lead axis. Electrical impulses with a net direction toward the positive electrode will generate a positive waveform or deflection, and those directed away from the positive electrode will generate a negative waveform or deflection.

As the angle between the lead axis and the direction of the activation wave increases, the ECG deflection in that lead becomes smaller. Electrical impulses with a net direction perpendicular to the positive electrode will not generate a waveform or deflection at all and are said to be isoelectric.

Standard electrocardiographic leads are used to create multiple angles to assess the waveforms that travel through the three-dimensional heart. A single lead would provide information on only one dimension of current flow. For the purposes of this overview, we’ll focus on lead II, a bipolar lead in which the right arm (RA) is positive and the left leg (LL) is negative. The right foreleg (RA) is positive and the left hind leg (LL) is negative. The net depolarization moving through the ventricles (green arrow) is normally oriented toward the left hind leg (the positive pole of lead II) in dogs and cats, and thus the QRS complex is predominantly positive in lead II. When using ECG machines that utilize four electrodes, the electrode placed on the right hind leg is the ground (it is not part of any of the leads).

Recording the ECG
The ECG should be recorded in an area as quiet and distraction-free as possible. Noises from clinical activity and other animals may significantly affect a patient’s heart rate and rhythm. In quadrupeds, the magnitude and direction of electrocardiographic vectors determined from limb leads can be vastly altered by changes in the position of muscular attachments of the shoulder girdle to the thorax.
Each pair of limbs should be held in parallel and limbs should not be allowed to contact one another. The animal should be held as still as possible during the ECG, and panting in dogs should be prevented if possible. In some cases, gently holding the animal’s mouth shut or placing a hand on the chest, if trembling is present, may be helpful. Alligator clips or adhesive electrodes may be used, though alligator clip teeth should be blunted and the spring relaxed to minimize discomfort.

Limb electrodes are placed distal to the elbow and stifle joints and wetted with 70% isopropyl alcohol or ECG paste to ensure good electrical contact. If the ECG complexes are too large to fit entirely within the grid of the paper, the calibration should be changed from standard (1 cm = 1 mV) to one-half standard (0.5 cm = 1 mV). The voltage and paper speed calibrations used for the recording must be inscribed during the recording so that this information is part of the permanent record.

**Evaluation of the ECG**

Areas of artifact should be identified as the ECG is being recorded so they can be addressed if possible. Electric (60-cycle) noise may be due to poor electric grounding (of the subject, the electrocardiograph or the table on which the ECG is being performed) or adjacent equipment such as lights or other electrical equipment. Electric noise appears on the ECG as regular fine, sharp, vertical oscillations. As mentioned earlier, placing a hand on the animal’s thorax may aid in reducing trembling or respiratory artifacts.

It’s important that artifacts not be misinterpreted during ECG evaluation. The heart rate (atrial and ventricular) should be calculated and waveform amplitudes and interval durations should be measured on a section of the ECG (lead II) that is run at a paper speed of 50 mm/sec. On a normal ECG, each P wave is followed by a QRS complex at a species-specific normal interval. Specific measurements to obtain for thorough ECG interpretation include:

- P wave amplitude and duration
- P-R interval duration
- QRS complex duration
- Amplitude of R wave
- Duration of QT segment.

Additionally, the mean electrical axis and the cardiac rhythm should be determined. (Rhythm analysis will be discussed later in the article.)

**Electrophysiology principles**

Several principles are important to remember when undertaking ECG rhythm assessment. All normal cardiac cells are capable of depolarizing when stimulated by a neighboring cell (excitability) and subsequently stimulate discharge of their neighboring cells. This capability is termed conductivity. However, only certain cells are capable of automaticity (beating on their own). These pacemaker cells undergo spontaneous depolarization (the resting potential becomes less negative) during diastole until the threshold potential is reached. Changes in the speed of spontaneous depolarization occur gradually over several heart cycles. Therefore, tachycardia associated with pacemaker cells (for example, sinus tachycardia) speeds up gradually over several seconds, unlike tachycardia originating from ectopic foci, which often accelerates abruptly. Specialized cells in the sinus node, atrioventricular (AV) node, and His-Purkinje system are capable of automaticity. However, under normal circumstances, pacemaker cells outside the sinoatrial (SA) node do not reach...
Hill’s Prescription Diet k/d\(^1\) is clinically shown\(^2\) to outperform Royal Canin\(^3\) at managing CKD.

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Compared to Royal Canin Veterinary Diet Renal Support A Feline\(^3\) cats with chronic kidney disease (CKD) fed Prescription Diet k/d Feline\(^1\) with E.A.T (Enhanced Appetite Trigger) Technology:

1. Voluntarily consumed 23% more calories\(^2\)
2. Increased their body weight by 5.8% while Royal Canin\(^3\) cats lost 13%\(^2\)
3. Maintained their muscle mass while Royal Canin\(^3\) cats lost over 11%\(^2\)

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1. Hill’s Prescription Diet k/d Feline with chicken dry food.
2. Data on file. Hill’s Pet Nutrition, Inc. 2018. Results are average values with statistical significance (p value less than or equal to 0.05).
3. Royal Canin Veterinary Diet Renal Support A Feline, dry food sold in the US market.

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SIX-MONTH CLINICAL RESULTS
Compared to Royal Canin Veterinary Diet Renal Support A Feline, 3 cats with chronic kidney disease (CKD) fed Prescription Diet k/d Feline with E.A.T (Enhanced Appetite Trigger) Technology:
Voluntarily consumed 23% more calories
Increased their body weight by 5.8% while Royal Canin cats lost 13%
Maintained their muscle mass while Royal Canin cats lost over 11%

WHAT’S CONTRIBUTING TO THE DIFFERENCE IN PATIENT OUTCOMES?
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HELP KEEP YOUR PATIENTS STRONG

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The P wave is generated by atrial depolarization. P waves may be absent in several dysrhythmias, including atrial fibrillation and atrial standstill. Alternatively, P waves may be buried in other waveforms (and therefore not visible), which commonly occurs in supraventricular tachycardia (Figure 2). P wave enlargement (taller or wider than normal) is recognized as an indicator of atrial enlargement.

The resultant T wave will also be abnormal and usually discordant (in the opposite direction of the QRS). Ventricular enlargement may alter QRS deflections, duration or amplitude. Aberrant conduction, such as through right or left bundle branch, can also alter the QRS duration and morphology (shape) for a similar reason. If conduction through a ventricular bundle branch is blocked, the depolarization wavefront cannot spread along the rapid conduction pathway in the affected ventricle. Conduction still spreads from cell to cell, but it is much slower (hence the widened QRS). Other causes of wide QRS complexes include electrolyte abnormalities such as hyperkalemia and certain medications (i.e. some antiarrhythmic agents).

Assessing the rhythm
When evaluating the heart rhythm on an ECG, using a stepwise approach simplifies the process.
1. Count the heart rate and determine if it is normal or abnormal (bradycardia or tachycardia). In cases of AV dissociation, there may be different rates for the atria and the ventricle.
2. Look at R-R regularity. Rhythms originating from a single site in the ventricles or atria are often regular, whereas the rhythms originating from the sinus node are often irregular due to variations in adrenergic activity (Figure 4).
3. Evaluate the shape or morphology of the QRS complex. Does it appear normal or wide? Causes of wider-than-normal QRS complexes include ventricular origin (Figure 5), electrolyte abnormalities (hyperkalemia), aberrant conduction (bundle branch block), ventricular hypertrophy or certain medications. Is there a P wave for every QRS complex and a QRS complex for every P wave? If so, sinus rhythm is likely. If there are P waves without QRS complexes, AV block is present.
4. Determine the degree of AV block. In first-degree AV block, every P wave produces a QRS complex but the AV conduction is slow and the P-R interval is therefore prolonged. If some P waves block (i.e. do not result in a QRS) but others do not, the rhythm is second-degree AV block (Figure 6). Second-degree AV block is further broken down into Mobitz type 1 (Wenkebach type), in which there is gradual lengthening of the P-R interval until a P wave blocks, or Mobitz type 2, in which the P-R intervals are constant. Complete dissociation (there are P waves and QRS complexes but no connection between them) is present with third-degree or complete heart block.

As with any clinical skill, becoming adept at ECG interpretation requires practice. Understanding the basic electrical principles of the heart is helpful for reading all ECGs, and it is essential for interpretation of more complex arrhythmias.

The animal should be held as still as possible during the ECG, and panting in dogs should be prevented if possible. In some cases, gently holding the animal’s mouth shut or placing a hand on the chest, if trembling is present, may be helpful.
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² Kynetec VetTrack November 2019. Sales of YuMOVE branded products through veterinary wholesalers.
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Knowing that giving pills can cause distress to cats and their owners alike, Royal Canin developed Feline Pill Assist to help cat owners administer medication by disguising the pill itself. According to a Royal Canin study, one in every four pet owners leaves a veterinary clinic with a pill prescription and one in every three of these pet owners admits their cat spits out the pill. However, Feline Pill Assist enabled successful pill administration in 91% of cases, helping pet owners ensure that their veterinarian’s prescription would be an effective treatment at home for their cat. The product contains a soft texture that can easily be molded around any pill shape. It can be used in conjunction with several Royal Canin veterinary-exclusive diets without compromising their efficacy. Royal Canin Feline Pill Assist can be found at select veterinary clinics; pet owners should consult with their veterinarian to determine if this product is appropriate for their cat. For more information, visit royalcanin.com.

FUR BABY TRACKER
Client communication platform
Fur Baby Tracker will be launching a new veterinary clinic–pet owner communication platform in early 2020. The system is a real-time communication platform that provides updates to veterinary clients after they drop their pets off at the clinic for treatment or surgery. A recent study in Frontiers in Veterinary Science revealed that if a pet is hospitalized for more than 24 hours, most pet owners want an update every two to six hours, which is about six updates per day. Fur Baby Tracker generates on average six to 15 updates per 24-hour period, delivered directly to the pet owner via text message and app update. The platform has been engineered to integrate with systems that are already standard in veterinary clinics. It’s designed to provide pet owners with a high-value experience and veterinary clinics with a new profit center. For more information, visit furbabytracker.com.

NAVC
Veterinary job search web platform
The North American Veterinary Community (NAVC) and guavaVet have launched a new web platform that utilizes Google’s search engine, enabling users to search for job opportunities in the veterinary industry in an unprecedented way. This feature enhances the NAVC Retriever app, a tool designed for the veterinary community that pairs individuals with hiring practices to create uniquely suited matches. The app looks at different criteria—including location, species, skills and experience—to ensure the match is suitable for both the hiring manager and applicant. The new web platform reinforces the app and enhances the user experience, allowing them to browse through all available jobs in the veterinary field. Using Google’s search engine, job seekers will be able to search through opportunities across the industry that interest them before they turn to the NAVC Retriever app for the matching process. For more information, visit navc.com/retriever.

MERCK
Redesigned animal health website
MerckVetManual.com, a free online animal health reference, has been redesigned to enhance ease-of-use and search capabilities. Among the improvements to the landing page are a more prominent search box, a “letter spine” to locate animal health topics alphabetically, “quick links” to pet health information, case studies, clinical calculators, an “above the fold” location for specially featured content, photos and animations, and curated infographics that often correspond with national observances. A news feed delivers breaking stories on animal health topics, and the digital platform allows for timely commentary about issues with significant public health implications, such as antimicrobial resistance and One Health. New to the collection of videos accessible on the website are series about pharmacology and zoonosis. Access to the site is unlimited and free for veterinarians, veterinary technicians and veterinary students. For more information, visit merckvetmanual.com.
**AAHA PRESS**

**Data resource on veterinary compensation**

*Compensation and Benefits* from AAHA Press is a trusted and comprehensive resource for understanding trends in veterinary salary packages. This book contains statistics and expert context to help veterinary professionals at all career stages, whether building a practice team, embarking on a job search or entering the profession. Using data from more than 600 U.S. practices, this updated ninth edition includes detailed demographic breakdowns of average salaries and wages for every member of the practice team; information on a variety of benefits, including paid time off, annual CE allowances, health insurance, veterinary services, retirement plans, bonuses and more; methods of calculating and compensating veterinary staff on production; and new data on industry turnover, nonmonetary incentives and use of performance evaluations. 

*For more information, visit aaha.org/aaha-press.*

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Profivex is a clinical strength probiotic supplement for dogs and cats with five strains and 5 billion colony-forming units per serving. It is formulated in a raw and unprocessed form to yield the highest potency and viability. It also contains two prebiotics, including fructooligosaccharides and sweet potato. The all-natural sweet potato in Profivex adds a beneficial amount of fiber and nutrients to further support the digestive tract. Profivex is indicated for the prevention of diarrhea, gas, intestinal upset and other digestive problems. It comes in a great-tasting pork liver soft chew treat or as a powder. Profivex is made in the U.S. with all-natural ingredients.

*For more information, visit profivex.com.*

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**HESKA**

**Point-of-care urine and fecal analyzer**

Element UF is a two-in-one automated solution for analyzing urine and feces in minutes. The analyzer was developed by Heska to prepare, automate and image feces and urine to find important cells, crystals and parasites, including roundworm, hookworm, tapeworm, whipworm, *Giardia* and more, in a fast and sanitary “load-and-go” approach. The unit is designed to provide instant results without the mess.

*For more information, visit heska.com.*

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**COVETRUS**

**Prescription management tool**

Covetrus, an animal-health technology company, has launched Covetrus Script Assist, a new way for veterinarians to leverage practice management system information to proactively prescribe preventive medications for patients with past or upcoming appointments. Covetrus Script Assist leverages machine learning and practice management records to identify gaps in medical care, particularly in areas like preventive medications. Once a prescription is “created,” the veterinarian or delegate has minimal steps in order to get a prescription to the client for fulfillment on their storefront. The system allows for more informed compliance monitoring—the ability to quickly prescribe preventives will drive practices closer to compliance and help keep their patients healthy. All Covetrus prescription management customers have access to the Script Assist application and may opt in to use it.

*For more information, visit bit.ly/CVETSA.*
For a full listing of events in 2020, visit dvm360.com/calendar

Here are the CE opportunities coming in the near future:

**February 1-8**
Veterinary Orthopedic Society's 47th Annual Meeting
Sun Valley, ID
secretary@dvm360.org

**February 2-5, 2020**
Fetch dvm360 in Baltimore
(800) 255-6864, ext. 6
fetchdvm360.com/balt

**February 9-7**
Ocular Surgery 1+2, Oral Pathology, and Radiology Training
Towson, MD
(410) 828-5005
AnimalDental

**February 10-12**
Training.com Animal Dental and Radiology Oral Surgery 1+2
February 7-9
vosdvm.org

**February 10-12**
VetVacationCE
February 10-12
VetVacationCE
vosdvm.org

**February 11**
Institute Veterinary Management
November 21
(800) 369-9564
Altoona, IA
Winter Conference
American Veterinary Medical Association

**February 13-21**
Veterinary Management Institute
Fort Collins, CO
(720) 963-4424
aaha.org

**February 16-19**
Western Veterinary Conference (WVC)
Las Vegas, NV
(866) 800-7326
wvc.org/conference

**February 20-22**
MVMA 123rd Annual Meeting
Minneapolis, MN
(651) 645-7533
mvma.org

**February 20-23**
Midwest Veterinary Conference
Columbus, OH
(614) 436-1300
mvinfo.org

**February 27**
VHMA Management Exchange
Charleston, SC
(518) 433-8911 ext. 2
vhma.org/events

**February 28-March 1**
American Laser Study Club 2020 Symposium
Delray Beach, FL
(888) 206-2710
americanlaserstudy.com/symposium

**March 15**
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Long Beach, CA
(303) 674-8169
vmc-inc.com

**March 20-25**
VetVacationCE
Cardiology and Oncology Whistler, BC
(888) 488-3882
vetvacationce.com

**March 26-28**
VetVacationCE Dermatology and Dentistry Austin, TX
(888) 488-3882
vetvacationce.com

**April 2-5**
Fetch dvm360 Conference Baltimore, MD
(800) 255-6864 ext. 6
fetchdvm360.com

**April 7-12**
France Vet: The Veterinary Rendezvous

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

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

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

**June 1-13**
ACVIM Forum Baltimore, MD
(303) 231-9933
acvim.org/ACVIM-Forum

**June 12-13**
France Vet: The Veterinary Rendezvous

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

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

**October 15-18**
ABVP Symposium Chicago, IL
(800) 697-3583
abvp.com/symposium

**December 11-14**
VHMA Regional Workshop Seattle, WA
(518) 433-8911 ext. 2
vhma.org/events

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

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New Year’s resolution

A phone call 20 years ago and two decades of writing changed my life.

I’ve been blessed—blessed so much that I don’t really understand it. As we start a new year, I look back on this wonderful career and wonder how it all happened and how fast time has passed. I’ve wondered how my wife and I went from being 28-year-old neophytes scared to death of $130,000 in school and practice debt, to a happy family with more than we deserve. Well, let me tell you one of the biggest reasons I believe we’ve thrived.

‘They wanted one article a month’

When we came to this small town in West Texas, the local paper asked me to write an article for the hometown paper, the Lamesa Press Reporter. They wanted one article a month. (The paper only comes out two times a week.) I agreed.

The first few articles I wrote were on subjects such as parvo in dogs and why you needed to get a Coggins test for a horse. I went over common cattle diseases and why cats spray urine on the curtains. I imparted great wisdom on heartworm prevention and housebreaking. And you know what? No one read them.

So one day I wrote an article about overweight Otis, my first case as a veterinarian. People loved it. In fact, people came to clinic just to tell me how much they laughed reading about the life of a veterinarian. The editor of the paper called me and asked if I could write more funny articles. He said no one read the scientific ones—or if they did, they never told him.

‘I was so honored’

I started looking for the funny things that happen every day at a veterinary clinic and writing them down. It gave me a new perspective. Instead of focusing on all the depressing things that happen when animals can’t be fixed, I was focusing on all the steps we take to try to fix them. It changed my life.

I was so honored I just kind of sat in silence on the phone for a minute. I’d been receiving that great big magazine in the mail every month since I was in veterinary school. I told him I’d be honored.

This went on for a while and then one day I got a phone call from a fella at DVM Newsmagazine (now dvm360). It seemed an older lady from Lamesa had sent a copy of a funny article I wrote to her grandson who was a veterinarian in a faraway state. The veterinarian loved the article and sent it to the editor of DVM, and that fella loved it too. He was calling to ask whether he could put it in the next issue of the magazine and if so, could I send one a month to put on the back page of the magazine?

I was so honored I just kind of sat in silence on the phone for a minute. I’d been receiving that great big magazine in the mail every month since I was in veterinary school. I told him I’d be honored. That was 20 years ago.

So, 20 years ago I started writing for a magazine that went all over the world to veterinarians. It wasn’t anything I ever planned on doing. I had no idea I could even write. In fact, I almost couldn’t get into veterinary school because the best grade I could ever get in English was a “C.” I was so bad that the professor sent me to a remedial writing lab to study with people learning English as a second language.

Looking for a reason to smile

I write about 12 articles a year for this magazine. That’s about 240 articles in 20 years. And I’ve learned something in all that time: When you go through life looking for humor, you find it. When you go through life looking for meaning, you find it. Somehow, a simple phone call from an editor in the year 2000 changed my life, my practice, my ambition and my happiness. Some fella named Dan Verdon just thought he was calling to get another author for the back of his magazine. But in fact, he was changing my life.

There were a lot of things that went into growing a veterinary clinic in the middle of nowhere. Hard work was certainly a part, dedication and motivation had to have fit in, passion for animals and people was woven into the formula, and luck was a big part too. But the intangible factor that may have been the thread that held them all together was me—me just looking for a way to make you smile.

The title of this article is “New Year’s resolution.” Many of us make them, and most of them we never keep. I hope you’ll make one this year: I hope you’ll spend every day looking for a reason to smile. I pray that you take this resolution so seriously that you even write an article once a month about what you found. Maybe it’ll never get into a magazine or be read by anyone. But it will change the way you see each moment of every day.

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