dvm360 Find it all here.™

Cannabidiol: A new option for pets in pain?

More research is needed, but barring adverse events, you might keep it mind.

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September 2017 | Volume 48 | Number 9 | dvm360.com

NAVTA Nurse Initiative targets Indiana, Michigan, Ohio for technician name change

Group hopes to have 'registered veterinary nurse' credential adopted in three states by July 2018.

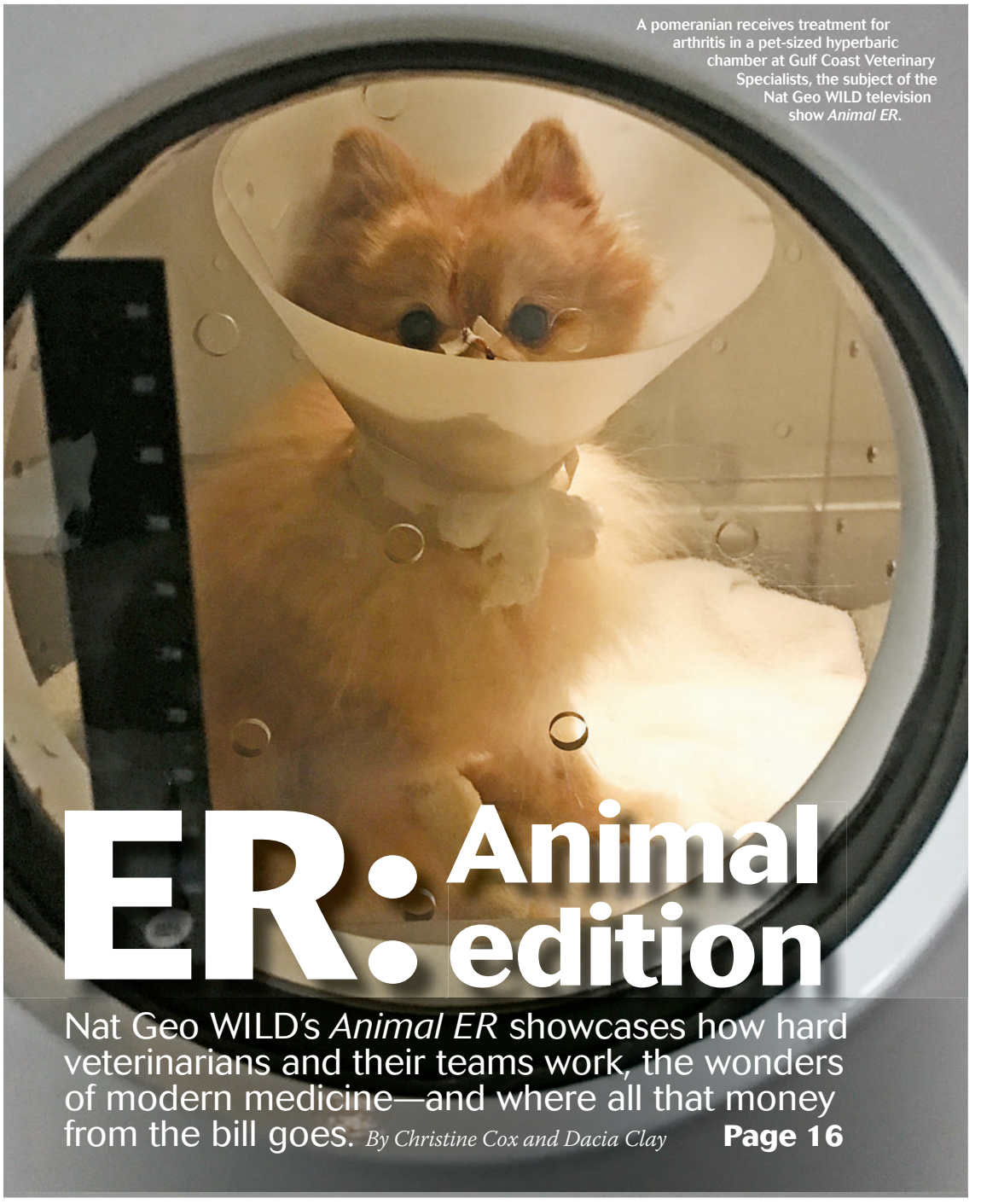
By Kristi Reimer Fender, News Channel Director

The group working to change the title of "veterinary technician" to "veterinary nurse" and standardize credentials nationwide said in July that they're first focusing on three states where they like their chances of success: Indiana, Michigan and Ohio.

"Our goal is to make this change in all 50 states, but it's not realistic to work in all 50 states at once," said Mark Cushing, JD, legislative strategist for the NAVTA Veterinary Nurse Initiative, during an update during AVMA's 2017 convention. "We'd like to get some early success under our belt, so we're targeting three states where we think we have a realistic chance."

Indiana, Michigan and Ohio all have well-respected veterinary schools and strong veterinary

See page 14 >



A pomeranian receives treatment for arthritis in a pet-sized hyperbaric chamber at Gulf Coast Veterinary Specialists, the subject of the Nat Geo WILD television show *Animal ER*.

ER: Animal edition

Nat Geo WILD's *Animal ER* showcases how hard veterinarians and their teams work, the wonders of modern medicine—and where all that money from the bill goes. *By Christine Cox and Dacia Clay*

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fetch dvm360 CONFERENCE™

CVC has a new look and feel. Learn more

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Life-saving pointers for puppies with parvovirus

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Award-winning hospital designed with room to grow

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The good Samaritan, the bad owner and the microchip

page 37

UBM

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Please see brief summary on page 03

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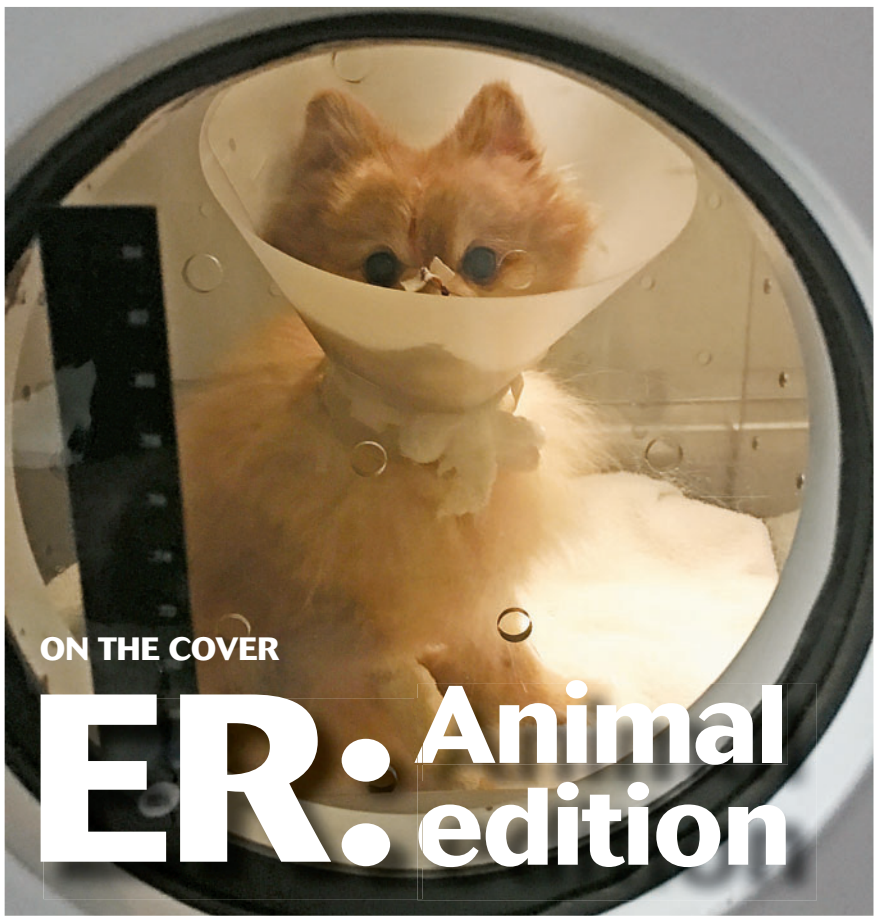

ON THE COVER

ER: Animal edition

CVC Educator Sarah Wooten, DVM
Sheep Draw Animal Hospital

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UBM

We're making fetch happen

The show formerly known as CVC has much more than a new name.

You may be noticing some new colors and design elements splashed and sprinkled throughout this issue of *dvm360*. That's because we've recently unveiled a new branding initiative that primarily focuses on our conference—heretofore referred to as CVC and henceforth to be known as something completely different—but also includes a new look and feel for the *dvm360* print magazine and for dvm360.com, our portal website.

To get the full picture, let's start at the top. Our parent company is UBM, an events-first corporation headquartered in London that spans the globe and dominates its markets, which range from computer technology to fashion, life sciences to heavy machinery. We at dvm360 are proud to be part of UBM and excited about its commitment to the veterinary market and animal care in general.

The live content at CVC has always been presented by the team at dvm360 (which we know you rely on every day for your media content), but the connection has not always been clear—until now. We are hooking the power of dvm360 to our event in a whole new way.

To that end, CVC (which once stood for Central Veterinary Conference but outgrew that designation long ago when it expanded to both coasts) is now Fetch, a dvm360 conference. And we're not just changing the name, the logo and the colors (though we absolutely love these changes and hope you do too!). We are working to deliver you a full-circle, 360-degree educational engagement experience that focuses on all the facets of your professional life.

In short, we don't just want you to come to Fetch to get your CE; we want to transform your life. We want you to go home from Fetch with renewed inspiration, enhanced wellness, a deeper sense of community with your fellow veterinary professionals, a suitcase full of solutions to your career problems—and that's just the start! Whether you're a longtime CVC veteran or a brand-spanking-new Fetch attendee, we hope you'll love what you discover. We can't wait to see you there!

Vets confess:

What I get out of CVC (now Fetch!)

fetch dvm360 CONFERENCE

We could go on and on (and on) about why you should join us for Fetch, but we think your colleagues say it best.

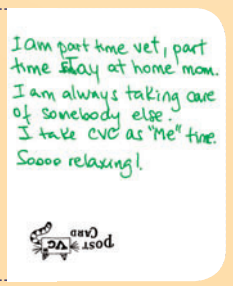
The Vet Confessionals post cards below from CVCs past provide a quick snapshot of what attendees get out of the experience. (Hint: It's not just about CE, although that's a pretty awesome and important part.)

I get encouragement.

"I was considering quitting my hospital (and possibly the industry) until I got to CVC. This meeting has totally reinvigorated me!"

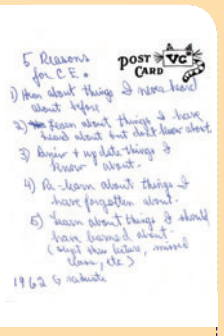
I get an escape.

"I am part-time vet, part-time stay-at-home mom. I am always taking care of somebody else. I take CVC as "me" time. Soooo relaxing!"



I get education and exploration.

"5 reasons for CE: 1) Hear about things I never heard about before; 2) Learn about things I have heard about but don't know about; 3) Review and update things I know about; 4) Relearn about things I have forgotten about; and 5) Learn about things I should have learned about (slept through lecture, missed class, etc.). –1962 graduate"



Whatever your reason, we hope to see you at Fetch San Diego Dec. 7-10. Visit **thecvc.com/sd** to learn more about the conference and to register.

Meet the dvm360/VHMA Practice Manager of the Year finalists for 2017

These 10 finalists are the cat's meow at tackling tough veterinary practice problems. Here are there stories—one winner will be announced this December in San Diego.

Kyle Wendy Skultety, LVT
Practice manager
VCA Bayview Animal Hospital
Toms River, New Jersey

Home delivery homerun

"When I first arrived at the hospital, I was surprised it hadn't incorporated home delivery and the online store into routines. It seemed like it would be an excellent tool for establishing reliable recurring income and would free up doctors and technicians. To our staff, however, it was an obscure program requiring additional tasks with no immediate or obvious benefit. Through education, encouragement and repetition, I got my team to buy into and consistently implement the home delivery idea. Now my customer service representatives sign up clients at the front desk, and our technicians use iPads to show clients that it's just as easy as Amazon.com to sign up and use. The pets never run out of meds and the hospital still makes a profit."

Charly Kronberger, BAAS, LVT, CVPM
Practice manager
All Pets Animal Hospital and 24-Hour Emergency Care
Katy, Texas

Valuable values

"It used to be practice policy to match prices for items that clients found at a cheaper price through an online source. Faxes were constantly coming in and the support staff was having to dig around in medical records and search the internet to verify whatever price an owner might dig up. We were spending a lot of time and money chasing this stuff down, and the support staff was not enjoying their work. And by matching prices, we were demeaning our values. As an AAHA-accredited hospital, we focus on excellence as our standard of care. Price-matching did not fit our mantra. I used my background in industry sales and researched numerous online pharmacies, their payment processing methods and their relationships with vendors and manufacturers. I convinced the hospital owner to switch our online store (which wasn't user-friendly and didn't support competitive pricing), and we stopped matching prices. Since then our online store volume has more than doubled and our margins are holding at a comfortable percentage. It's been a win for our hospital, for the clients and for the pets."

Smooth (on call) operator

"When I started my hospital administrator role, weekend on-call technicians were being misused. I gathered information from all team members to understand the problems and learned that the main issues stemmed from: 1) a lack of rules for when to call in a technician, 2) a lack of communication between all team members before making the decision to call someone in and 3) specialty techs feeling frustrated that they were called in for ER and expected to cover anesthesia surgery call as well. As a result, I devised a call-in protocol that identified specific parameters that needed to be met as well as approval from leadership before making the call to bring someone in. I also put ER technicians on call for ER and moved specialty techs to cover anesthesia calls for surgeries. The current system is much more clear, and techs are only called in when they're needed."

Jill Bechtel, BS, RVT, CVPM
Practice manager
Nashville Veterinary Specialists
Nashville, Tennessee

Molly Lautzenheiser, BSBA, CCFP
Practice manager
Avon Lake Animal Clinic
Avon Lake, Ohio

Teamwork triumph

"Our business is spread through three buildings and seven departments. With a staff of more than 160 employees, each day brings new challenges and happenings, which I found our managers were facing alone. There seemed to be no time for connection between the different department managers, so I saw an opportunity for improvement through collaboration. In reaching out to them one by one, I learned they were eager to share with and learn from one another. Despite our busy schedules, I rallied the department managers and set the first meeting designed to keep each other abreast of changes, needs and developments. It was a success. Communication, creativity and collaboration ensued. We have since started recognizing the opportunity for cross-training and promotion from within, encouraging staff members to seize the chance to learn a variety of aspects of the business outside of their daily duties. At the managers' request, I present on a different HR topic at each meeting, allowing for continuing education and group discussion. I also created a Slack app group for our management team, which allows us to stay in contact on needs, meeting dates and announcements."

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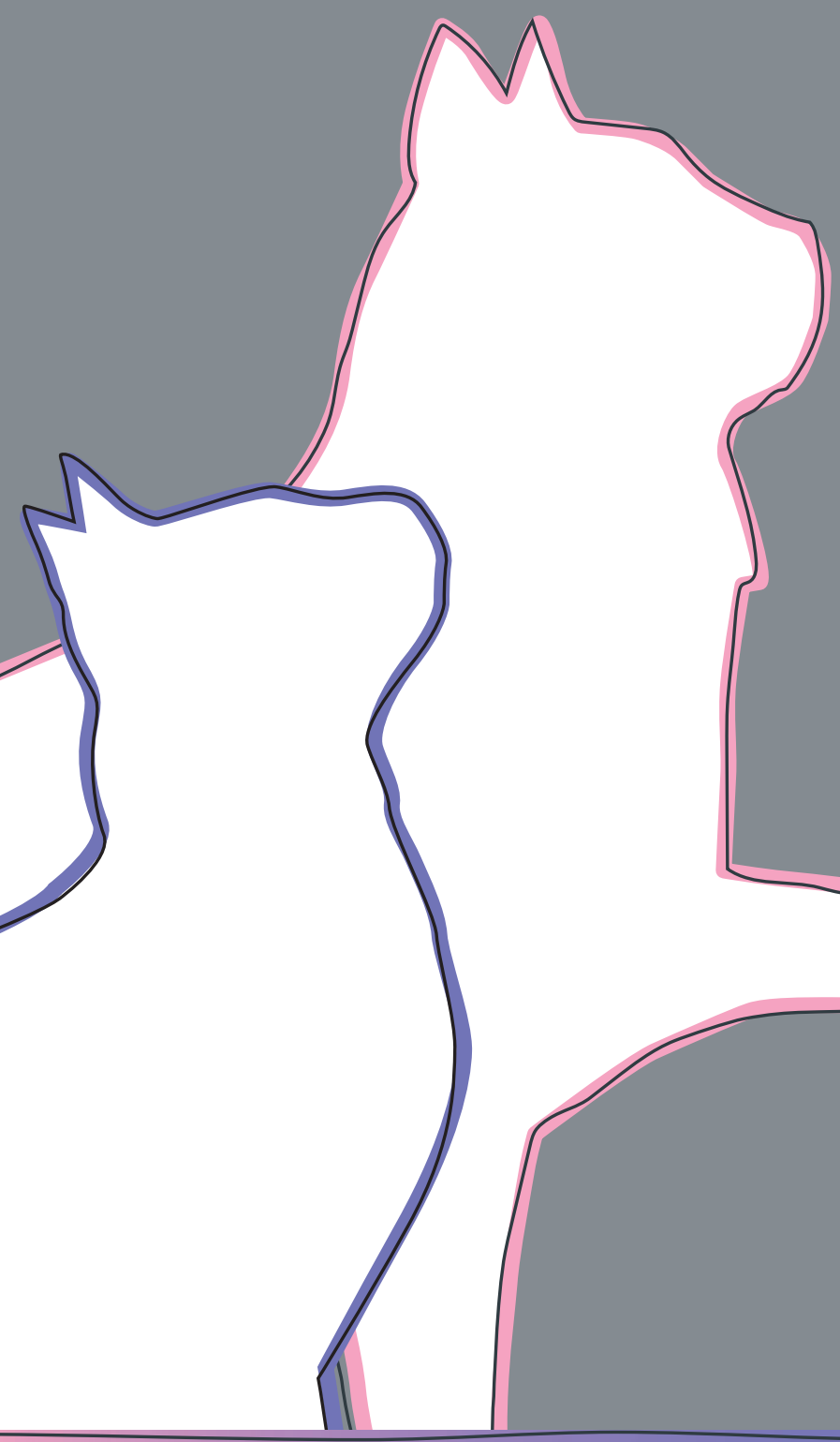

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Suggestion box success

Rebecca Rowe, CVPM
Practice manager
Seven Hills Pet Clinic
Loveland, Ohio

"The weekly meeting is the way we introduce our new policies, share knowledge and build a stronger team. While individual patient care is critical in our practice, what we say and how we treat our clients and patients should be the same. Our team has the closest interaction and understanding of these needs, so to access this valuable knowledge, I took our 'suggestion' box in the lobby and changed the meaning. Team members put their suggestions in this box, and I use these suggestions to make our weekly meeting notes. The notes then go to the doctor and owners for their approval and input. This is when new ideas are presented to the doctors for approval. I have found this to be a respectful and professional way to request changes to our policies and procedures. As our meeting notes have become the reference point for our new policies and procedures, I developed a common drive on our server that can be accessed from every computer in the clinic. Employees who miss the weekly meeting must read the meeting notes. Topics from meetings can be easily referenced by searching the folder for the topic, which is helpful if you need to go over a policy that was previously discussed in the meeting. This method helps to keep us consistent and standardized with our policies."

Patrick Fabricatore, MS, CVPM
Practice manager
Perkiomen Animal Hospital
Palm, Pennsylvania

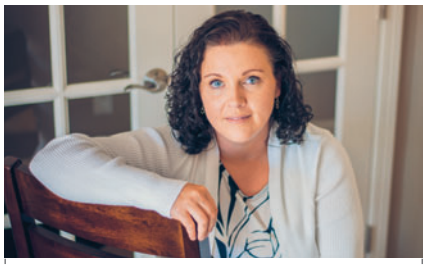
CE power to the people (without licenses)!

"In veterinary medicine, whether we like to admit it or not, there seems to be a feeling among team members that CE is only for those with licenses, so I implemented mandatory CE for all team members. It wasn't about implementing a new company policy that others needed to abide by. It was about building value and assuring all team members that everybody's contributions matter to us. All team members must have a minimum of 20 hours per year. Some assistants and customer service representatives at first believed they didn't need CE, but I placed the focus on professional development. They were all encouraged not only to attend job-specific training, but also to seek areas of interest or areas where they believed they could benefit from additional training. At first the program was met with some trepidation, but now they seek out dinner meetings and coordinate their schedules to attend CE they would never have attended otherwise. At each staff meeting or department meeting, team members will present the highlights of their CE to others and are prepared to answer questions."

Tiffany Consalvo, CVPM
Practice manager
Gilbertsville Veterinary Hospital
Gilbertsville, Pennsylvania

Standard-of-care construction

"I met with the practice owners to discuss my long-term plans of establishing a culture based on the hospital's mission. I listened to their goals, and we assessed the strengths and weaknesses of individuals on our team to identify and promote natural leaders. We then established monthly meetings that gave the team a platform for solving operational issues. The doctors became our last opportunity for change. They all practiced good medicine, but they each had their own recommendations. We needed a consistent message from the doctors so we could provide a consistent message to our clients. We became passionate about creating a standard of care that was centered around our mission to provide the best medicine. During our doctors' meetings, we worked through our recommendations for preventive care and established hospital standards that everyone was comfortable recommending."



Amanda Inman, CVPM
Practice manager
Pet Care Clinic of Kokomo
Kokomo, Indiana

Merry meetings

"Our team meetings are my pride and joy. I often go around to individual team members before the meeting requesting that they be the designated speaker on a topic during the meeting. This encourages participation and offers others a chance to enhance their speaking skills. But what really makes our meetings different is that we've learned how to make them fun without losing meaning and purpose. Every one of our meetings has a theme. I look at the list of topics and try to find a common thread—like the time we had a lot of concerns with clinic procedures that had to be addressed with care. So that meeting's theme was 'hot and prickly.' I filled the room with hot tamales, flames and cacti! I was able to start the meeting with a warning that some of the topics that day would be difficult but to hang in as a team to fix things. I always have a gift for the person who volunteers to take minutes, and we often have other giveaways: football tickets, coffee machines, scrubs, dinners and drinkware, to name a few. It's important to save the clinic money when possible, so we use vendor points for freebies, I watch for sales, and I reuse any decorations I can."

Marshall Liger, LVT, CVPM
Practice manager
Bees Ferry Veterinary Hospital
Charleston, South Carolina

Fruitful feedback

"I restructured the monthly staff meetings to make them productive, presenting issues that need to be addressed and also a plan to remedy the issue. For example, we discussed our extended wait times and then explored ways to better schedule appointments and better staff the hospital. I taught my team members statistics and benchmarks that substantiated the plan so they could understand my reasoning. Today, I'm proud to say that clients rarely experience an inappropriate wait time. The meetings also include feedback. I share positive and negative client reviews. When I first started at the hospital, the post-visit client surveys were largely negative. Now they are almost all positive and I love being able to show the team all the compliments clients give them. They earn them! The team can also compliment one another by dropping a 'shout-out' card in a locked box in the break room. We end each meeting by presenting all of the shout-outs and congratulating the recipients with praise and fun prizes (like candy and gift cards)."

Carol Hurst, LVT, CVPM, CVJ
Practice manager
ABC Animal & Bird Clinic
Sugar Land, Texas

Extra accredited

"Shortly after I was hired, the owner told me that one of his goals was AAHA accreditation. One of my biggest achievements toward this goal was writing our protocol book. My team was involved as well, and each department was able to take its own section and outline what areas we excelled at and what areas needed change. I set goals for when I needed the information (including any new purchases we needed to make), and my team met the necessary deadlines with a sense of pride in the accomplishment. This was something we all worked on together. After passing our accreditation, we celebrated with a party!"

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AVMA update: Didn't make it to Indianapolis? Here are the highlights

Pot for pets. Telemedicine. Service animal fraud. These topics and more were on the agenda at the association's annual convention in July. *By Kristi Reimer Fender, News Channel Director*

If practice life was hectic and you couldn't get away, if Indianapolis was not your idea of a dream destination, or if you were saving your CE pennies for CVC (now renamed Fetch—see page 5), here's a recap of the 2017 AVMA Convention, which took place July 21-24 in surprisingly lovely downtown Indy.

Pot for pets

With a number of tricky legal and ethical issues surrounding the use of therapies derived from marijuana and related plant species in pets (see our clinical overview on page 32), a number of veterinarians are hoping their national association can provide some guidance. To that end, the AVMA House of Delegates officially asked the Board of Directors to consider creating and disseminating information on the current legal status of cannabis as it applies to veterinary practitioners, consistent definitions of cannabis and its derivatives, current available research, and clinical signs and treatment of cannabis toxicosis in pets for both practitioners and clients.

The house also recommended that the board look for ways to work with other stakeholder groups to reclassify cannabis from a schedule 1 to schedule 2 substance. This would help researchers investigate potential uses in veterinary and human medicine more easily, advocates say.

Telemedicine

Another hot topic at the conference was telemedicine or, more broadly, telehealth. (FYI, "telehealth" refers to all forms of electronic exchange of health-related information, including general education, while "telemedicine" is the exchange of specific medical information in relation to an individual patient's health status.) The House of Delegates passed a resolution establishing a new policy: In essence, the policy states that telemedicine involving diagnosis, treatment or the prescribing of drugs should not occur in the absence of a veterinarian-client-patient relationship (VCPR), except in cases of emergency.

In a panel discussion on the subject, Board of Directors member Lori Teller, DVM, DABVP, of

Audience members discussed whether the definition of the VCPR might change in the future—specifically, whether a physical exam is necessary to establish a VCPR.

Houston, Texas, noted that the AVMA is preparing a toolkit with resources on telemedicine for veterinarians. Phase one is to be released this month, with the entire toolkit expected to be available in June 2018.

Audience members also discussed whether the definition of the VCPR might change in the future—specifically, whether a physical exam is necessary to establish a VCPR. Human medicine no longer requires an in-person visit to establish a doctor-patient relationship, and some veterinary groups in Canada may be relaxing this requirement as well, panelists and attendees noted.

Service animal stickiness

Veterinarians are increasingly finding themselves in the awkward position of being asked to provide a letter stating that a person—usually a client—has a legitimate need for an emotional support animal. While these practitioners recognize that this is a job for a mental health professional, not a veterinarian, clients are not so clear on the issue—if a lively discussion on the topic during AVMA is any indication.

During its annual meeting, the House of Delegates passed a resolution clarifying the veterinarian's role in regard to service animals. This role involves "assisting their clients in selecting the right animal for the right task, recommending that the animal receive appropriate training for its intended role, and ensuring that the health and welfare of that animal is addressed,"

the resolution states. In addition, the AVMA has developed a white paper with additional guidance on the subject: "Assistance Animals: Rights of Access and the Problem of Fraud." It can be downloaded at avma.org/kb/policies.

Leadership

Michael J. Topper, DVM, PhD, DACVP, who was elected AVMA president-elect last year, was installed as president of the AVMA during this year's convention. He recently retired after 12 years as director of clinical pathology at Merck Research Laboratories in West Point, Pennsylvania. Speaking before the House of Delegates, he stressed the importance of veterinary leadership, the federal veterinary workforce and the One Health movement.

"Ultimately, people and animals rely on the environment for their nourishment and survival, and it's these interconnections that make the practice of One Health so critically important for each of us," said Topper, according to a release from the AVMA. "As veterinary professionals, we must uphold our duty to promote the health of all species and the varied places in which they live."

John de Jong, DVM, of Weston, Massachusetts, was chosen as AVMA president-elect during the House of Delegates meeting, meaning he will take over as president in 2018. Dr. de Jong owns the Boston Mobile Veterinary Clinic and Newton Animal Hospital. He has served as AVMA Board of Directors chairman and president of the Massachusetts and New England Veterinary Medical Associations, according to an AVMA release.

Angela Demaree, DVM, an Indiana veterinarian and a major in the U.S. Army Reserves, and John Howe, DVM, a Minnesota mixed-animal practitioner, have announced that they're running for president-elect of the AVMA in the 2018 election, the AVMA reports.

Awards and honors

The AVMA named Johann (Hans) F. Coetzee, BVSc, Cert CHP, PhD, DACVCP, recipient of its 2017 Animal Welfare Award. Dr. Coetzee was recognized for his commitment to the welfare of livestock animals and achievements in developing pain assessment models and pain management techniques for cattle.

"Dr. Coetzee ... has brought about enormous change in the livestock industry regarding awareness of pain and concern for managing painful procedures," said Dr. Tom Meyer, AVMA president, during a recognition ceremony. "His research and leadership have been instrumental in transforming the attitudes and practices of veterinarians, farmers and food animal practitioners."

Dr. Coetzee is a professor and department head in Kansas State University's Department of Anatomy and Physiology.

Also honored was Joan Miller, who received the AVMA's 2017 Humane Award for her contributions to feline welfare. Miller served as the Winn Feline Foundation's president for 16 years and on the advisory boards of the Cornell Feline Health Center and the UC-Davis School of Veterinary Medicine.

Lone star liabilities: No Lyme, but lots to be leery of

A parasitologist, a human allergist and an entomologist shine a spotlight on lone star tick risks.

By Kristi Reimer Fender, News Channel Director

The lone star tick may not transmit *Borrelia burgdorferi*, the Lyme disease bug, but there's still plenty to be concerned about when it comes to *Amblyomma americanum*—whether you're a two-legged or four-legged individual. During the AVMA's annual convention in Indianapolis in July, a veterinary parasitologist, human-medicine allergist and PhD entomologist all discussed the lone star tick in a session sponsored by Boehringer Ingelheim.

Risks to pets. Brian Herrin, DVM, PhD, DACVIM (parasitology), a postdoctoral researcher at Oklahoma State University Center for Veterinary Health Sciences, discussed the pathogens that the lone star tick does transmit, and they're nothing to blow off. *Ehrlichia* and *Rickettsia* bacterial species are two major concerns in dogs, and diagnosis can be tricky. With *Ehrlichia* species, a positive in-clinic test result may not indicate imminent clinical disease (which means the dog may or may not need doxycycline), and with *Rickettsia*, clinical signs may manifest before antibodies appear (making it a "treat, then confirm" disease, Dr. Herrin says).

In cats, *Cytzauxzoon felis* infection is often fatal despite treatment, and owners should be encouraged to check their cats for ticks, since it takes 36 hours for *A. americanum* to transmit the pathogen, Dr. Herrin says. The best strategy is to know the risks in your area—with awareness that the lone star tick is marching steadily northward—and create specific diagnostic and treatment protocols accordingly.

Risks to people. Scott Commins, MD, PhD, an allergist at the University of North Carolina-Chapel Hill, has researched the connection in people between bites from larval lone star ticks (often called "seed ticks") and the development of allergy to mammalian meat—beef, pork, lamb, bison and so on. In a case of medical detective work, he and a team of researchers identified cases in which people who had tolerated meat their whole lives started experiencing itching, swelling and hives six to eight hours after eating it.

In comparing incidence of the allergy (the culprit was identified as alpha-gal, a type of sugar found in lower mammals but not in humans) to the territory of the lone star tick, the team eventually determined that tick bites were triggering the allergy in people. The research is ongoing, including whether there's any similar process that takes place in dogs.

Random facts. Finally, Thomas Mather, PhD, professor of entomology and director of the TickEncounter Resource Center at the University of Rhode Island, offered some interesting facts about lone star ticks and a quick lesson in tick identification. One "bet you didn't know" item: The lone star tick is super-speedy, meaning it can scoot up your leg and under your shirt—or into your dog or cat's fur—faster than the deer tick or the American dog tick. Also, tick species are often misidentified, Dr. Mather says, but focusing on the tick's scutum (or "shield" beneath the head) and the differences among them will help with a proper ID. Dr. Mather's team runs the tickencounter.org website, which offers more resources.

No matter what species the tick and what disease process it triggers, ticks are bad news. After all, "every year is a bad year for ticks—it only takes one," as Dr. Herrin puts it. Smart use of tick-prevention products, plus strategies such as yard cleanup and frequent tick checks—will help keep people and pets safe and disease at bay.

Henry Schein consolidates software products, rebrands key systems

ImproMed and AVImark are now being treated as practice management products under one umbrella—Henry Schein Veterinary Solutions.

Henry Schein recently placed all of its veterinary software offerings under one umbrella, called Henry Schein Veterinary Solutions. This includes AVImark and ImproMed, which were previously considered divisions of Henry Schein and are now being treated as practice management products available to Henry Schein customers.

The shift includes a bit of rebranding as well. ImproMed Infinity, Henry Schein's most comprehensive veterinary practice management software product, is now simply being called ImproMed. And ImproMed Triple Crown, software designed for equine practitioners, is now labeled ImproMed Equine. AVImark has not been rebranded.

Henry Schein Veterinary Solutions also includes Vetstreet and Rapport, marketing and client communications solutions that integrate with other Henry Schein systems, along with Australia and New Zealand's VisionVPM and RxWorks.

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Please see Brief Summary on page 12.

> Continued from the cover

medical associations (VMAs) with effective executive directors, Cushing said—major reasons why these states were identified as the initiative's first stop on the road to change. Two of the universities with veterinary schools (Purdue and Michigan State) also have a veterinary technology program, another factor.

The group's goal is to convince each state legislature to pass an amendment to the veterinary practice act that substitutes the word "nurse" for the word "technician." The requirements that individuals graduate from an AVMA-accredited school of veterinary technology and pass the national licensing exam will not change in states where this is the credentialing process, initiative leaders say. All those who receive their credentials would be known as "registered veterinary nurses," and the titles "registered veterinary technician," "credentialed veterinary technician" and "licensed veterinary technician" would no longer exist.

Cushing says an advantage for the effort is that state veterinary practice acts fall under the purview of agriculture committees in most state legislatures—not health committees, which are less likely to understand the issues involved and control the agenda effectively.

"There are about 10 to 12 people on each agricultural committee in each house, and that's a manageable number to meet with," he said.

The group will be getting in touch with the veterinary school deans and state VMA leaders in each state they're targeting to gauge response to—and hopefully generate support for—the initiative's goals, Cushing says. They are also looking for grass-roots support from technicians and veterinarians as well as from organizations and industry.

"Hopefully by this time next year there will be one, two or three states that have taken the step," he said.

While opposition from human nurses is most likely inevitable, initiative co-chairs Kenichiro Yagi, MS, RVT, VTS (ECC, SAIM), and Heather Prendergast, BS, RVT, CVPM, SPHR, said leaders of national nursing organizations have become much more receptive when they learn about the training and education technicians receive and what they do on the job.

"It's very rewarding to see the switch flip from resistance to understanding when we describe our jobs to them," Prendergast said.

"We have compared the curriculums of veterinary technology programs to human nursing programs in schools that contain both," Cushing said. "At the very worst they're comparable. In my estimation most technology programs are actually more demanding. The argument that human nurses are somehow more superior healthcare providers goes away when you push it back to education."

Yagi said NAVTA's surveys have indicated that 60 percent of current technicians support the change to "veterinary nurse" and another 20 percent are neutral, meaning about 80 percent are in favor of or will not resist the group's efforts.

The group has created an extensive FAQ document and is working on a memo describing why this change is good for veterinarians.

"When I talk to veterinarians, the first thing they say is, 'Will I have to pay them more?'" Cushing says. "And my response is always, 'I hope so, because your practice is going to be doing so much better.' It's worth noting that the top-rated profession in surveys is always nurses. Incidentally, No. 2 is veterinarians."

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*90% of dogs in one group showed enhanced mobility; 88% of dogs in a second group showed enhanced mobility

References 1. Wolyniak CJ, Brenna JT, Murphy KJ, Sinclair AJ. Gas chromatography-chemical ionization-mass spectrometric fatty acid analysis of a commercial supercritical carbon dioxide lipid extract from New Zealand green-lipped mussel (*Perna canaliculus*). *Lipids.* 2005;40(4):355-360. **2.** Data on file. **3.** Data on file.

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ER: Animal edition

Nat Geo WILD's *Animal ER* showcases how hard vets and their teams work, the wonders of modern medicine—and where all that money from the bill goes.

By Christine Cox and Dacia Clay

Driving up to Gulf Coast Veterinary Specialists (GCVS) in Houston, Texas, you'd be forgiven for thinking you're in the wrong place. You first see an unassuming brick-and-glass square protruding from a wide swath of parking lot, all surrounded by dense forest. But after entering the "white box," as employees call it, and descending into the hospital proper, you quickly realize that the small building you entered is just the tip of a much larger iceberg and that there's a whole world below the surface.

Originally home to an architecture firm, the building's unique design blends structure with nature. Though near a Houston freeway, the windows of its main floor, set just above ground level, overlook natural forest growth. Inside, busy staff members circulate between oncology, surgery and dental wings, the maze-like halls creating the familiar disorientation of a human hospital.

As with any veterinary practice, most visitors only see the reception area and exam rooms. But the Nat Geo WILD show *Animal ER* is changing that. Viewers of the show, now in its second season starting Aug. 19, are getting to see below the surface and into the hospital's fascinating maze. More importantly, they're getting to see the veterinary skill and magic that happens in this most unusual place.

Why TV producers love this hospital

When Nat Geo WILD scouted veterinary locations for the show, they settled on GCVS, part of the Compassion-First veterinary hospital network, as a natural fit. The network airs other veterinary shows (including the controversial *Incredible Dr. Pol*), but this time they wanted a big hospital with cutting-edge medicine and a wide variety of animal clients, from exotics to house pets, that would generate compelling stories.

Danielle Inman in GCVS's Avian and Exotics department.

The now-TV-famous "white box" of Gulf Coast Veterinary Specialists, which opens in to a state-of-the-art animal hospital.

The film crew relies on remote and wireless devices to stay mobile. This monitor allows the production crew to watch what will become film for the show and report back to the cameraman while he's scrubbed into surgery.

Surveying the storyboards for the season, *Animal ER*'s executive producer Richard Hall says, "Gulf Coast's clientele is great because Texans own a range of animals, but there are also lots of animal sanctuaries here [in Houston] and private zoos."

> *"It was of the most exciting shoots the crew has ever been on. We were all biting our nails. Will the tiger survive? Will they get it out in time? Will it wake up safely from sedation? All of those things happened."*
>
> *—Richard Hall, executive producer,* Animal ER

GCVS also occasionally handles animals for the renowned Houston Zoo and features a veterinary team with specialties ranging from orthopedics to neurosurgery, critical care, oncology and nationally recognized dentistry. "It's a great place," Hall says, "because the doctors themselves are just really interesting people. And they do such groundbreaking work."

Animal ER features some of the hospital's state-of-the-art equipment and resources in its stories, including the facility's hyperbaric chamber, dialysis machine and cat blood-donor playroom. GCVS also boasts a 24-hour critical care unit in the main building and a secondary location focused on neurology. "People think you're limited in veterinary medicine with what you can do," says Michelle Fabiani, DVM, DACVR, "but every day I talk to people and say, 'Anything that you've ever done with your doctor, we can do.'"

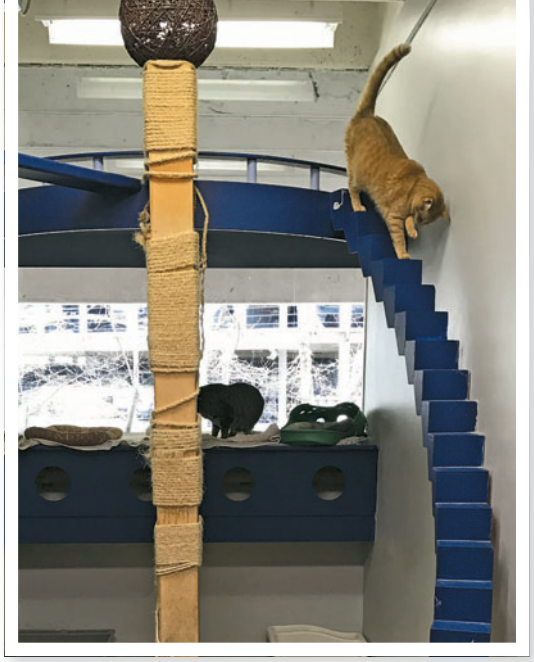
When your workplace becomes reality TV

In the first season, a dozen team members came in on a Sunday to perform a truly television-worthy hysterectomy on a tiger. Hall describes the event:

"It was a dicey surgery because the infection of the uterus was a lot worse than they thought. And of course with a tiger, you can't keep the anesthesia going for too long and you can't let

PHOTOS BY CHRISTINE COX

The crew of Nat Geo's *Animal ER* films Dr. Chanda Miles as she investigates a growth in a dog's jaw.



The cat blood donor room at Gulf Coast Veterinary Specialists, equipped with a private window and constant staff attention.

them wake up too soon. So there was a kind of race against the clock and a very real medical issue. But [the staff] responded really well. It was really one of the most exciting shoots the crew has ever been on. We were all biting our nails. Will the tiger survive? Will they get it out in time? Will it wake up safely from sedation? All of those things happened."

Uncommon surgeries like that create the compelling drama that viewers want from *Animal ER*. But what's it like for the surgeon performing the surgery to have a cameraman in scrubs hovering nearby? And what's it like to be a part of that camera crew?

For the staff of GCVS, the decision to participate in *Animal ER* wasn't an easy one. Medical director Heidi Hottinger, DVM, DACVS, explains: "I had incredible trepidation, because I thought this could be really invasive to my clients and staff. I just wasn't sure about how it would take place as well as how it would be portrayed."

But once the crew arrived, their professionalism put GCVS staffers at ease immediately. "You hardly even notice them," Dr. Hottinger says. "Our clients have been so accepting, too. The crew prearranges everything, so every client who's involved is fully willing."

And the crew doesn't just arrange filming for high-stress moments like the tiger's surgery. They see stories through as much as possible, from the exam room to counseling and follow-up appointments.

"They get a complete story from the moment the owner walks into the hospital," says Brittany Neal, DVM, DACVS.

Dr. Neal was on camera the day *dvm360* visited GCVS, performing surgery on a cat that had a mass in its right ear canal and an infection causing meningitis. She performed surgery with the film crew looking on.

"[During] the first season, I'd try to narrate while I was doing the surgery

so my sentences would come out very spaced out, and I noticed the editors would splice it all together," Dr. Neal says. "This year, I've learned to focus on the surgery when I need to and then narrate."

The *Animal ER* storyboard for season two, color coded by medical department.

The production crew watches camera shots and reports back on angles and sound, taking notes for future editing.

Dr. Brittany Neal and her team performing surgery to remove a tumor from a cat's ear that led to a meningococcal infection. She narrates the surgery while a cameraman captures the details on film.

A trickier aspect to film is the comprehensive imaging that GCVS offers. Dr. Fabiani reads images in the dark, but that doesn't exactly translate on TV, so the film crew has taught the doctors how to present their work to make the best impact on viewers. Season two will incorporate imaging that highlights complicated processes, such as performing an ultrasound on a penguin with thick skin and ice requirements that make a routine task complicated.

The crew also tweaked its approach from season to season, pivoting from a focus on the gorier and more extreme aspects of surgery to a focus on the veterinary surgeons and doctors as people and on what it can take for them to handle individual cases.

Showing why we do what we do

Everyone involved in *Animal ER*, from veterinarians to team members to film crew, work to showcase the true nature of animal hospitals and how the dedicated staff works every day to extend animals' lives.

Dr. Hottinger explains that the show has brought a truly unexpected element to the fore: "You don't always see the impact that you have on families, the good that you're doing and the result of all the long hours that you work. So many staff members, such as kennel technicians and surgery techs, only interact with patients. They never see the pet owners. I saw the team members show a renewed enthusiasm for their jobs because they watched the program."

The show also provides a unique platform to educate would-be pet owners, especially about certain breeds that have specific health and care needs, such as brachycephalics. In the current season, doctors tackle prophylactic gastropexy and concerns surrounding gastric dilatation and volvulus. They'll also highlight dermatology, oncology and dentistry. As Dr. Hottinger says, "Pet owners think the treatment is worse than the disease, so it's nice to educate people on what's available and why they don't just have to give up."

What sets *Animal ER* apart is the entire veterinary team's commitment to explaining the medicine. Grayson

Dr. Chanda Miles and her expansive dentistry knowledge get more coverage in season two, highlighting the necessity of good pet dental health.

Cole, DVM, DACVS, says, "Hopefully it comes across how dedicated and patient-focused we try to be, but also how much coordination, technology and equipment is required to do these procedures. There are obviously high costs associated with them, and I think once you see how much equipment and personnel time is involved, [your veterinary bill] starts to make more sense."

Chanda Miles, DVM, DAVDC, also notes that it's hard for pet owners to know what goes on behind the scenes, because "[they] just see how their pet acts when they get home. Your animal gets a team of people, an ICU staff person, general staff, and round-the-clock monitoring. The show displays all of that."

From the crew's perspective

Perhaps the significance of *Animal ER* is best illustrated by the effect it's had on the film crew, some of whom are from Los Angeles. As executive producer Hall explains, "We come here [to Houston] and live for eight weeks, and each year at least one of our members has brought their dog with them. And each year they bring their dog in for a checkup to take advantage of what's going on here."

The show excels at showing the bond between humans and animals and then taking it a step further to show the dedication of veterinarians. "They really wanted to portray the vet profession as where we are, where we have come," says Dr. Hottinger.

The film crew's admiration for the staff of the hospital shines throughout the show. As Hall puts it, "They're proud of what they're doing, and they do it really well. So we're celebrating their work."

Christine Cox and Dacia Clay are freelance writers in the Houston area.

Ticks And Canine Disease

The rise of ticks in the United States and the risk to your patients.

The Growing Threat

Ticks now pose a greater threat to dogs across the country than ever before.[1] Several species of ticks – and the diseases that they can transmit – are now commonly found in parts of the country where they previously did not exist.

What's to Blame?[2-6]

Some potential causes include:

- Reforestation
- Wildlife conservation, relocation and restocking
- Climate changes
- Migratory birds
- Decreased environmental pesticide application
- Increased human involvement in forested areas

A Year-Round Threat

Ticks are more than just a summer nuisance. These hardy parasites can thrive – and hunt – in temperatures as low as 40 degrees.[7] The rising populations of ticks across the U.S. have led to an increased risk of exposure for many pets. Given the resilience of ticks, this risk can be high for many months of the year, even year-round in some areas.

Where Ticks Prey

Ticks lurk in many of the places dogs love to go, including:

- Parks
- Nature trails
- Wooded areas
- Campsites

Even in urban areas, ticks can be brought into residential yards by hosts like white-tailed deer, raccoons, wild turkeys, coyotes, and the neighbors' pets.[2]

Tick-Borne Diseases

Blacklegged (deer) tick[8]
(Ixodes scapularis)

Associated with:
- Lyme disease
- Anaplasmosis

American dog tick[8]
(Dermacentor variabilis)

Associated with:
- Rocky Mountain spotted fever
- Tularemia

Brown dog tick[8]
(Rhipicephalus sanguineus)

Associated with:
- Rocky Mountain spotted fever

Lone star tick[8]
(Amblyomma americanum)

Associated with:
- Ehrlichiosis
- Tularemia

Complete Tick Life Cycle = Often Two – Three Years

Blacklegged Tick and Canine Lyme Borreliosis (CLB)

In North America, only one tick genus of veterinary importance has been found to effectively harbor and transmit the bacterial agent of canine Lyme borreliosis (CLB). The genus *Ixodes* includes the blacklegged tick *(Ixodes scapularis)* and the Western blacklegged tick *Ixodes pacificus)*.

I. scapularis is mainly found in the eastern half of the United States, though drier and hotter microclimates within this zone may not harbor as many ticks.

I. scapularis is a three-host tick, successively feeding on a different host during each of its three growth phases. It is mainly a forest dweller, spending most of its life either in the leaf litter – where moisture is high and the risk of drying out is low – or on leafy green vegetation lower than knee-height.[9]

The larval deer tick stage, active in August and September, is pathogen-free. CLB is carried by the nymphal and adult deer tick stages, which are active May through July and October through August, respectively.[10]

Lyme Disease Today

Canine Lyme disease has become a major concern in the United States and Europe over the last 20 years. More recently, the disease has been increasing in parts of the U.S. that previously only had sporadic cases. Practitioners face many challenges when it comes to Lyme disease.

1. **Diagnosis:** Verifying a sick dog that is serologically positive actually has Lyme disease.
2. **Treatment:** Determine what antibiotic to use, how much and for how long.
3. **Monitoring:** Determine when, and how, practitioners should monitor non-clinical dogs for evidence of *Borrelia burgdorferi* infection.
4. **Prevention:** Consider how practitioners can prevent Lyme disease from affecting their patients.

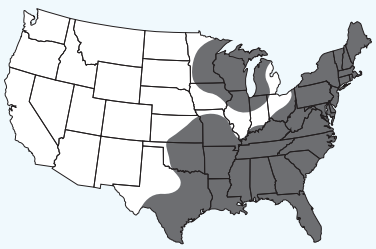
Diagnosis: The apparent lack of clinical signs in many dogs with Lyme infection can make the diagnosis of Lyme disease difficult. In fact, clinical signs, including those below, are observed in just 10% of infected dogs[11]:

- Lameness
- Joint/limb swelling
- Lymphadenopathy
- Lethargy
- Fever

Staying Alert

The key word is vigilance. Even if you do not live in a state that is known to be endemic for CLB, remember that many dogs and their owners routinely travel in and out of areas thick with *Ixodes scapularis* ticks carrying or infected with *Borrelia burgdorferi*. Awareness, knowledge of testing, treatment and prevention procedures are important for veterinary staff members, regardless of geographic location.

Areas Inhabited by Blacklegged Ticks[8]



A multipronged approach is important to help protect your patients against Lyme disease and the ticks that transmit it.

- **Vaccinate.**
- **Use tick control.**
- **Remove ticks daily:** It takes approximately 48 hours for an infected tick to transmit *Borrelia burgdorferi* to a dog.[12] Pet owners in areas with a heavy tick burden should examine their pet for ticks daily, and carefully remove any tick they find.

1 Dryden MW. Flea and tick control in the 21st century, challenges and opportunities. *Vet Derm.* 2009;20:435-440.

2 Blagburn BL, Dryden MW. Biology, treatment and control of flea and tick infestations. *Vet Clin N Am.* 2009;39(6):1173-1200.

3 Childs JE, Paddock CD. The ascendancy of *Amblyomma americanum* as a vector of pathogens affecting humans in the United States. *Annu Rev Entomol.* 2003;48:307-337.

4 Paddock CD, Yabsley MJ. Ecological havoc, the rise of white-tailed deer, and the emergence of *Amblyomma americanum*-associated zoonoses in the United States. In: Childs JE, Mackenzie JS, Richt JA, eds. *Wildlife and Emerging Zoonotic Diseases: The Biology, Circumstances and Consequences of Cross-Species Transmission.* Berlin Heidelberg New York: Springer Science + Business Media; 2007:290-324.

5 Foley JE, Nieto NC, Foley P. Emergence of tick-borne granulocytic anaplasmosis associated with habitat type and forest change in northern California. *Am J Trop Med Hyg.* 2009;81(6):1132-1140.

6 Ogden NH, St-Onge L, Barker IK, et al. Role of migratory birds in introduction and range expansion of *Ixodes scapularis* ticks and of *Borrelia burgdorferi* and *Anaplasma phagocytophilum* in Canada. *Appl Environ Microbiol.* 2008;74(6):1780-1790.

7 Tick Populations To Explode In 2013. Veterinary Practice News website. http://www.veterinarypracticenews. com/March-2013/Tick-Populations-To-Explode-In-2013/. Published March 28, 2013. Accessed July 12, 2017.

8 Center for Disease Control - Tick Geographic Distribution. http://www.cdc. gov/ticks/geographic_distribution.html. Accessed July 12, 2017.

9 Piesman J, Schwan TG. Ecology of *Borreliae* and Their Arthropod Vectors: In: Samuels DS, Radof JD, eds. *Borrelia, Molecular Biology, Host Interaction and Pathogenesis.* Norfolk, UK: Caister Academic Press; 2010:261-263.

10 Life-cycle of *Ixodes scapularis* (a.k.a. blacklegged or deer tick). University of Rhode Island Tick Encounter Resource Center website. http://www.tickencounter.org/PDF/LifeCycleOfIxodesScapularis.pdf. Accessed July 12, 2017.

11 Littman MP, Goldstein RE, Labato MA, Lappin MR, Moore GE. ACVIM small animal consensus statement on Lyme disease in dogs: Diagnosis, treatment, and prevention. *J Vet Intern Med.* 2006;20:422-434.

12 Kelly C, Lake S, Mather T. Estimation of the transmission probability of Lyme borreliosis. *Biometrical J.* 1999:6:735-751.

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NEX17TICKINSERT2 (08/17)

Veterinarians: The future of telemedicine is in our hands

As DVMs, we must stay in the policy-making driver's seat to protect our patients and the value of our services.

By Dan Randall, DVM

Nobody in the practice wants to see Charlie. Not me, not the technicians, not the other doctors. No one. It's not because Charlie doesn't look cute and cuddly. His tail wags. His expression is relaxed. He'll even approach you and let you pet his head.

It's because if you attempt to impose your will on Charlie—restrain him, pick him up, poke him with a needle—he transforms into a ferocious, 12-pound, eat-your-face-off, lunge-at-your-throat beast with the seeming strength of a grizzly bear and the speed of a feral cat. Even Charlie's owners are helpless in the face of his supernatural transformation. Everyone involved fears for his or her life. It makes for miserable exam room visits.

I'm sure I was subconsciously taking all of that into consideration when Charlie's owner called to request a refill of metronidazole we'd prescribed when Charlie had a recent bout of diarrhea. Even though he had been problem-free for months, this looked to Charlie's owner like his last episode and the metronidazole had cleared him right up. She was certain that was all he needed. I verified that he was still eating and drinking and his activity was more or less normal. Then, against my better judgment, I agreed to refill the prescription. I told Charlie's owner that if his diarrhea didn't improve after two doses, I wanted him in for a recheck. I wasn't totally surprised when I saw his name on my appointment schedule two days later.

Wait, something's *in there?*

I went into the exam room to speak to the owner, carefully ignoring Charlie so he didn't think I was going to touch him. He looked like a little dust mop. He couldn't be groomed without sedation and his owner had to be especially careful bathing him. Brushing was out of the question. The slightest restraint would trigger his fearful transformation.

His owner reported that she hadn't seen any change in his bowel movements since starting the metronidazole. He was still straining and making small, semi-formed stools. I informed her that I needed to get my hands on him to do a good physical. She reluctantly agreed.

We used our "distract and pounce" technique to bundle Charlie in a blanket so his teeth were neutralized by the fabric. With him wrapped up tight, a technician administered a sedative in his back leg. We carefully released him to his owner's care while the sedative kicked in. Then we backed cautiously out of the exam room using our blanket like a bullfighter's cape in case he decided to come after our ankles in retaliation.

A few minutes later, when I picked Charlie up off the floor and carried him back to the treatment area, I noticed that he felt a little swollen by his tail. With his long, matted hair coat, I couldn't tell anything was unusual just by looking. But when I scooped my hand around his back end to lift him up, I could tell it didn't feel quite right. I laid him on the exam table and began poking and prodding. The clinical picture began to come into focus. Charlie wasn't having diarrhea at all. In fact, Charlie's colon was packed full of formed poop. His prostate was huge and both the colon and prostate were reflected caudally into a perineal hernia next door to his tail that was perfectly hidden under the long, thick dreadlocks that covered his body. He was straining to push whatever semi-formed poop he could out the exit door, making it appear to the owner as if he had colitis.

I informed the owner of our findings and we scheduled his surgery. No telling how long Charlie had been suffering miserably. It was at least two days longer than it should have been.

What you don't see

Charlie's case is a good example of the limitations of telemedicine. There are factions within our ranks pushing aggressively for more widespread use of telemedicine in our profession, but in this case telemedicine would have been dangerous. Often our initial impressions based on a client's observations end up being wrong. Pet owners don't intentionally mislead us, but they often misinterpret what they see at home. Hardly a day goes by that I don't have to gently convince an owner that her coughing poodle doesn't have something stuck in its throat ... or that the cat isn't vomiting but coughing ... or that the dog doesn't have constipation but diarrhea. Owners don't know what they don't know. As the doctors involved, we're tasked with sorting it all out.

Our counterparts in human medicine aren't faced with this exact same dilemma. They have the luxury of a verbal patient who, in most situations, can provide a first-person account of their history and symptoms. They can pinpoint pain, describe sensations, answer questions and follow instructions. Our patients cannot. As my colleague Matthew Edson, DVM, has said before, a human patient telling a physician he has a stomachache is very different from a pet owner telling a veterinarian he thinks his dog has a stomachache.

Is there a place for telemedicine in veterinary medicine? Yes. I would argue that we've been using telemedicine for years and that those of us in the trenches have learned when it's helpful and when it's dangerous. The recently published AVMA position paper on telemedicine is very clear in specifying that telemedicine can be a useful tool in the context of an existing veterinarian-client-patient relationship (VCPR) to improve client communication, document progress and aid in making clinical care decisions. However, I don't believe telemedicine alone, with technology as it exists today, is sufficient for establishing a VCPR.

Hardly a day goes by that I don't have to convince an owner that her coughing poodle doesn't have something stuck in its throat or that the cat isn't vomiting but coughing.

My fervent hope is that veterinary clinicians in academia and private practice will not cave to corporate interests or public pressure on this issue. I hope we confront greed and misinformation by educating the public and providing insight into the complexity of diagnosing disease in animals. I hope primary care veterinarians will insist on staying in the driver's seat in the policy-making process as we move forward to protect the value of the services we provide. And I hope we manage to balance the potential economic benefit of telemedicine with the safety of our patients and the integrity of our profession.

Dan Randall, DVM, is the owner of Foothill Veterinary Hospital in Greenville, North Carolina, and a member of the AVMA Practice Advisory Panel on Telemedicine.

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Living the vet school dream means taking responsibility for choices

One *dvm360* reader says it's not his job to bail out a young veterinarian who makes ill-advised financial decisions.

Student debt has become a regular feature of our professional publications and has risen to a level of concern for many in our profession. This is clearly a multifaceted issue influenced by escalating costs, technological advances, declining state support and, not least, poorly thought out personal choices.

In his June 2017 commentary, "What $300,000 in student debt does to the vet school dream," Justin Sahs asks us to share any wisdom that will help make his dreams a reality. The reality is that people need to take ownership, personal responsibility and accountability for their decisions and not pursue a dream expecting others at some future time to bail them out of those ill-advised actions.

With a degree in biology and chemistry one could secure a position in medicine, technology, or some other industry making multiple times the wages Sahs earned the last three years as a "veterinary nurse," allowing him to save more money to pursue his dreams. Also, according to a publication from the Association of American Veterinary Medical Colleges (AAVMC), Sahs chose to attend an institution with one of the highest levels of out-of-state tuition. He could have spent his three years in a higher-paying job and establishing residency in a state with a veterinary school, bringing the total costs down to a manageable future.

Pursuing your dream at any cost is no better a decision than purchasing a car or house you cannot afford and thinking your fellow taxpayers should help you out.

Pursuing your dream at any cost is no better a decision than purchasing a car or house you cannot afford and thinking your fellow taxpayers should help you out. Not frequently discussed is the simple economics of these decisions for the future. As long as there are those willing to borrow money disproportionate to their income potential, universities will continue to escalate the costs. It's Economics 101.

—Robert M. Mason Jr., DVM
Kokomo, Indiana

Yes, great carpenters make great surgeons

Dr. Brock's column stirs up fond memories for this fellow practitioner.

STAMPEDE | Bo Brock, DVM

Veterinary surgery, junior high edition

Wood-n't you know, I credit my capabilities in the veterinary surgical suite to my junior high school woodworking teacher.

In 1978 I walked into a woodworking class at Fannin Junior High School in Amarillo, Texas, with no idea how it would influence my life. The shop was in the northeast corner of the school, far enough away from the rest of the campus that the constant noise of power tools wouldn't interrupt other classes.

The woodworking teacher, George Howle—a big man who'd played college football—was the largest man I'd ever seen as a scrawny eighth-grader. Equipped with a giant mustache and cowboy boots, he spent the entire first class talking tough to us about safety around power tools and the dangers of shop class.

Mr. Howle had developed a thriving industrial arts club at the school and would spend countless hours in the shop almost every night helping students with projects for competitions or for class. Even though he put on a tough cowboy act, he had the heart of a teddy bear and never seemed to quit teaching.

I became very involved with woodworking and, though I probably wasn't very good at it, Mr. Howle made me feel like a master. I built projects and took them to state competitions. For the two years I took shop from Mr. Howle, I kept trying and learning.

What has all this to do with being a veterinarian? Twelve years later I was standing in front of a group of friends and professors at a banquet toward the end of my fourth year of veterinary school. I had been given an award, voted on by the professors, for being the most outstanding student surgeon that year. I knew I was not the most talented surgeon in that class, but I was the most prepared to do surgery, all because of Mr. Howle.

I had to say a few words as I accepted this award, and I spent every word I had praising my junior high shop teacher. I explained that he had already taught me most of the things we did in surgery—lag screw fixation, tapping and drilling, estimating and measuring angles for fixation and applications. He had taught me how to cut with and against the grain and which blade worked best for each. He had taught us plumbing and how to join pipes of different diameters as well as how to suture leather and work with pleats. He had taught me to think like a draftsman and have all of the plans ready in my mind before I started the building.

I didn't realize until near the end of my veterinary training that almost every surgery we performed on animals was borrowed from someone like Mr. Howle who was already doing it on wood or metal or pipes. I was ready to be a builder using wood and steel long before I got a chance to do almost the exact same things on living tissue.

As luck would have it, Mr. Howle retired a few years back and now lives just 30 miles from me. I go to his shop and build projects even to this day. He is still teaching me, and I still learn new ways to be a better surgeon from him. I love bending wood and building rocking chairs with George Howle, and I can't thank him enough for taking me under his wing all those years ago.

A few weeks ago, Mr. Howle was inducted into the Technology Student Association Hall of Honors, the highest award that can be given to someone who's spent their life teaching students in ways that changed them forever.

In recent weeks I've been pondering the effects of a good teacher. Good teachers show us how to think and how to do things, even more than they realize when they're doing it. There's no way Mr. Howle had any idea he was teaching a puny eighth grader named Bo how to be a surgeon someday—but he was. dvm360

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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Regarding Dr. Bo Brock's recent column on his experiences with wood shop and veterinary surgery: I have a Mr. Howle in my past as well. His name was Joe Carlat. He taught me wood shop at Richardson High School during the 1964-65 school year.

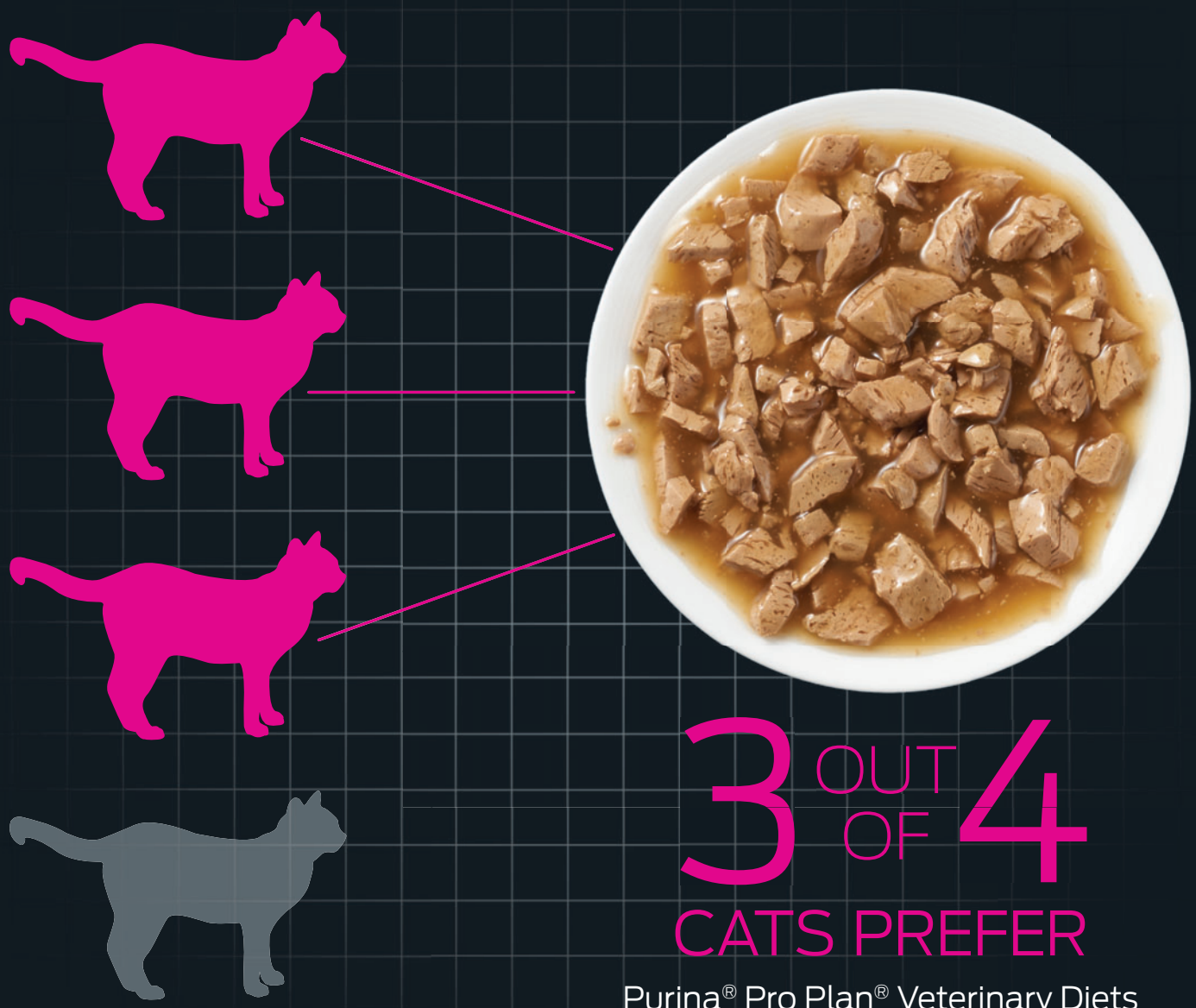
My grandfather was a carpenter, so I guess I got the carpenter gene from him. It is pretty much the only explanation for why I took wood shop. It opened a whole new world for me that continues to this day and that has allowed me to develop my philosophy of what constitutes a "good project." A "good project" is one that requires that you purchase a new tool. I love tools and have a plethora of them because of that philosophy. It is also notable that my grandfather told me, "If you take care of your tools, they will take care of you." I share that with all of my newly employed veterinarians.

I love surgery and believe that I'm fairly accomplished in the art and science of it. Although I only practice on cats, I have mastered and even pioneered several surgical procedures, including frontal sinus obliteration, rhinotomy, bulla osteotomy, total ear canal ablation, thyroidectomy (parathyroid transplant technique), nasopharyngotomy, ACL repair, luxating patella repair, hemimandibulectomy, colectomy, perineal urethrostomy and perivulvoplasty. Like you, I attribute much of my veterinary surgical success to my shop teacher. I have told many externs who have visited my practice that "a great carpenter makes a great surgeon."

Thank you for bringing up some great memories.

—Gary D. Norsworthy, DVM, DABVP (feline)
Alamo Feline Health Center, San Antonio

3 Out of 4.
Need We Say More?



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A soothing experience: Custom pain management through alternative therapies

Traditional Chinese medicine gives Dr. Sally Barchman an opportunity to create a unique pain management treatment plan for each veterinary patient. *By Katie James, associate content specialist*

For Sally Barchman, DVM, CVA, owner of State Line Animal Hospital and Holistic Health in Leawood, Kansas, her interest in acupuncture and traditional Chinese medicine stems from honoring the memory of a late colleague and friend. Today, inside the spa-like atmosphere of her integrative medicine space, pets in pain find relief.

"I was practicing in the main hospital and it wasn't as zen I imagined it could be. So now in the space we have a running fountain and use an essential oil diffuser, and the walls are in a softer-color paint. We have the tools that we need but try to keep it minimalistic," Dr. Barchman says. Soft music and comfortable rugs on the floor and exam table complete the space, which is in a leased building across the street from the main hospital.

Traditional Chinese medicine is made up of five components: acupuncture, food therapy, Chinese herbs, exercise and tui na, which is a type of massage. At Dr. Barchman's practice, instead of massage, a chiropractor not only performs chiropractic adjustments on the animals but also does deep tissue manipulation and myofascial release. Dr. Barchman is certified in veterinary acupuncture and is also working toward her certification in food and Chinese herbs.

When an animal presents with signs of pain, Dr. Barchman completes a traditional exam, but then also checks the pet's tongue and pulse diagnosis to direct her treatment plan.

"You look at the tongue's color and whether it is dry or wet, and feel the strength and speed of their pulses, to see what's going on," she says. Dr. Barchman also discusses food and Chinese herbs with clients in addition to acupuncture.

"There are yin and yang properties in every food, so if an animal presents with hot signs, you want to cool them down; with cool signs you want to warm them up. This can be done with things like changing up

The treatment space includes soft mats, a water feature and salt lamp, and neutral paint on the walls.

PHOTOS COURTESY OF TROY VAN HORN

Dr. Barchman performing acupuncture on her dog.

the protein in the pet's dry food or home-cooking meals," she says.

When combined with food and herbs, acupuncture can be performed less frequently, Dr. Barchman says. "Acupuncture is the more expensive part of it, so if we can use food and herbs to help balance out the body, the acupuncture treatments can be done less often," she says.

The plan is tailored to what each patient and client needs and is able to do. "If a client says I just can't cook for my pet right now, we'll discuss other options," Dr. Barchman explains.

"It depends on what's going with that animal on that day. It goes a little deeper than just giving an NSAID and moving on," Dr. Barchman says. "Whatever the client wants to do is what we'll do and what works best for the animal. We'll often try a combination of Eastern and Western medicine. I tell the client, 'A quick fix is medication, but it doesn't always fix the underlying cause.' So sometimes if it's a really painful condition we'll start with medication but then follow up with acupuncture and herbs to try and get them off the medication eventually or prevent the condition from occurring again."

The flexibility of combining alternative and traditional therapies allows Dr. Barchman to provide a complete solution for each patient she sees, she says. And even though these modalities typically require follow-up appointments over a period of time, she doesn't have problems with client compliance.

"Usually the people who are seeking out holistic care are really dedicated, so we don't have too much of a problem with people not coming back," she says. One thing that helps is that often, especially with painful conditions, results are seen after just one session, she says.

That's not always the case, though, so Dr. Barchman came up with a package plan to encourage follow-through. "If people buy four follow-up treatments, they receive half off of their consult price. In five treatments you should see what's going to happen, so I encourage the package. If they aren't really believers I try to have more than just one treatment to have a chance to help the animal," Dr. Barchman says.

"Our purpose is loving on people by loving on their pets through high-quality, integrative medicine," Dr. Barchman says. "So we'll tailor the plan to whatever the client wants to do."

Life-saving pointers for parvo puppies

Fragile parvovirus puppies *can* make it through. Here's how.

By Mindy Valcarcel, Medicine Channel Director

In a discussion at the International Veterinary Emergency and Critical Care Symposium in Grapevine, Texas, Medora Pashmakova, DVM, DACVECC, had a key message: If you help puppies survive the first three to four days of parvovirus infection, they usually make a rapid recovery. Easier said than done, though, right? Here are Dr. Pashmakova's hints on getting these delicate patients successfully through all four stages of therapy.

First, treat the patient for shock. Dr. Pashmakova says crystalloids are the best choice in these patients. She recommends fluid boluses of 30 ml/kg. The pattern: administer the bolus, reassess the patient, repeat the bolus, reassess the patient … You get the picture. A trick for boluses in puppies is to administer them as quickly as possible—don't use a fluid pump that delivers over 20 to 30 minutes. Boluses should be complete within 10 minutes to replenish volume and treat shock.

Second, rehydrate the patient. It's hard to properly detect dehydration in pediatric patients because of many factors, says Dr. Pashmakova: One, their total body water content is 10 to 20 percent higher than adults'. Two, normal measures of dehydration just don't work (skin turgor is hard to assess, and the kidneys don't even work well until 9 to 10 weeks of age). And three, the cardiovascular system is immature and tachycardia is not a reliable indicator of shock as it is in adults.

So how can you detect dehydration? Dr. Pashmakova says to suspect it in any puppy experiencing diarrhea or vomiting. Look for things such as a urine specific gravity of > 1.020, cold extremities, dull mentation and pale mucous membranes.

To rehydrate the puppy, Dr. Pashmakova uses an intravenous rather than subcutaneous (SQ) route since SQ fluids take longer to circulate. She also uses a weight scale to measure rehydration. For example, if you think the patient is about 5 percent dehydrated and weighs 10 kg, at correct hydration it should weigh about 10.5 kg. She recommends making this measurement scale part of the treatment sheet and measuring weight frequently, especially when gastrointestinal (GI) losses are profound. The scale can help you measure losses as well as rehydration goals. Waiting 12 to 24 hours until the next body weight can set you far back. Start by measuring body weight every four hours to direct fluid therapy.

Third, replenish GI losses. Dr. Pashmakova says veterinarians do pretty well on the first couple of steps of parvovirus treatment. It's this third one that often results in mortality. "GI losses is where we often fall behind," she says.

The key is finding a way to quantify the loss from diarrhea and vomiting. Dr. Pashmakova says you likely need more than two or three times the maintenance rate. She recommends measuring how much the patient has lost every two or three hours (see "Calculated fluid rate case example"). A calculated fluid rate in a parvo case can actually be six to seven times maintenance, which is why she advocates objective metrics rather than multiples of maintenance.

Again, crystalloids are the mainstay of therapy in these patients. Synthetic starches have been used for decades to aid hypoproteinemic patients, but the vasculature in sick (septic) patients does not retain starches the way it does in healthy patients, Dr. Pashmakova says. Starches are just as likely to leak out through damaged endothelium as crystalloids, dragging more crystalloid with it. Human medicine has documented significant morbidity associated with synthetic starches, especially in patients with sepsis and acute kidney injury. For this reason, the pendulum in veterinary critical care has swung away from using starches on a routine basis.

Fourth, provide metabolic maintenance. Early enteral nutrition, such as with CliniCare (Abbott), Purina Pro Plan Veterinary Diets CN Critical Nutrition (Nestlé Purina), or Emeraid (Emeraid), has been proven to make a difference in patients with parvovirus, says Dr. Pashmakova. In one study, it resulted in shortening hospitalization by one day.[1] Even though patients will likely vomit some of what you're feeding, even half retained is something.

She says placing a tube in a vomiting patient that's unsupervised in an isolation ward is risky, but if you do choose to place a nasogastric feeding tube, be sure to obtain radiographic confirmation (Figures 1-5), note the length of placement, and reradiograph if you have concerns of dislodgement.

Cost-savings measures. Good news: Dr. Pashmakova says many traditional parvovirus measures aren't vital, which can save your clients money. For example, these puppies don't need plasma transfusions or antiviral or recombinant therapies that are expensive and not proven to make a difference. If there's no evidence of bleeding, coagulation testing is also unnecessary. The mainstays of therapy (providing fluids and nutrition, measuring electrolyte concentrations daily and performing a blood smear) give you the tools to treat and diagnose the most significant aspects of this process.

Calculated fluid rate case example

Why shouldn't you just do multiples of the maintenance rate in puppies with parvo? You may not be delivering a sufficient amount of fluids, says Dr. Pashmakova. Take the case of a 10-kg dog:

Fluid delivery with a straightforward multiple of three times the maintenance rate: 10 kg x 60 ml/kg/day x 3 for 24 hours = 75 ml/hr

A calculated plan delivering adequate fluids: Rehydration (5% x 10 kg = 21 ml/hr) + GI losses (75 ml/hr) + metabolic needs (90 ml/kg/day x 10 kg = 37 ml/hr) = 133 ml/hr

That's almost twice as much fluid!

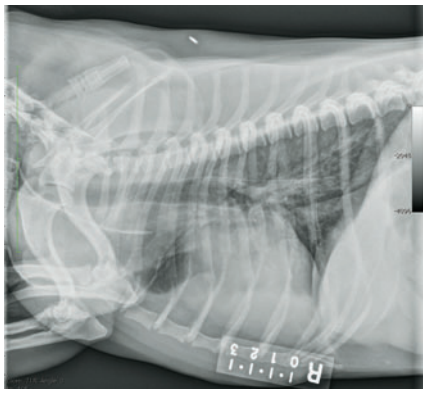

Figure 1: A right lateral radiograph showing a well-placed naso-esophageal tube.

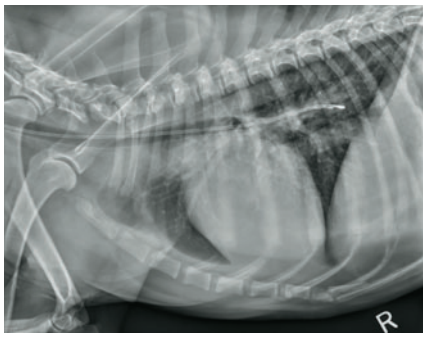

Figure 2: A right lateral radiograph showing a naso-esophageal tube possibly in the airway.

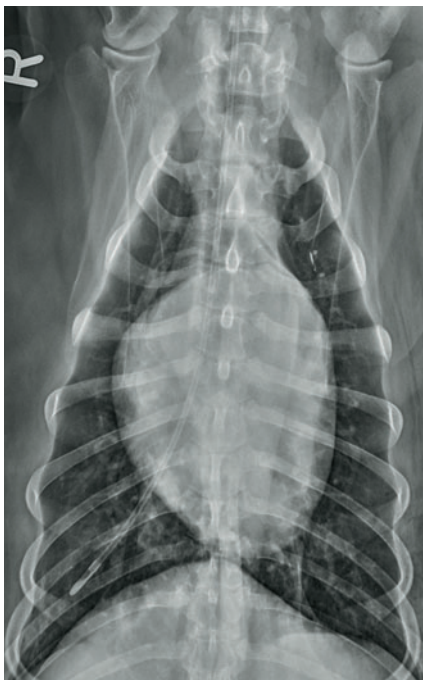

Figure 3: A dorsoventral radiograph of the same patient as in Figure 2 showing the tube is in the airway.

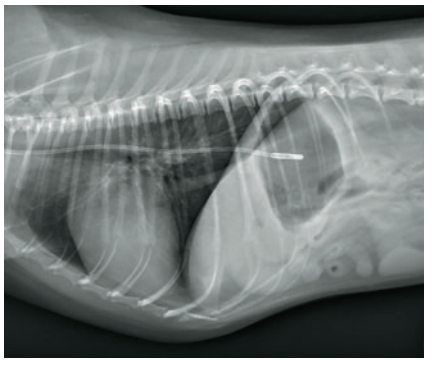

Figure 4: A right lateral radiograph showing a naso-esophageal tube looped in the cervical esophagus.

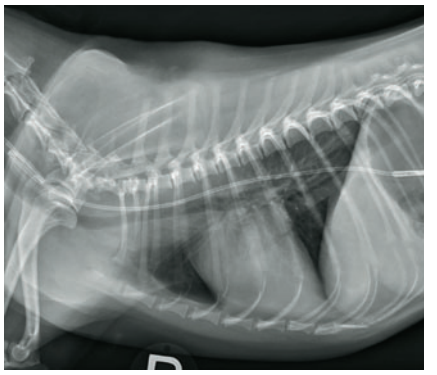

Figure 5: A more expanded version of Figure 4, highlighting the loop in the cervical esophagus. Note that if you don't include the neck in the image, you might not see it.

Reference

1. Mohr AJ, Leisewitz AL, Jacobson LS, et al. Effect of early enteral nutrition on intestinal permeability, intestinal protein loss, and outcome in dogs with severe parvoviral enteritis. *J Vet Intern Med* 2003;17:791-798.

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Southwest through and through. Hospital owner Dr. Daniel Levenson says the hospital's exterior fits in with the Southwest region with its metal roof, covered porch entry with wood beams and xeriscaped landscape of drought-resistant plants.

Designing with room to grow

Moving from a leased space on a semi-rural road to a spot on a busy commuter road, find out how Southwest Veterinary Medical Center scored its dream location in Albuquerque, New Mexico. *By Ashley Griffin*

When it came to finding the perfect site, the team at Southwest Veterinary Medical Center got lucky.

"It was one of the last vacant lots that really fit our criteria," says Daniel Levenson, DVM, owner of the hospital in Albuquerque, New Mexico.

Opening Southwest Veterinary Medical Center almost 10 years ear-

Light up your reception. When clients enter Southwest Veterinary Medical Center, they see an open lobby with a U-shaped reception station large enough for multiple receptionists but efficiently designed for single operation. "We added pendant lights we found on Etsy that add class to our reception desk," Dr. Levenson says. "These lights were made from antique insulators found on poles near railroads."

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*Sensitivity represents the ability to correctly identify positive samples.
†Specificity represents the ability to correctly identify negative samples.

References:
1. Data on file, Study Report No. D886R-US-17-038, Zoetis Inc.
2. Data on file, Study Report No. D886R-US-16-033, Zoetis Inc.
3. Data on file, Study Report No. D886R-US-16-032, Zoetis Inc.

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360-degree exams. Of the four double-door exam rooms with direct access to treatment, three are configured as "one-wall" exam rooms. "This design allows 360-degree patient access for the doctor and technician while maintaining contact with the seated client," the team wrote in their Hospital Design Competition entry. Each exam room has bench seating which allows for storage and removes a common hiding spot for pets. Two of the exam rooms feature fold-down tables. "This really helps us see big dogs without a table in the way," Dr. Levenson says.

Break it up. The welcoming staff lounge was important to Dr. Levenson. "I wanted the team to have a comfortable place to hang out that was large enough for staff meetings and for things like a couch, a dishwasher and a TV," he says.

lier, he and his team wanted to stay within one mile of their original location for the sake of their current clients. So they were thrilled to find the perfect lot near a busy highway that was less than a mile from their current space. The location was so good that they came close to losing it to a restaurant developer.

Lucky for the Southwest Veterinary team, however, that deal fell through. So they wrote a new offer in 48 hours, put an earnest deposit in the bank and built a new hospital on the coveted site. And that building earned a Merit Award in the 2017 *Veterinary Economics* Hospital Design Competition.

"We finally got our corner lot at a stoplight on a busy highway," Dr. Levenson says.

Southwest Veterinary Medical Center: By the numbers

Owners: Daniel Levenson, DVM; Jill Levenson, RVT

Number of doctors: 3 full-time, 1 part-time

Exam rooms: 4

Total cost: $2,022,524

Building cost: $1,005,667 (Cost of building only; excludes land purchase, landscaping, parking lot, etc.)

Cost per square foot: $106.93

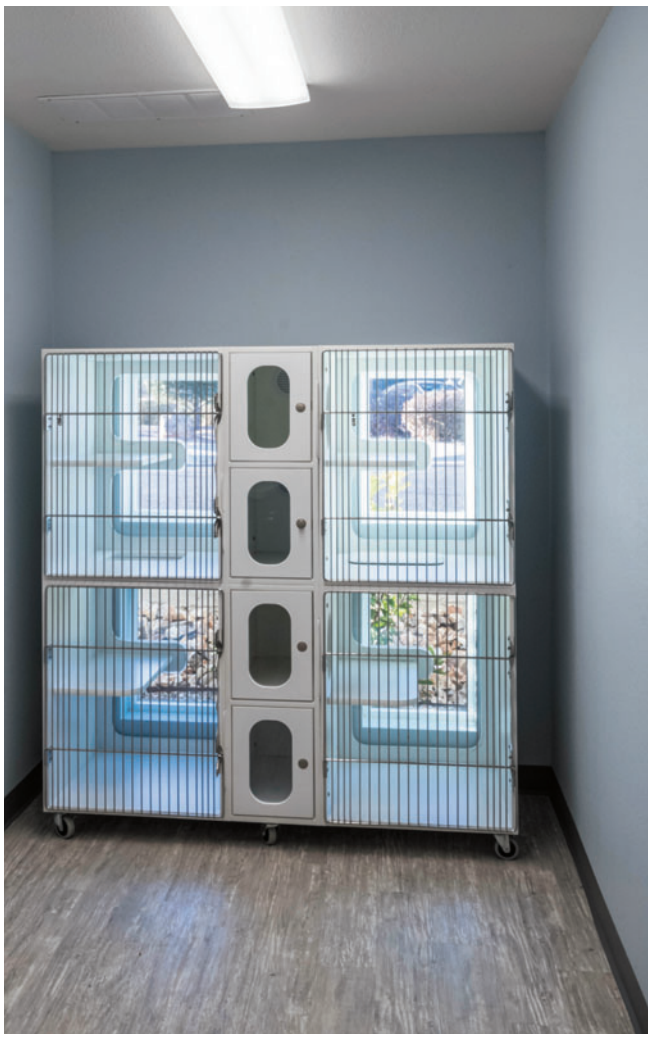
Square footage: 6,038

Structure type: New freestanding

Architect: Wayne Usiak, BDA Architecture

Photographer: Kirk Gittings, Kirk Gittings Photography

Cool it. Dr. Levenson wanted a cool (literally) surgery suite with built-in shelving for pack-prep access. "We put a mini-split heating and cooling unit on the wall so I can control the climate in that one room," Dr. Levenson says. "This is really important when I get hot performing surgeries."



Room with a view. These cat condos are strategically located to match up with the glass in the hospital's exterior wall. This way, the cats get a room with a view.

Treat your patients. The centralized treatment area was designed for efficiency. It contains a pharmacy, a laboratory, a treatment island, a dental station and a doctor/technician workstation—all in about 550 square feet. Isolation is located in the corner. It is out of the high-traffic zone but still allows for maximum observation of critical patients. When it comes to lighting, LED lights fill the entire hospital. "These cost more upfront, but they really reduce the electric bill, and we don't have flickering fluorescent bulbs," Dr. Levenson says. "And when I do exams, the color of the patient's skin and gums is real!"

Here's how Dr. Levenson went about creating the veterinary hospital of his dreams, including dreams of future growth and development:

1. He turned wish lists into checklists

Dr. Levenson knew exactly what he wanted in his new hospital. Take a peek at some of the top items he shared with his architect, Wayne Usiak of BDA Architeture, and team.

New-site checklist:

- Stick to the budget
- Gain street visibility
- Stay within one mile of the original practice in order to keep current clients

Hospital design checklist:

- Large, open lobby area with soothing colors
- No confusing hallways for clients to navigate
- Separate dog, cat and exotic boarding areas to reduce patient fear and stress

Team checklist:

- Individual staff lockers
- Writing counter adjacent to ICU for convenient access
- Modern, staff-only bathroom

"My staff is like family, and they deserve to work in a place that they're proud of and that reflects my pride in their work," Dr. Levenson says.

2. He gave himself room to grow

Moving from a leased space on a semi-rural road in suburban Albuquerque to one of the busiest commuter roads in the area, Dr. Levenson wanted to plan for expansion.

"Even though the economy was up and down at the time, our business was slowly growing. With no other new practices coming into the area, we could see ourselves getting bigger in the future," Dr. Levenson says.

The hospital occupies about 5,000 square feet of a 9,550-square-foot ground floor space. There are two adjacent 2,000-square-foot suites for lease with separate storefront entries that will allow the hospital to expand in the future. In the meantime, these spaces provide valuable rental income and create additional client traffic.

"One lease space was immediately filled by the local humane society for an adoption center. This further cements our location as 'Pet Central' and provides an opportunity for new clients through pet adoptions," the team wrote in their Hospital Design Competition entry.

3. He saved his energy

Going green was also a priority for Dr. Levenson and his team. They made sure their building was as efficient as possible while sticking to their budget. Here are some of the features they incorporated:

- Tankless water heaters
- LED bulbs throughout the hospital
- Xeriscaping on the exterior lot with a drip water system

"We wanted to conserve energy where we could and reduce our energy footprint as much as possible," Dr. Levenson says. "This hospital helped us achieve these goals and provide the best service to our clients."

Ashley Griffin is a freelance writer based in Kansas City and a former content specialist for dvm360.

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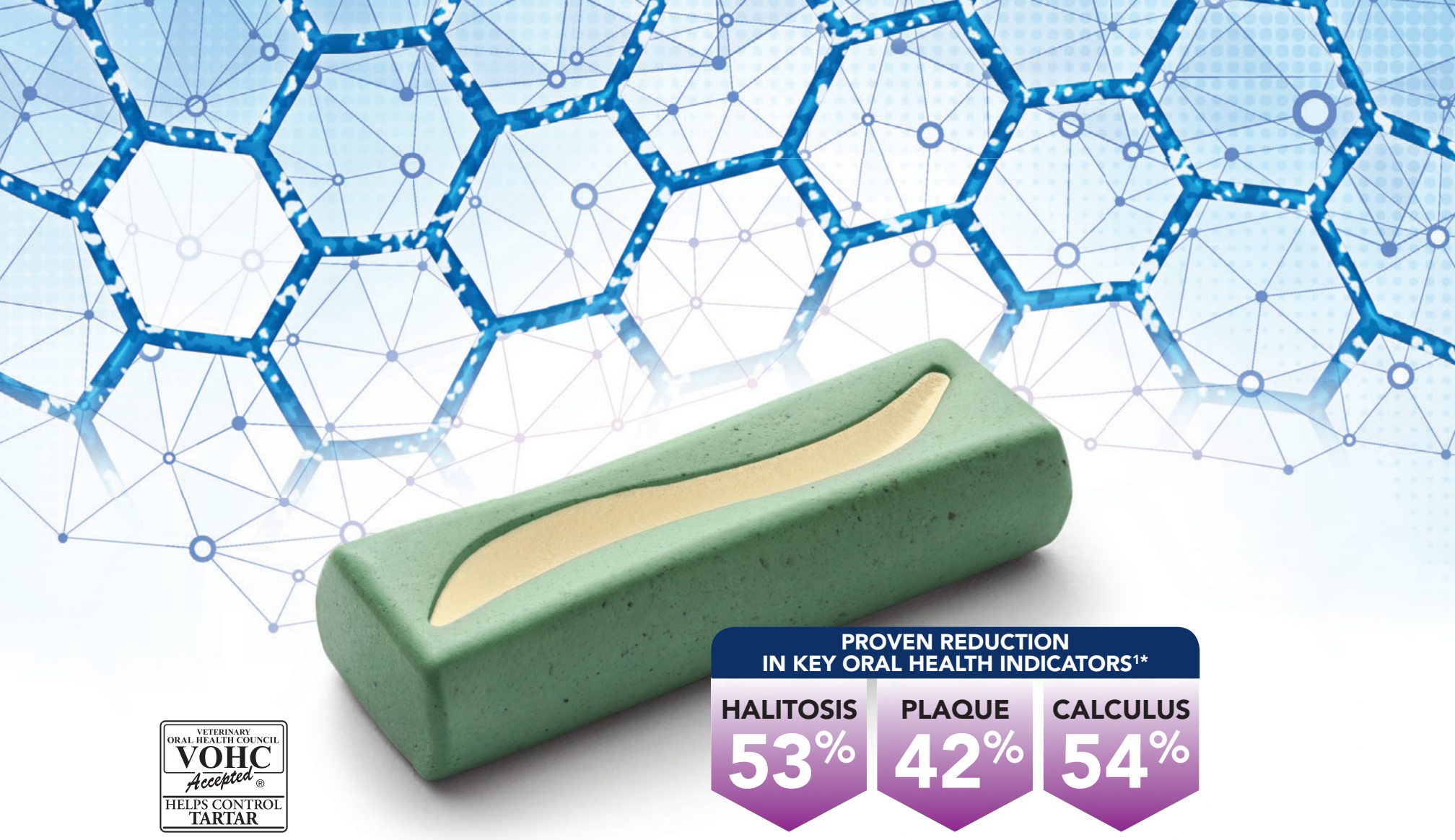

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References: 1. Data on file. **2.** Steinberg D, Beeman D, Bowen W. The effect of delmopinol on glucosyltransferase adsorbed on to saliva-coated hydroxyapatite. *Archs Oral Biol*. 1992;37:33-38. **3.** Vassilakos N, Arnebrant T, Rundegren J. In vitro interactions of delmopinol hydrochloride with salivary films adsorbed at solid/liquid interfaces. *Caries Res*. 1993;27:176-182.

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Cannabidiol: A new option for patients in pain?

More research on effectiveness is needed, but unless adverse events are reported, it's a treatment worth keeping in mind for your painful veterinary patients. *By Michael Petty, DVM, CVPP, CVMA, CCRT, CAAPM*

Cannabidiol (CBD) has been receiving increasing attention for its use in the treatment of pain in veterinary medicine. Unlike marijuana, which is a class 1 substance that contains varying levels of its active ingredient tetrahydrocannabinol (THC), cannabidiol is an extract of the hemp plant that has THC levels lower than 0.3 percent.

CBD affects the endocannabinoid receptors, which are located in both the central nervous system and the peripheral nervous system. Endocannabinoid receptors are very important as they function to maintain body homeostasis. CBD is deeply involved in those endocannabinoid neurotransmissions in that they upregulate and downregulate neural transmissions as needed to maintain that homeostasis, helping keep the body in a normal and healthy state. Although we're focusing here on the use of CBD for pain in animals, other known actions in humans include the downregulation of anxiety, noise phobia, epilepsy, inflammation, emesis and anorexia, among other actions.

The "magic" of treatments that both upregulate and downregulate neural transmissions is that they always act to move the body toward a normal state and therefore don't shift things in the wrong direction. Acupuncture is another treatment known to have the same type of homeostatic action.

In other words, both acupuncture and CBD work quite unlike many pharmaceuticals. Most pharmaceuticals only stimulate upregulation or downregulation, making it possible to move body systems out of their normal or homeostatic state. Because CBD works toward homeostasis, it doesn't do this, making unwanted side effects rare and giving CBD a good safety profile.

There's currently very little published research on the use of CBD in animals. Some research is being performed at Colorado State University on the use of CBD for pain, but as with most research projects, the results won't be available for some time. Therefore, practitioners who want to recommend or dispense CBD must do so based on information from anecdotal evidence—one of the worst types of evidence to rely on.

As a pain practitioner, I'll carefully consider utilizing treatments with little or no research behind them as long as

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there don't seem to be reports of serious adverse events. Our drug armamentarium for pain in veterinary medicine seems woefully deficient, especially when we're dealing with a patient that doesn't respond to proven and approved therapies. However, if we're willing to utilize the unproven treatments, we must also be prepared to discard them if they're eventually shown to have no real evidence supporting their use or when unacceptable side effects or adverse events present themselves.

I've encouraged many of my clients to use CBD to treat the pain of degenerative joint disease and other chronic conditions in their pets. The results have been mixed—but that's true of proven treatments such as nonsteroidal anti-inflammatory therapy too. In patients where CBD has worked, my clients have reported a decrease in pain, improved sleep patterns, increased appetite, improved attitude and an overall improvement in quality of life. Again, these clinical impressions are not research and don't carry the weight of well-done studies, but they certainly offer hope for an additional pain treatment.

What's more, veterinary clients are already using CBD for their dogs and cats with or without our input, and for a variety of reasons besides pain. Many internet-based businesses have robust sales of CBD. Most states allow the import of hemp-based products as long as the THC level is at 0.3 percent or lower. Most commonly it is being used to treat pain, but it's also used for anxiety, seizures, anorexia, vomiting and as a sleep aid. Clients buy these products without any knowledge of the extraction process, which can have a profound effect on the amount of CBD that is bioavailable. Some companies buy their hemp from Chinese sources, which are often associated with high concentrations of heavy metals and pesticides. Some companies have no quality control and wildly varying concentrations of CBD, including no CBD in their products.

As clinicians, we want to know which company has the best product, what the concentration of the product is, and what quality control and testing have been done for dangerous heavy metals and pesticide contamination. But we may not have better luck than our clients. For example, I've reached out to several popular companies selling CBD products to get basic information about quality and testing, but none have ever responded. The FDA did some testing on CBD products and found that label claims rarely matched the actual content. Some didn't even contain CBD. The results of the FDA's report can be found here: fda.gov/newsevents/publichealthfocus/ucm435591.htm.

An exception on the horizon may be a product being produced for Peak Performance Veterinary Group in Colorado. It has a CBD concentration of 100 mg/ml in a coconut oil base and has been tested for purity and contaminants. It's also a full-spectrum extraction, meaning additional cannabidiol substances like cannabidivarin, cannabichromene and cannabigerol are also present. You can contact the hospital through peakvets.com for more information.

Future research and experience will give us more information on dosing levels and intervals. Current recommendations for oral dosing of CBD in dogs and cats are 0.02 mg/kg to 0.1 mg/kg given twice daily. According to James Gaynor, DVM, DACVA, DACVPM, of Peak Performance Veterinary Group, for pain management most dogs do well at 0.05 mg/kg twice daily, while cats do well at 0.025 mg/kg twice daily.

Finally, this article would not be complete if we didn't touch on the legality of buying and reselling hemp-based products. The DEA considers CBD a marijuana derivative and therefore subject to class 1 scheduling. However, the agency has enforcement only over the cultivation of hemp—not its distribution. This is why most hemp products come from overseas, resulting in the concerns over heavy metals and pesticide contamination we discussed earlier.

The FDA has also gotten involved because of medical claims made by some manufacturers of CBD products. As a result, in order to avoid prosecution, most CBD products come with no specific medical claims or dosing recommendations. As if that wasn't confusing enough, the USDA considers hemp an agricultural product and has made its own statements about the product. In order for CBD to be dispensed without fear of reprisal, all federal agencies need to come together and take a position on the sale and use of CBD products.

Is it worth recommending CBD products to your clients? My answer is yes, as long as you take into consideration the points framed here. Should you have clients buy direct from a manufacturer or resell it yourself? I think that depends not only on how far you want to insulate yourself from the various government agencies, but also on the specific laws of your state concerning the purchase and resale of CBD. This information is changing constantly, but information for some states can be found here: ncsl.org/research/health/state-medical-marijuana-laws.aspx. The information on CBD can be found by scrolling down the page.

Dr. Michael Petty is a faculty member of the Canine Rehabilitation Institute in Wellington, Florida, and owner of Arbor Pointe Veterinary Hospital in Canton, Michigan.

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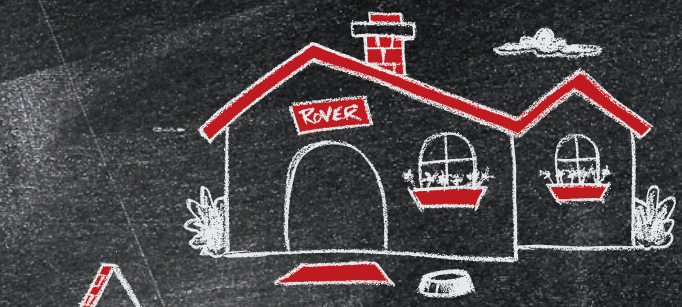

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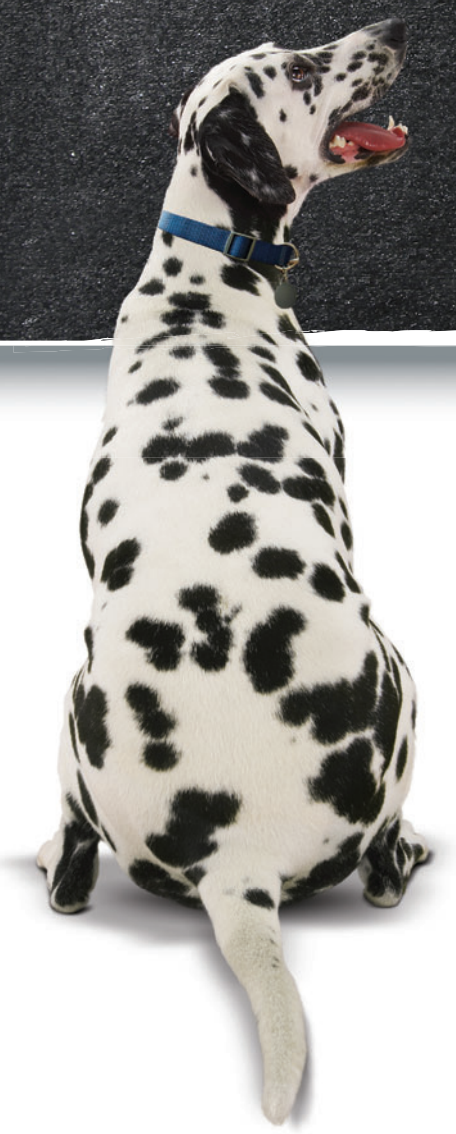

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Would standing up against a tyrannical technician cause more problems than it would solve?

Fight or flight?

An abrasive senior veterinary technician is leaving distressed team members and neglected patients in her domineering wake. Dr. Greenskin thinks that if she owned the hospital, she wouldn't put up with such bad behavior—would she?

In life and in veterinary medicine, difficult decisions and pesky problems are never resolved soon enough. Dr. Greenskin has been consumed by the seemingly life-or-death decision of whether she should become a practice owner. And as usual, the day-to-day grind of practice life and weeks of double-booked appointments mean time continues to fly without so much as a hint of past conversations between herself and Dr. Codger.

This week is no different. It seems that yet another predicament will

ILLUSTRATION BY RYAN OSTRANDER

prevent our beloved docs from making any big business decisions. However, this crisis will allow Drs. Codger and Dr. Greenskin another opportunity to learn from each other and better understand the great divides between how they believe the business should be run.

In preparation for selling the practice, Dr. Codger has been looking after such long-forgotten trivialities as balance sheets and expense reports. Yes, he's really been getting the place all buttoned up. Judging by the chatter around the dental table (which sometimes doubles as the lunch break table), some of the staff are getting the feeling that the old doctor already has one foot out the door. His offhand remarks about retirement preparations—without a mention of the plan for the future—is causing some not-insignificant levels of insecurity and anxiety.

Mrs. Actright's been downright condescending to the kennel staff, and her attention to patients has waned. She's been late for work several times without calling or offering so much as a word of apology.

For some employees, this uncertainty has been a kick in the pants to tighten up their performance and prove their worth to the practice. Others have had the opposite reaction, acting as if what they do no longer matters since their leader is on his way out.

It has recently come to Dr. Codger's attention (i.e. Dr. Greenskin has hassled him about it daily) that tensions are developing between a senior staff member and some of the newer support staff. Still trying to learn about the business of vet med while debating whether she wants the business of vet med, Dr. Greenskin's been closely examining the people around her—the people who may work for her someday soon (gulp).

The young doctor has noticed that their most senior technician, Mrs. Actright, has been even less pleasant to work with than usual lately. She gets along fine with the clients—most of whom have known her for years—but it's a different story back in the treatment area. Mrs. Actright's been downright condescending to the kennel staff, and her attention to patients has waned. She's been late for work several times without calling or offering so much as a word of apology.

When one of the younger veterinary technicians clocks out in tears after another outburst from Mrs. Actright, possibly never to return again, Dr. Greenskin decides enough is enough. The fuming young doctor finds Dr. Codger in the pharmacy, but she's immediately interrupted by that familiar "boss" tone before she can even complete her first thought.

"Calm down, Dr. Greenskin. I took care of it."

There's a long pause as Dr. Greenskin waits for him to explain.

"Look, we really need Mrs. Actright around here. I know she can be rough around the edges, but she's the most skilled technician we have. We can't be doing all of the treatments ourselves, right? Anyway, I told her to be a little easier on the young'uns because kids nowadays are real soft—not like when Actright and I started this practice. Back then we had to prove our worth and earn our keep. These kids just want too much too fast. I've told Actright to ease up a little, but we really don't want to upset her with any threats. It'll be fine. OK—I'm off to give a steroid shot to the itchy dog in exam room two."

Dr. Greenskin is left alone, flabbergasted by Dr. Codger's response and by the realization that Mrs. Actright has created job security for herself by dominating newer employees, thereby preventing anyone else from becoming too valuable to the hospital. Dr. Greenskin can't help but believe that if she owned the hospital, she wouldn't put up with such behavior from any employee. She would be all too eager to show Mrs. Actright the door.

It's clear to Dr. Greenskin that buying the clinic would result in some real changes. But what if the entire staff just up and left? The young DVM wants to show bravery. She feels the need to stand up for what's right and create the best work environment possible. But there's a lingering fear that Dr. Codger is right. If Dr. Greenskin buys the practice and starts rocking the boat, could she end up with zero staff? That scenario presents more stress than Dr. Greenskin can even fathom. This is just one of the myriad issues she would have to face as an owner.

Is the worry about potential repercussions simply too great a hurdle to overcome? Will Actright's behavior and toxic presence be enough to turn Dr. Greenskin away from the most important business decision of her life?

Dr. Jeremy Campfield works in general practice in California's Sacremento Valley. He is also an avid kiteboarder.

The good Samaritan, the bad owner and the microchip

A veterinary team is torn between giving an irresponsible owner back his microchipped dog or letting a Good Samaritan who got him medical care take him in as her own.

Ms. Cotswald brought a stray dog to Hess Animal Hospital claiming, in her best British vernacular, that he seemed "a bit unthrifty." She was a kindhearted animal lover and excellent client. She let the hospital team know that the dog had been roaming the neighborhood for months before she took him in and gave him "a right proper home."

The veterinary team was told to examine him and do whatever was necessary to assist him. As with all new patients, the dog had a complete physical exam and was scanned for a microchip. The scan turned up an AVID chip. The attending technician called the chip hotline and identified the dog's owner as Sam Reese, with an address about six blocks from where Ms. Cotswald lived.

At this point, the clinic manager called Ms. Cotswald and told her that they'd discovered the chip and determined the identity of the dog's owner. Ms. Cotswald was upset. She went on to say that the dog roamed the streets, was underfed and had fleas before she'd taken him in. In addition, she presented the dog for veterinary services and paid for the care, and she wanted the dog returned to her. She promptly came to the clinic and picked up "her" dog.

Meanwhile, the technician told the microchip company about the dog, and the company reached out to the registered owner. The next

day the office manager received a call from Mr. Reese. He'd been informed that the dog had been at the clinic and he wanted Ms. Cotswald's contact information.

The office manager had mixed feelings. A clearly irresponsible pet owner wanted to take his dog from a loving, caring environment. It was time to speak to her boss.

Dr. Hess, after being updated on the situation, advised acting professionally and ethically. He told his team that the clinic could not release a client's private contact information without that person's permission. This meant Mr. Reese would have to call the authorities and ask them to contact the clinic with the necessary paperwork to procure the information.

In addition, Dr. Hess said, Mr. Reese should be advised that the dog was not being cared for in a responsible manner and that this had been noted in the dog's medical files. Finally, he said, Ms. Cotswald needed to be informed that the owner was pursuing the return of his dog.

Several days passed and the police contacted the clinic to obtain the name of the client who had presented the microchipped dog. The team made a follow-up call to Ms. Cotswald advising her of the official inquiry. Ms. Cotswald informed the clinic staff and the authorities that the dog had run away and was no longer in her possession.

Do you agree with the way the veterinary clinic handled the situation? Was the team obligated to contact the irresponsible owner after receiving the microchip information? Or should they have just treated the dog and returned him to Ms. Cotswald rather than getting involved in the drama?

Rosenberg's response

Clinical veterinary practice consists of medicine, surgery, drama and constant advocacy for our patients. There was no doubt that this dog was better off with the Good Samaritan than the irresponsible dog owner. Legally, it certainly was an issue. Morally, it was not.

The veterinary clinic took the proper steps. They informed the dog's owner of the legal process required to access the necessary information. They advised him that the dog was inadequately cared for and noted it in the record. In addition, they assisted the Good Samaritan as much as they possibly could. I might have gone further by encouraging the pet owner to give up the pet and mentioning the consequences of animal cruelty statutes in the area.

Unfortunately, irresponsible owners are a fact of life. As veterinarians we have to continue to call them out on their behavior as well as continuously educate them. It's a fine line to walk. Fortunately, in this case, the "dog ran away" excuse most likely meant he was safely moved to Ms. Cotswald's sister's house.

Dr. Marc Rosenberg is director of the Voorhees Veterinary Center in Voorhees, New Jersey. In his private time, he enjoys playing basketball and swing dancing with his wife. Although many of his scenarios in "The Dilemma" are based on real-life events, the veterinary practices, doctors and employees described are fictional.

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The pricing struggle:
How high is too high for pet owners?

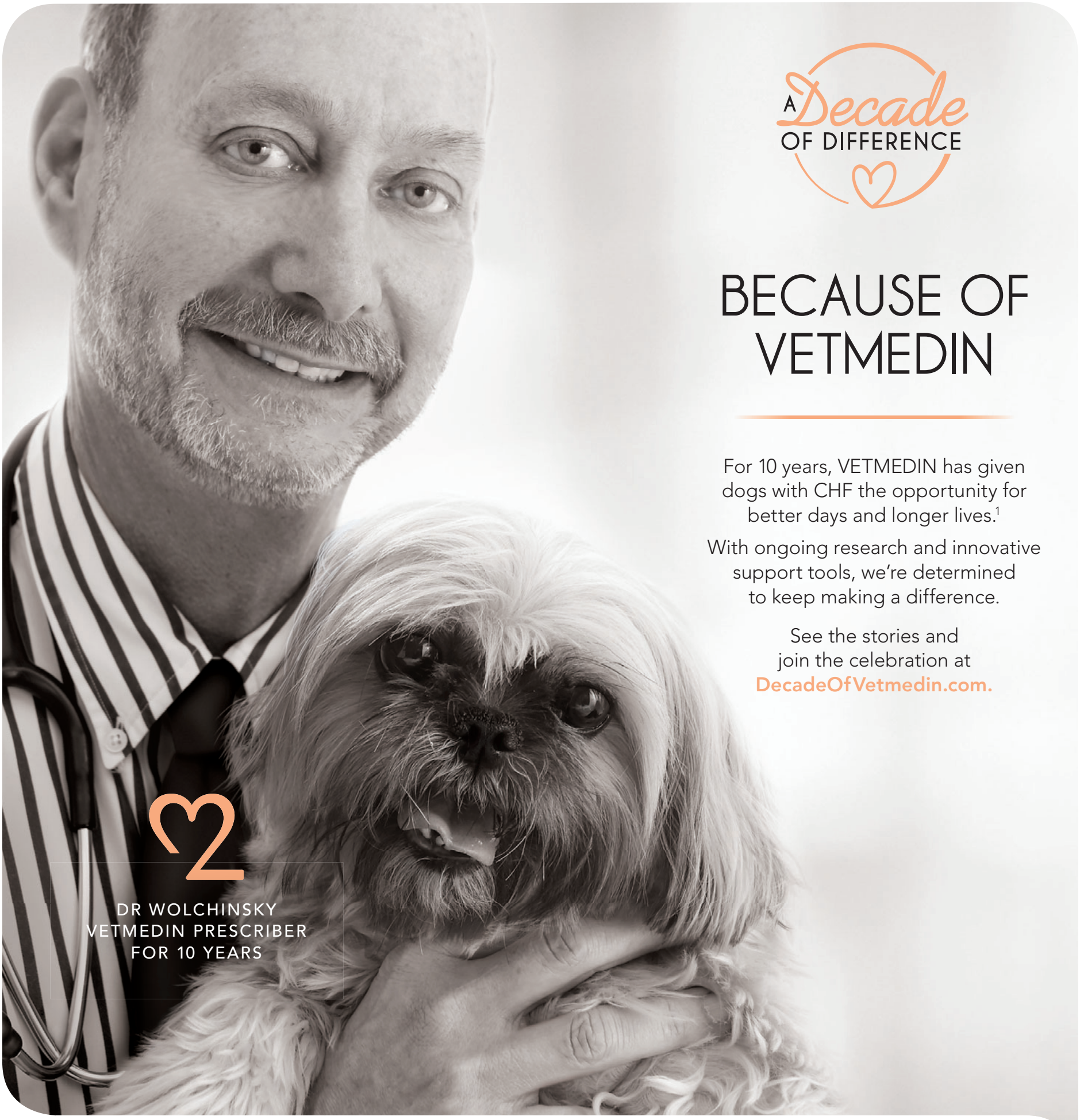
Our study suggests that when veterinary prices rise faster than the rate of inflation, consumers opt out of seeking services. *By Rebecca Brake, DVM, MBA, and Michael Dicks, PhD*

Veterinary pricing can be a confusing topic. After all, experts urged practice owners for years to raise their fees—and then suddenly everyone started wondering why client visits were dropping. No surprise: There may be a connection. We at the AVMA Economics Division recently delved into the question of how prices affect the demand for veterinary services in some depth.

There are currently two widely available veterinary price indexes: the Nationwide-Purdue Veterinary Price Index and the U.S. Bureau of Labor Statistics' (BLS) Veterinary Services Index. Until recently, these two sources appeared to contradict each other: The Nationwide-Purdue index showed prices falling until the beginning of 2015, while the BLS data showed prices increasing at a rate greater than inflation. To help get a better idea of how prices have been trending over time, we consulted another well-known resource on prices, *The Veterinary Fee Reference* published by AAHA.

To perform our analysis we gathered mean fees for selected services from the first through ninth editions of the AAHA reference, categorized them as either wellness or medical services, and calculated index values and compound annual growth rates. We included only commonly performed services that were similarly reported in the majority of editions, ending up with seven wellness services and 20 medical services in our final set. The wellness services were selected to reflect what's purchased during a typical canine wellness visit: physical exam, fecal analysis, heartworm test, nail trim, and rabies, distemper-parvo and *Bordetella* vaccines.

Mean and median values varied greatly for some services. To minimize the inconsistency between means and medians, we excluded services with greater than 20 percent difference. Changes in technology that occurred over this period—such



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Reference: 1. Lombard CW, Jöns O, Bussadori CM; for the VetSCOPE Study. Clinical efficacy of pimobendan versus benazepril for the treatment of acquired atrioventricular valvular disease in dogs. *J Am Anim Hosp Assoc.* 2006;42(4):249–261.

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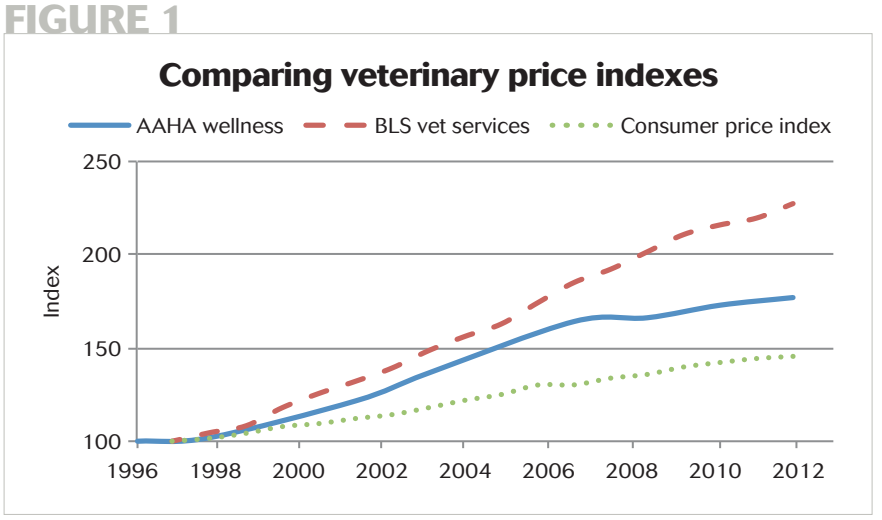

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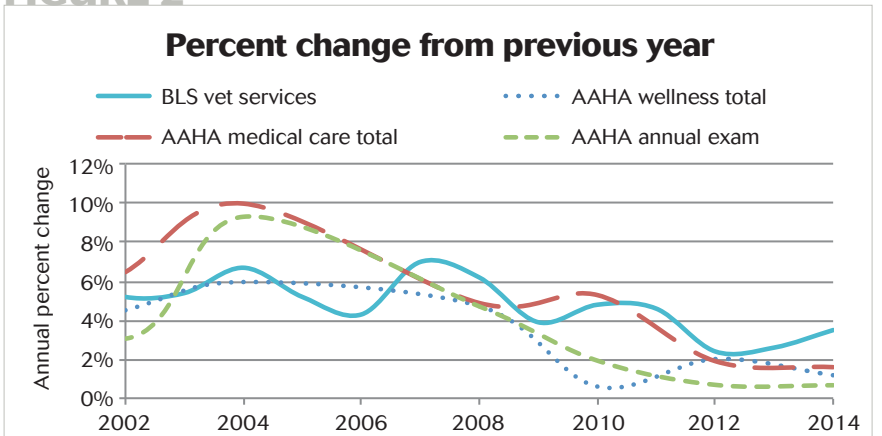

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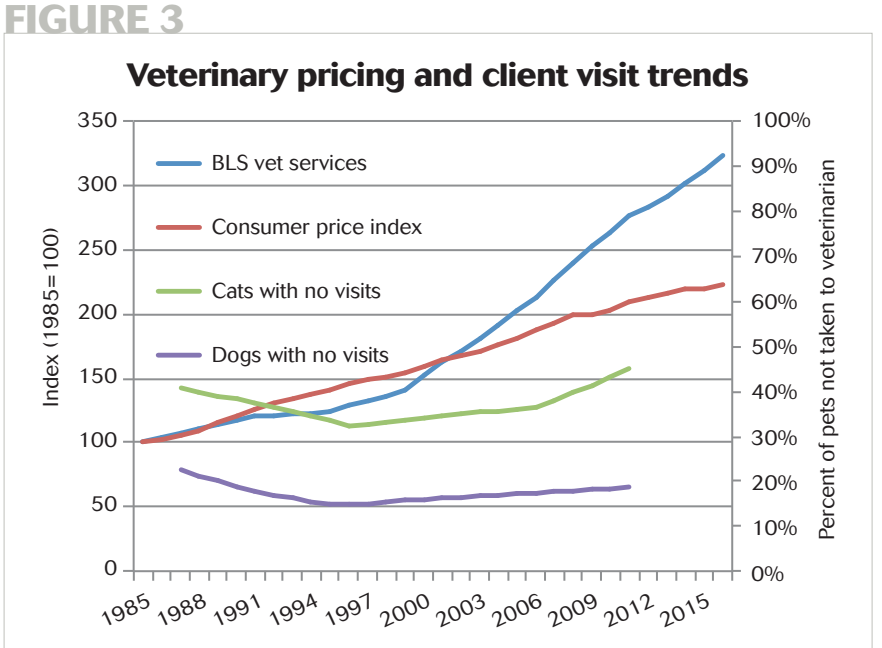

as the introduction of the triennial canine rabies vaccine and the adoption of digital radiography—are reflected in the data, affecting the fee increases for those years.

How did the price indexes compare?

The AAHA prices on wellness services generally increased at a lower rate than prices listed in the BLS veterinary services index but faster than inflation (as reflected by the consumer price index) until 2012 (Figure 1). After 2012, prices for wellness services increased at rates closer to the rate of inflation. It's worth noting that from 1998 until 2011, the number of pets not receiving care at a veterinary hospital increased and has remained at the same level since 2011. This suggests that rising prices at a rate greater than general inflation led to an increase in pets not visiting a veterinary hospital. Rising prices reached a point where demand was truncated—some pet owners no longer saw the value or could not afford the prices charged.

Most interesting was the fact that overall prices for the AAHA wellness services increased at lower rates than for the AAHA medical services (the opposite of what the Nationwide-Purdue index shows), which were often found to mirror price increases from the BLS veterinary services index (Figure 2). Because wellness services are considered to be "shopped" and therefore more sensitive to price changes, practices appear to have understood that raising wellness service prices would have a greater negative impact on demand (or would be met with more resistance) than increasing prices of medical services.

Impact on veterinary practices

What we're seeing here is that when prices increase, consumers respond. Some will pay the higher prices, while others will buy fewer services, switch to a lower-cost alternative or eliminate the service from their expenditures. If the rising prices have a relatively small impact on the number of services purchased (inelastic demand), total revenue will increase. If rising prices have a large impact on the number purchased (elastic demand), total revenue will decline.

At some price point, increasing prices will no longer increase revenue because more clients will choose to spend less or not go to the veterinarian than can be compensated for by the higher prices being paid by remaining consumers. For every service or service bundle, there is a price point at which revenue is maximized. Previous studies have shown that the amount spent by pet owners at veterinary practices each year is not increasing, while the price indexes show that prices may be increasing at a rate higher than annual inflation. And the AVMA Pet Ownership and Demographic Survey illustrates that the number of pets not seeing a veterinarian has increased since the beginning of the price increases in the late 1990s. This could indicate that current prices have exceeded the revenue-maximizing price.

From 2010 to 2014 veterinary practices passed the price point where rising prices no longer increased profit. Any further attempt to raise prices above the rate of inflation will further reduce profit, and holding price increases below inflation will likely increase profit.

So how can practicing veterinarians use this information when deciding how much to increase prices next year? First, avoid the pitfall of assuming that increasing prices will always result in increased revenue. Instead, examine past trends to determine how changing prices have affected the number of transactions and average value of transactions. In general across the profession, prices and total revenue have increased while compliance (number of services) and number of active clients have dropped.

More importantly, profit showed no change from 2010 to 2014 and only recently has started to increase. This suggests that from 2010 to 2014 veterinary practices passed the price point where rising prices no longer increased profit. Any further attempt to raise prices above the rate of inflation will further reduce profit, and holding price increases below inflation will likely increase profit. Even better, maintaining price increases below the rate of inflation will also help to improve compliance and client visits, ensuring that more pets receive all the care that they need from veterinarians.

This and other information will be discussed at the 2017 AVMA Economic Summit, October 23-24, in Chicago, Illinois.

Dr. Rebecca Brake is an extern in the AVMA Economics Division. Dr. Michael Dicks is director of the division.

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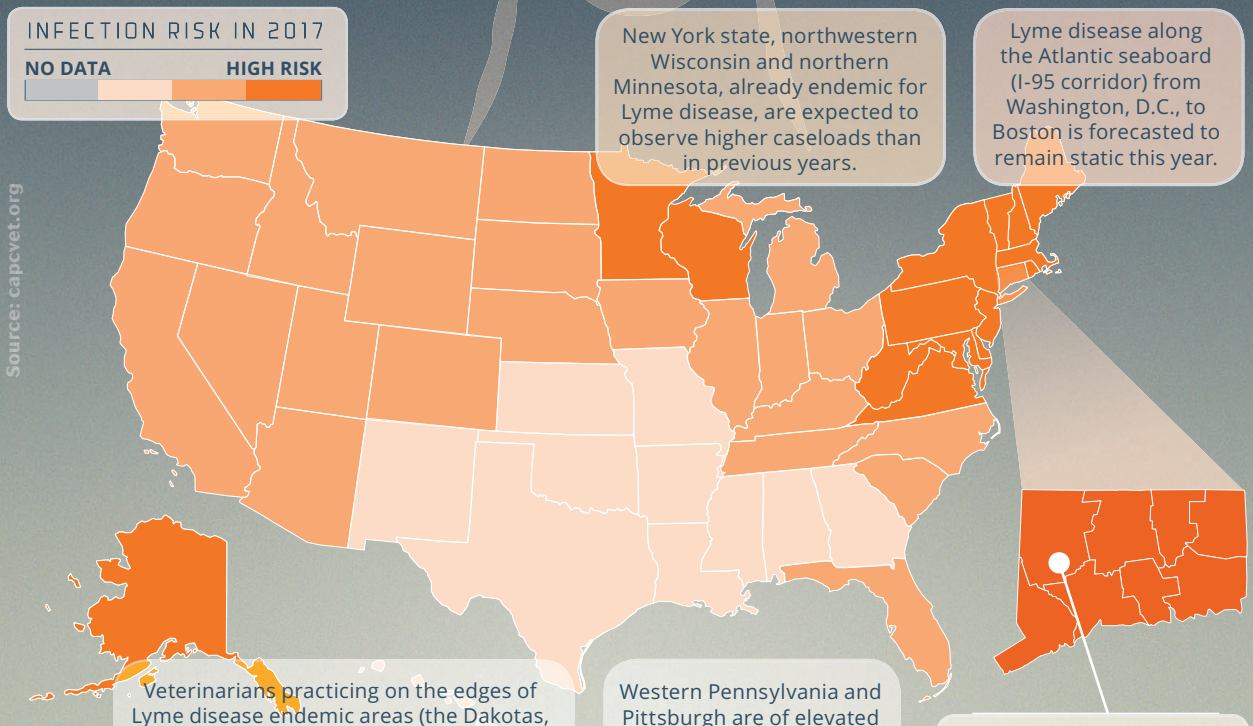

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PUBLICIZING PRIME LYME TIME TO CLIENTS

"Winter is coming. I don't need to give a tick preventive. And another vaccine? Really!?" Have you heard this from your clients? They don't get that they have two excellent tools that can prevent Lyme disease from ever taking hold in their pets—parasite preventives and vaccines. Veterinary parasitologist Dr. Susan Little reminds us all of the never-ending risk of ticks: "Adult deer ticks, which are the primary transmitter of Lyme disease and other infections to dogs, are actually most active in the fall. Their activity peaks in October, and they'll continue to quest, or seek a host, through the winter months." In this video from CAPC at dvm360.com/deertick, Dr. Little says as long as the ambient temperature is over 40 F, deer ticks will be on the hunt for new hosts. In fact, the risk of infection with *Borrelia burgdorferi* in dogs peaks in the winter!

Do you need help passing on pertinent information to your clients about Lyme disease preventives or the added protection of a vaccine? We've created Facebook and twitter posts at dvm360.com/tickposts, ripe for the taking.

Another myth to bust about Lyme disease: **"I don't live in a wooded area, so my pet can't get ticks."**

When clients assert their pets don't visit areas where ticks are commonly found, such as wooded areas and places with high grass or brush, it's helpful to explain that ticks are actually able to live out their entire life cycle within the pet owner's home. It helps to mention that woodpiles near or inside a home provide the perfect environment for ticks to survive. And if there are pets inside, this improves the environment for a tick's survival because they need readily available hosts.

You also might mention that when small rodents such as mice are infested with ticks, they can enter the house, bringing the ticks indoors. Even if ticks don't make their way into the home, they can still live in low grass and trees—such as found in the backyards of most suburban homes. When pets play in these areas, they are at risk of tick infestation.

Download a client handout featuring this and 6 more myths you can bust about Lyme disease at dvm360.com/lymemyths.


Client handout: 7 myths about Lyme disease

MEDICINE | Dermatology

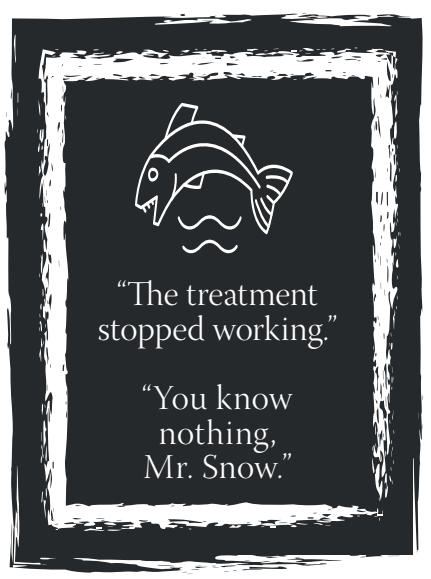
A song of fire and itch: Veterinary dermatologic variations on GAME OF THRONES

What better way to find out the latest derm updates to rescue your patients than by correlating them to the hottest series on TV?

By Sarah J. Wooten, DVM

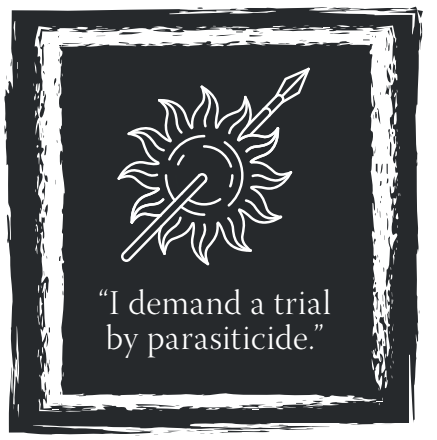
At a recent CVC (Now Fetch! See page 5), Anthea E. Schick, DVM, DACVD, shared the latest research findings from the 2017 North American Dermatology Forum that every private practitioner needs to know. In honor of the seventh season of the best show on TV (IMHO), I've spiced up the tips with variations on quotes from the *Game of Thrones.* Whoever guesses the right episode for each quote wins some Valyrian steel.

One of the most common complaints from irate owners of atopic dogs is that the expensive treatment that you prescribed stopped working,



whether oclacitinib (Apoquel—Zoetis), monoclonal antibody therapy (Cytopoint—Zoetis) or cyclosporine (Atopica—Novartis). This is simply not the case, says Dr. Schick. What has happened is that the patient's pruritus is due to something else, such as flea allergy dermatitis, mites or a concurrent bacterial or fungal infection. Manage client expectations from the get-go to avoid these confrontations, and explain clearly that these drugs manage but do not cure skin allergies. If the dog stops responding to the medication, there is something else going on that requires your attention.

So you can draw from an unblemished reputation, Dr. Schick recommends always scraping pruritic patients—even on rechecks. Cytologic examination of skin scrapes, impression smears or tape preps gives you information you need to best manage the patient. No time for scraping or cytology? Dr. Schick recommends training your technicians! They are waiting for opportunities to learn and grow. By training them on where and how to collect samples and how to evaluate the samples, you save time and are able to see more patients.



Atopy is a diagnosis of exclusion—only after you have ruled out everything else can you diagnose atopy. Because it lasts three months, even one dose of fluralaner (Bravecto—Merck) will rule out scabies and demodicosis in most patients. Dr. Schick finds fluralaner useful when she is starting a parasite treatment trial and a food trial because she only needs to give one dose, which won't interfere with the diet trial. Another parasiticide option is selamectin (Revolution—Zoetis) applied every other week for three treatments. Treat the itchy dog as well as all the other dogs in the household.

Dr. Schick thinks fluralaner is a game-changer for demodicosis. The old treatment recommendation was one treatment every two months, but the new recommendation is one treatment every three months. For older patients with chronic demodicosis, Dr.

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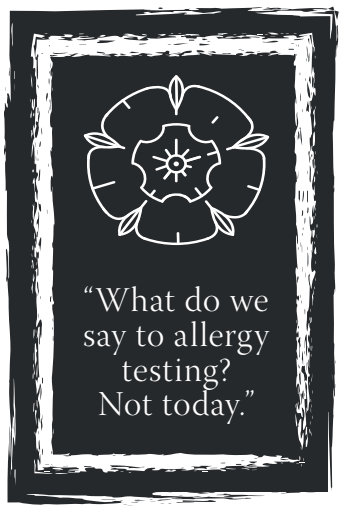
Schick recommends long-term maintenance with fluralaner every three months. She says a study that will be published soon shows that fluralaner can reduce the incidence of demodicosis in litters of bitches that have a history of litters infected with *Demodex* species. The bitches were given one dose 10 days before mating and a second dose three months later, and all dogs except one had *Demodex*-free litters.

The isoxazolines are safe for ivermectin-sensitive breeds. Sarolaner (Simparica—Zoetis) is approved for fleas and ticks and lasts 35 days, and afoxolaner (NexGard—Merial) is approved for use in puppies 8 weeks or older.

A client may be interested in pursuing allergy testing for immunotherapy treatment, but if the patient is being treated with corticosteroids or antihistamines then you must wait—two weeks for antihistamines, one month for corticosteroids. Dr. Schick shares the good news: There is no withdrawal period required for Atopica, Apoquel or Cytopoint, and you do not have to discontinue the drugs. Clients will appreciate that their dogs don't have to suffer through withdrawal periods any more.

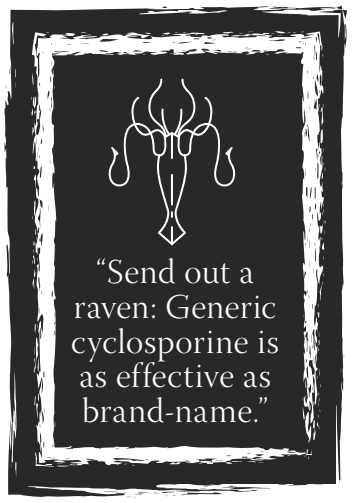
Speaking of allergy testing, are any of your clients coming in with hair and saliva testing kits that they bought off of Groupon? Dr. Schick ran her own study on those kits. She sent in 10 samples from real dogs and five fake samples—all the samples came back positive,



even the fake cat hair off a costume. She is in the process of getting the study published, so stay tuned, and tell your clients that there is research coming that proves what you already know: those kits don't work.

Dr. Schick also reminds us that allergy testing is not used to diagnose atopy but to simply determine the recipe for the allergy serum. The recipe needed for an individual patient can change over time, she says, so pay attention to pollen counts when you are choosing which allergens to include in the serum. When it comes to the best tests for the money, Allercept (Heska) blood tests are very specific but have low sensitivity and can lead to false negative results. Dr. Schick recommends skin prick testing over blood testing.

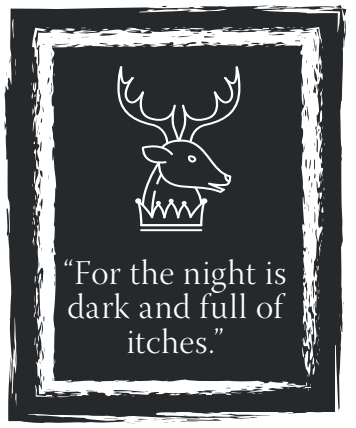
That's right, generic modified



microemulsion cyclosporine has been proven to be bioequivalent to the brand name.[1] Costco has a great price on generic modified cyclosporine, Dr. Schick says, and if your clients are still struggling with cost, adding 2.5 mg/kg ketoconazole will approximately double serum concentrations of cyclosporine, which is great for big dogs.

Compounded cyclosporine, on the other hand, is still not as reliable in absorption or dosage, Dr. Schick cautions. While the cyclosporine compounded into capsules has somewhat reliable dosage, there have been significant dosage problems with compounded liquid cyclosporine.

When it comes to dealing with side effects from chronic cyclosporine administration, Dr. Schick says that azithromycin toothpaste can help with gingival hyperplasia. Cyclosporine can cause occult urinary tract infections in both male



and female dogs. Dr. Schick recommends monitoring canine patients receiving long-term cyclosporine with yearly urinalyses and cultures.

Cats can do really well on cyclosporine, but absorption is variable, Dr. Schick says. The good news is that cats receiving it long-term do not get occult urinary tract infections. There are a couple of side effects to warn clients about, however. If a cat that has high rates of cyclosporine absorption is exposed to *Toxoplasma* species, it may be fatal. Let your owners know, offer to do a *Toxoplasma* screen before starting medication, and keep cats on cyclosporine indoors-only. Cyclosporine can also cause unexplained weight loss in cats, though this side effect is rare.

First the good news about Apoquel—it does not affect intradermal skin test or Allercept serologic test results.

The bad news—after abrupt withdrawal of Apoquel, dogs demonstrate pruritus that is more intense than before they started the drug. This phenomenon has been studied in mice[2] and it appears that the intensified pruritus is due to an increase in pruritogenic cytokines and fast peripheral sensitization, Dr. Schick says.

Clinically, I have noticed (and you have probably noticed as well) that when I decrease patients to a once-daily maintenance dose of Apoquel, there is an increase in itching. Here are several solutions you can try:

> Advise giving Apoquel in the morning and diphenhydramine at night.

> Split the maintenance dose into twice-a-day administration.

> Push the maintenance dose closer to 0.6 mg/kg.

Dr. Schick says those "put-

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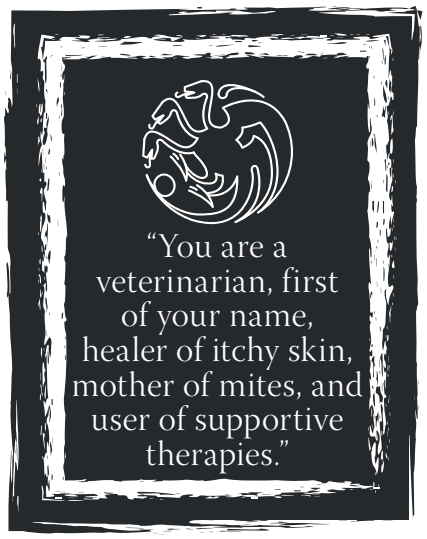
out-the-fire doses" of twice-daily Apoquel for one to three days a month are OK if needed for breakthrough itching.

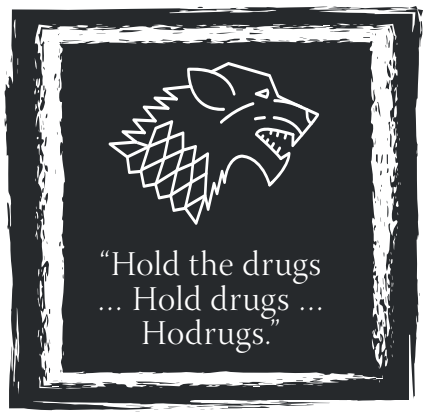
Bloodwork is recommended every six months for patients receiving Apoquel, and Dr. Schick says papilloma viral flare-ups, an increase in the prevalence of benign skin tumors (histiocytomas), and low albumin concentrations are among the side effects to monitor.

Apoquel is being used (extralabel) successfully to treat acral lick granulomas in dogs, and it is also being used for atopy in cats. The dosage for cats is 0.6 mg/kg, Dr. Schick says, but warn the owner of the possibility of demodicosis, based on her experience as well as conversations with other veterinary dermatologists.

White walkers are real, and so is antibiotic-resistant bacteria. And you've got a dog with pyoderma in exam room[1]. Current recommendations from the North American Veterinary Dermatology Forum are to use cephalexin, clindamycin, augmentin and trimethoprim sulfamethoxazole as first-tier antibiotics. If the pyoderma does not respond, perform a culture before switching to a second-tier antibiotic. Avoid fluoroquinolones unless absolutely necessary—they speed up the rate of multidrug resistance in *Staphylococcus* species, and ciprofloxacin has a wide variability in absorption in dogs. Don't use fluoroquinolones without culture results and unless absolutely necessary.

Rifampin is effective as a single agent against staphylococcal infections, and 5 mg/kg is shown to be effective clinically, which is lower than what is reported the literature. Dr. Schick recommends keeping the dosage below 10 mg/kg to avoid gastrointestinal side effects.





In patients with pyoderma or a high bacterial load on their skin, Dr. Schick strongly recommends the use of supportive therapies, such as bathing, to reduce the bacterial load. Chlorhexidine is still an efficacious topical, but for dogs that are sensitive to chlorhexidine, Dr. Schick recommends rinsing the dog in bleach. She warns that you will definitely get some funny looks from owners. Studies show that 0.005% bleach dilution is not toxic to epithelial cells and has a good effect on even drug-resistant *Staphylococcus* species.[3] Bleach is light-sensitive, so owners must make it fresh every time, and the dilution she recommends is one-third of a cup Clorox bleach to a gallon of water. Generic bleach is not consistent in dilution, so use the brand name Clorox. It does not need to be rinsed off. Dr. Schick says leave it on.

References

1. Navarro C, Séguy L, Vlia M, et al. Bioequivalence study between two formulations of ciclosporin A (Cyclavance oral solution and Atopica soft capsules) following a single oral administration to dogs. *BMC Vet Res* 2016;12:54.

2. Fukuyama T, Ganchingco JR, Bäumer W. Demonstration of rebound phenomenon following abrupt withdrawal of the JAK1 inhibitor oclacitinib. *Eur J Pharmacol* 2017;794:20-26.

3. Pariser M, Gard S, Schmeitzel L. An in vitro study to determine the minimal bactericidal concentration of sodium hypochlorite (bleach) required to inhibit meticillin-resistant *Staphylococcus pseudintermedius* strains isolated from canine skin. *Vet Dermatol* 2013;24:632-634.

The ABCs of veterinary dentistry: K is for kick-starting your dental practice

Top-notch dentistry is a win for your practice and your patients, so let's talk about the skills, equipment and mindset you'll need to get started. *By Jan Bellows, DVM, DAVDC, DABVP, FAVD*

Nearly eight of 10 of the dogs and cats you see daily need dental care, yet a much smaller percentage receive it. How can you kick-start dentistry as a domain within your practice and realize the good that it provides for your patients, their owners and your practice?

1. Believe in dentistry.
2. Invest in the best education, materials and equipment.
3. Perform a great exam.
4. Prevent the preventable and treat the treatable.

Ready? Let's break it down.

1. Believe in dentistry

Not everyone likes running, biking or lifting weights, but we all believe it's good for us. The same is true of dentistry—you don't have to love or even like it. All that's required to move forward is to believe in its benefits. The long-term benefit of periodontal care and aftercare is relieving inflammation. Human dentists are convinced that much damage to our bodies arises from periodontal disease inflammation; why should it be different for companion animals?

We have all seen older dogs and cats with fractured teeth and advanced periodontal disease that appear to be eating well and thriving. Do these patients really need immediate dental care? Yes, they really need it. Dogs and cats have similar oral pain pathways as people. Dental disease hurts—even if it's chronic persistent dull pain. Imagine if you walked around with inflamed bleeding gums or if it hurt every time you chewed on one side.

No animal should be left to silently suffer. Proactive dental care and home preventive measures to prevent recurrence can eliminate the discomfort (Figures 1A and 1B). Rejoice in the smiles on your clients' faces when they exclaim they have a "new" dog or cat after comprehensive dental examination and care for pathology discovered.

2. Invest in dental education, the best materials and equipment

There is no greater rate of return in your veterinary practice than dentistry. To do it right you need to know how to diagnose, treat (or refer) dental pathology you see and have the best equipment and materials to do the job right.

Education. Most veterinarians receive only minutes or a few hours of dental training during veterinary school. But all is not lost. Great resources abound for teaching what we missed. Examples of dental continuing education opportunities include lectures and hands-on wet labs at local and national meetings, VIN's online dental classes and the Veterinary Dental Forum (Nashville, Sept. 14-17, 2017; Phoenix, Nov. 15-18, 2018; Orlando, Sept. 26-29, 2019). Our next local hands-on dental wet lab in Weston, Florida, for veterinarians and technicians is Oct. 15, 2017. For additional information, please contact me at dentalvet@aol.com.

Tackling dental education as a whole can be daunting. Spending time understanding each of the subspecialties (intraoral radiology, periodontal diseases, oral surgery, oral medicine, endodontics, orthodontics and oral trauma)—cutting "dentistry" into bite-sized pieces—becomes doable for those who are committed. Time spent practicing hands-on intraoral radiology and periodontal techniques during wet labs pays off many times over (Figures 2A-2C).

Figure 1A. Multiple crown fractures without apparent pulp exposure affecting a dog's right mandibular first molar. (All figures courtesy of Dr. Jan Bellows, unless otherwise indicated.)

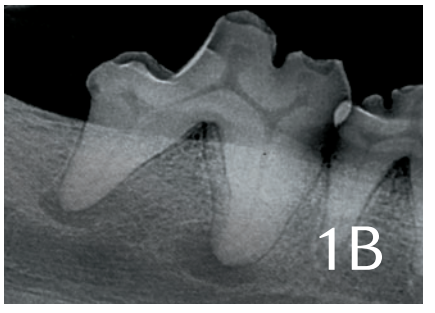


Figure 1B. An intraoral radiograph reveals periapical lysis consistent with painful advanced endodontic disease. Root canal therapy or extraction is indicated to relieve discomfort.

Dental training needs to be shared with the entire staff, including your receptionists. They need to understand what you are doing to help patients during the comprehensive oral prevention, assessment and treatment (COPAT) visit and how to schedule appointments, including preparing your client for two steps: 1) oral diagnosis and teeth cleaning followed by 2) care for pathology uncovered. When asked, receptionists can quote fees for the first step (diagnostics and dental scaling) but not the second step until an anesthetized tooth-by-tooth examination has been performed. Treatment can be completed during the same anesthetic period or during a later appointment.

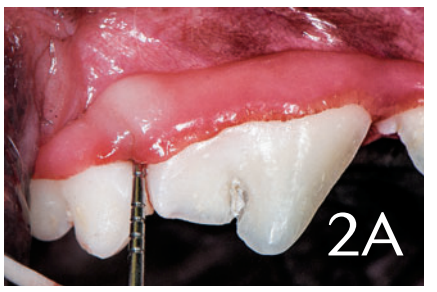


Figure 2A. A periodontal probe confirming a deep pocket between the maxillary fourth premolar and first molar.

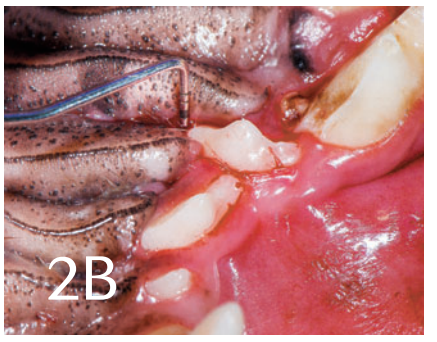


Figure 2B. An 8-mm pocket discovered on the palatal aspect of a rotated maxillary third premolar; extraction is indicated.

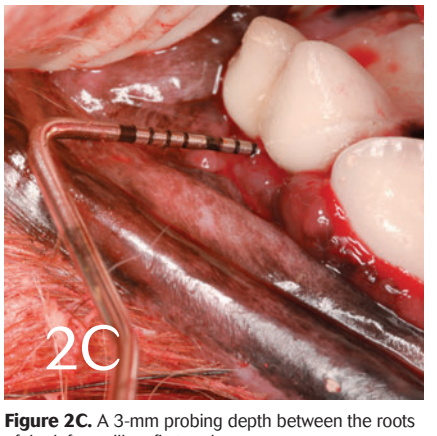


Figure 2C. A 3-mm probing depth between the roots of the left maxillary first molar.

Much of dentistry is technician-run. Your dental assistants need to be able to expose and collate full-mouth intraoral images within 15 minutes. They also need to know how to completely chart the oral cavity, clean and polish the teeth, and apply local antimicrobials and sealants. All of

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this will take training, which is available at national veterinary meetings, on VIN, and often locally.

Kick-starting your dental practice should not include performing advanced dentistry (endodontics, orthodontics, complicated oral surgery). These disciplines are taught during three-year dental residencies. You can do enough good focusing on prevention, diagnosis and treatment of periodontal diseases and referring advanced dental care.

Becoming friendly with your local veterinary dentist is another great way to learn by observing, especially by accompanying the patients you refer. Veterinary dentists (avdc.org) welcome the opportunity to share and teach colleagues.

Materials and equipment. To perform even basic quality dentistry, a lot of equipment and materials are necessary.

Examination essentials:
- Periodontal probe
- Explorer
- Intraoral dental radiography
- Dental charts.

Treatment essentials:
- Ultrasonic scaler
- Polishing equipment
- Curettes
- Regional anesthesia
- High-/low-speed handpieces, burs and delivery systems
- Wing-tipped elevators
- Periotomes
- Extraction forceps
- 4-0, 5-0 suture material on P-3 reverse cutting needles
- Staff safety equipment (eye goggles, face mask, ear protection)
- Dental sealants (Sanos—AllAccem, OraVet—Merial)
- Locally applied antimicrobials (Clindoral—Trilogic Pharm, Doxirobe—Zoetis).

Aftercare essentials: Veterinary Oral Health Council (VOHC.org) products including daily chews, water additives, dentifrice and diets.

3. Perform a great exam

Here are the basics on conducting an excellent oral examination:

Clinical exam. Do not allow "dental drop-offs" for dogs and cats with halitosis. Each patient needs a clinical examination with the client present to take a look inside the mouth and review the oral assessment, treatment and prevention (oral ATP) process. Often without a clinical examination the client does not understand that "a dental" is much more that cleaning teeth. If the client cannot arrange to be at the appointment the same day as the procedure, arrange an in-person exam the week before.

Anesthetized exam. What you observe clinically during probing and with the help of intraoral radiography during the dental examination in an anesthetized patient is the foundation of dental diagnostics. Dogs normally have 42 "tooth patients" in their mouths, while cats have 30. Some of the "patients" will be in good shape and not need additional care, while others will be quite ill. When clients present their companion animals for dental care complaining of halitosis or gingival inflammation, additional care in addition to dental scaling and polishing is needed.

Dental probing around each tooth and between tooth roots is most important. When deep pockets are present (Figures 3A and 3B), locally applied antimicrobials (Figures 3C and 3D), gingival surgery or extraction is needed.

If bleeding occurs during probing, application of a local antimicrobial coupled with stringent home care will usually resolve the bleeding and prevent the progression of periodontal disease.

Fractured teeth are commonly observed during the anesthetized examination. Pulp exposure can either be confirmed visually or with the aid of a dental explorer (Figure 4). If there is pulp exposure, root canal therapy or extraction is indicated.

Intraoral radiography—a MUST. Remember, approximately 60 percent of the tooth is located subgingivally. The radiographs allow you to "see" below the gum line (Figures 5A and 5B). Full-mouth radiographs should be exposed and examined on every professional oral hygiene visit. Figuring out how to accomplish this can be a challenge both in staff time and client compliance. Some practices choose not to charge for the radiographs separately. Others charge what they think is reasonable without giving the owner an option of radiographs or not.

Studies have found that in those cases without clinical findings, radiographs showed clinically important pathology in 27.8% of dogs and 41.7% of cats.[1] These are lesions that cannot

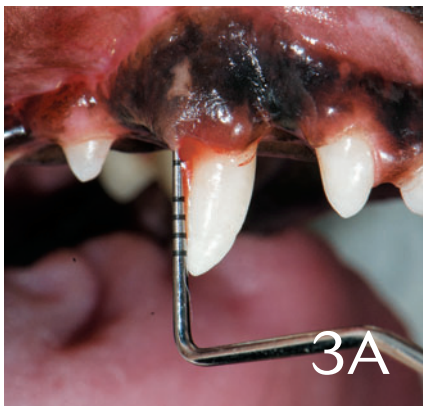


Figure 3A. Bleeding on probing.

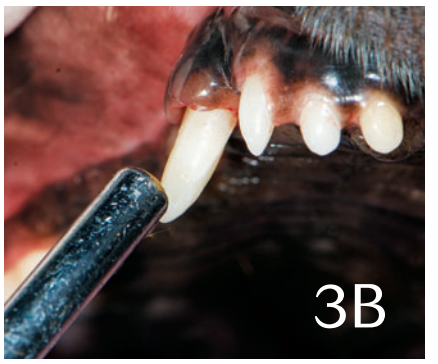


Figure 3B. Drying the sulcus with compressed air.

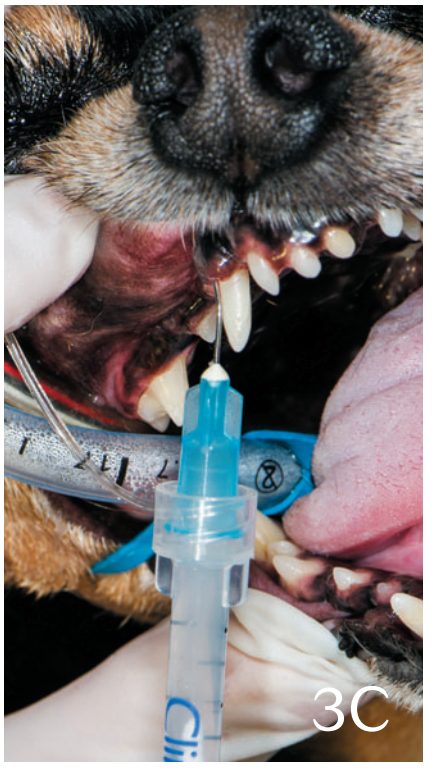


Figure 3C. Application of a local antimicrobial.

Figure 3D. Completed application of the local antimicrobial.

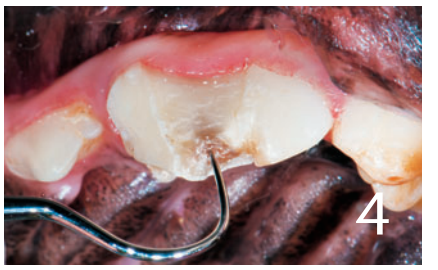


Figure 4. A shepherd's hook explorer used to probe a crown root fractured maxillary premolar. The explorer tip stuck into the dentin, confirming pulp exposure.

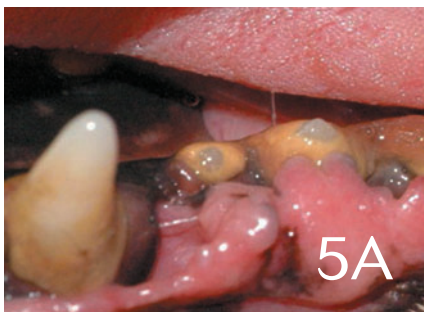


Figure 5A. Left mandibular canine first and second premolars with plaque and tartar.

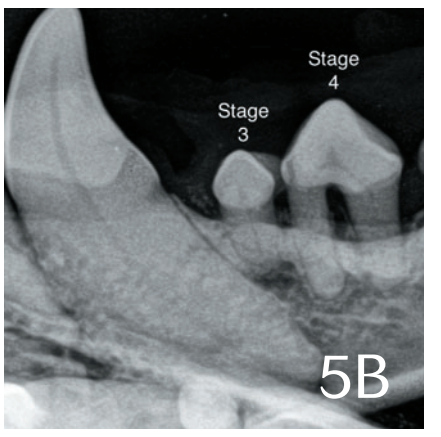


Figure 5B. An intraoral radiograph revealing stages 3 and 4 periodontal disease; extraction of the imaged premolars is indicated.

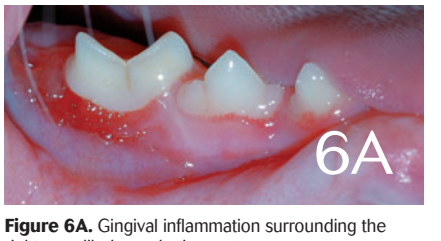


Figure 6A. Gingival inflammation surrounding the right mandibular molar in a cat.

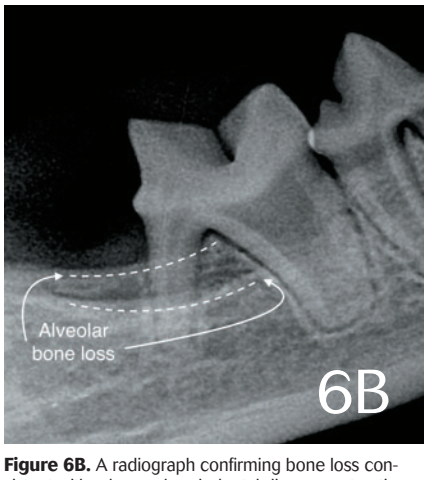


Figure 6B. A radiograph confirming bone loss consistent with advanced periodontal disease; extraction is indicated.

Nutritional management of canine atopic dermatitis

Hill's® Prescription Diet® Derm Defense™ is formulated to help disrupt the internal allergy response and create a barrier against future episodes.

Environmental allergens pose an invisible but constant nuisance to many dogs. Pollens, molds and house dust mites can be found almost anywhere, and in any season.

It is estimated that more than 50 percent of allergy cases in dogs are caused by environmental and flea allergies, which can leave dogs with itchy skin and they just can't seem to stop scratching. These cases can pose challenges to the veterinary healthcare team, and require a multimodal treatment plan that includes medication and environmental modification.

In forming a treatment plan, it's important not to overlook the benefit of nutritional modification and its ability to reduce signs of environmental allergies by normalizing the immune response to allergens.

Hill's® Prescription Diet® Derm Defense™ is formulated to reduce signs of environmental allergies by helping disrupt the internal allergy response and create a barrier against future episodes.

The Derm Defense formulation features the HistaGuard™ Complex, a proprietary blend of bioactives and phytonutrients that helps support skin rejuvenation, reduce inflammation and support a healthy immune system.

RESTORING THE SKIN BARRIER

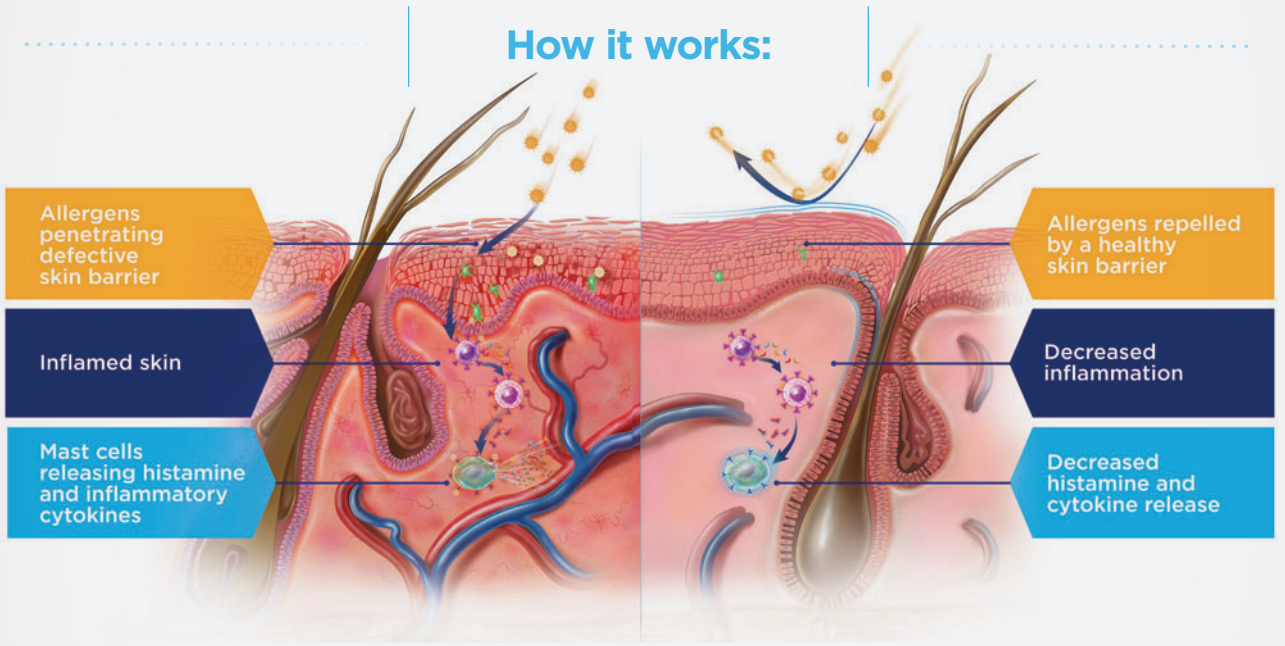
A healthy skin barrier is needed to protect the underlying tissues from allergen exposure and prevent water loss. Dogs with atopic dermatitis have a defective skin barrier, and scratching and infections can cause further damage.

Derm Defense is formulated to help restore and maintain the skin barrier and contains linoleic acid to help reduce transepidermal water loss and prevent skin dehydration.[5] The formulation also features zinc, which has a synergistic effect with linoleic acid to decrease transepidermal water loss and improve coat gloss.[6,7]

MANAGING INFLAMMATION

Derm Defense is rich in omega-3 fatty acids from fish oil and antioxidants, including vitamins E and C, which help fight inflammation, reducing redness and itching.

Antioxidants also combat reactive oxygen species which contribute to the pathogenesis of canine atopic dermatitis. In a recent study, vitamin E supplementation was found to significantly reduce clinical signs in atopic dermatitis affected dogs compared to placebo.[8]



HEALING THE SKIN FROM WITHIN

Derm Defense contains high quality, highly digestible protein, which plays an integral role in sustaining the skin's ability to respond to injury. It's been determined that normal hair growth and keratinization of the skin make up 25 to 30 percent of an animal's daily protein requirements.[1]

Essential fatty acids are required for healthy cell structure and to regulate epithelial proliferation during healing.[2] The International Committee on Allergic Diseases of Animals found that "EFA-enriched diets provide higher amounts of EFAs than oral administration of EFA supplements."[3]

The precise amounts of vitamins and minerals found in Derm Defense support healthy skin and a shiny coat.[4]

For more information visit:
HillsVet.com/Derm

The HistaGuard Complex contains polyphenols, including quercetin, which bind with allergens to form insoluble complexes that are unrecognizable to the immune system, and thus inhibit the release of histamine by mast cells.[9-12]

SUPPORTING A HEALTHY IMMUNE SYSTEM

A healthy immune system is especially important for dogs with a defective skin barrier that is allowing increased allergen exposure.

Carotenoids, vitamin A and zinc found in Derm Defense help the immune system function through both innate and humoral immunity. Zinc positively impacts survival, proliferation and differentiation of the cells of the immune system.[13]

Oxidative stress caused by free radicals is immunosuppressive. Derm Defense contains antioxidants such as vitamins C and E and polyphenols that help ensure the immune response is optimized.[9,14]

Prescription Diet Derm Defense is an integral part of the multimodal management of canine atopic dermatitis. With its comprehensive package of nutrients, Derm Defense has been formulated to help support skin healing, skin barrier restoration, reduction of inflammation and a healthy immune system.

[1]Scott DW, Miller WH, Griffin CE. Nutritional Skin Diseases. In: Scott DW, Miller WH, Griffin CE, eds. *Muller and Kirk's Small Animal Dermatology*. 6th ed. Philadelphia, PA: W.B. Saunders Co.; 2001:1112-1124.
[2]Kirby NA, Hester SL, Rees CA, et al. Skin surface lipids and skin and hair coat condition in dogs fed increased total fat diets containing polyunsaturated fatty acids. *J Anim Physiol Anim Nutr.* 2009;93(4):505-511.
[3]Olivery T, DeBoer DJ, Favrot C, et al. Treatment of canine atopic dermatitis: 2015 updated guidelines from the International Committee on Allergic Diseases of Animals (ICADA). *BMC Vet Res.* 2015;11(210):1-15.
[4]Roudebush P, Schoenherr WD. Skin and hair disorders. In: Hand MS, Thatcher CD, Remillard R, et al., eds. *Small Animal Clinical Nutrition.* 5th ed. Topeka KS: Mark Morris Institute; 2010:637-665.
[5]Miller WH, Griffin CE, Campbell KL. Structure and function of the skin. In: Miller WH, Griffin CE, Campbell KL, eds. *Muller and Kirk's Small Animal Dermatology.* 7th ed. St. Louis, MO: Elsevier; 2013:1-56.
[6]Marsh KA, Ruedisueli FL, Coe SL, et al. Effects of zinc and linoleic acid supplementation on the skin and coat quality of dogs receiving a complete and balanced diet. *Vet Derm.* 2000;11(4):277-284.
[7]Campbell KL, Uhland CF, Dorn GP. Effects of oral sunflower oil on serum and cutaneous fatty acid concentration profiles in seborrheic dogs. *Vet Derm.* 1992;3(1):29-35.
[8]Plevnik KA, Salobir J, Levart A, et al. Vitamin E supplementation in canine atopic dermatitis: improvement of clinical signs and effects on oxidative stress markers. *Vet Rec.* 2014;175(22):560.
[9]Singh A, Holvoet S, Mercenier A. Dietary polyphenols in the prevention and treatment of allergic diseases. *Clin Exp Allergy.* 2011;41(10):1346-1359.
[10]Sommerhoff CP, Osborne ML, Lazarus SC. Effects of inhibitors on histamine release from mast cells recovered by bronchoalveolar lavage in Basenji-Greyhound and Mongrel dogs. *Agents Actions.* 1990;31(3/4):183-189.
[11]Nijveldt RJ, van Nood E, van Hoorn DE, et al. Flavonoids: a review of probable mechanisms of action and potential applications. *Am J Clin Nutr.* 2001;74(4):418-425.
[12]Weng Z, Zhang B, Asadi S, et al. Quercetin is more effective than cromolyn in blocking human mast cell cytokine release and inhibits contact dermatitis and photosensitivity in humans. *PLoS One.* 2012;7(3):e33805.
[13]Maggini S, Wintergerst ES, Beveridge S, et al. Selected vitamins and trace elements support immune function by strengthening epithelial barriers and cellular and humoral immune responses. *Br J Nutr.* 2007;98(Suppl 1):S29-S35.
[14]Erlund I. Review of the flavonoids quercetin, hesperetin, and naringenin. Dietary sources, bioactivities, bioavailability, and epidemiology. *Nutrition Research.* 2004;24(10):851-874.

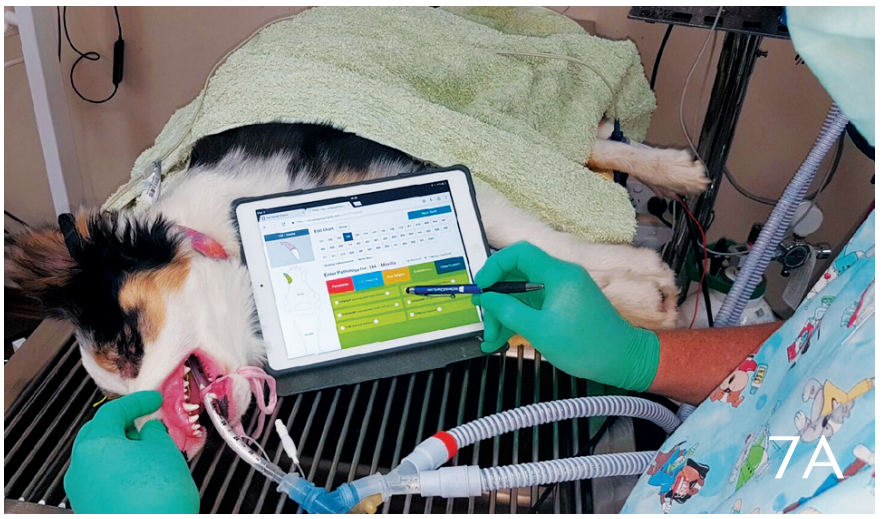


Figure 7A. An electronic dental chart completed chair side. (Image courtesy of vetdentalcharts.com.)

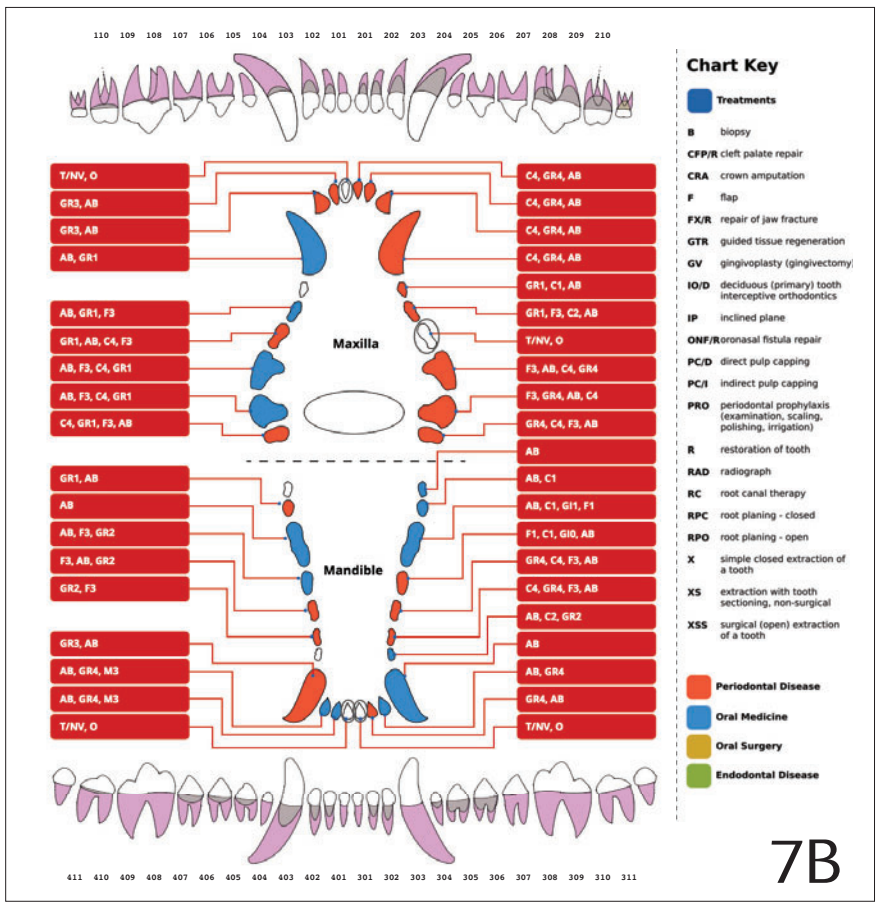


Figure 7B. Examination findings.

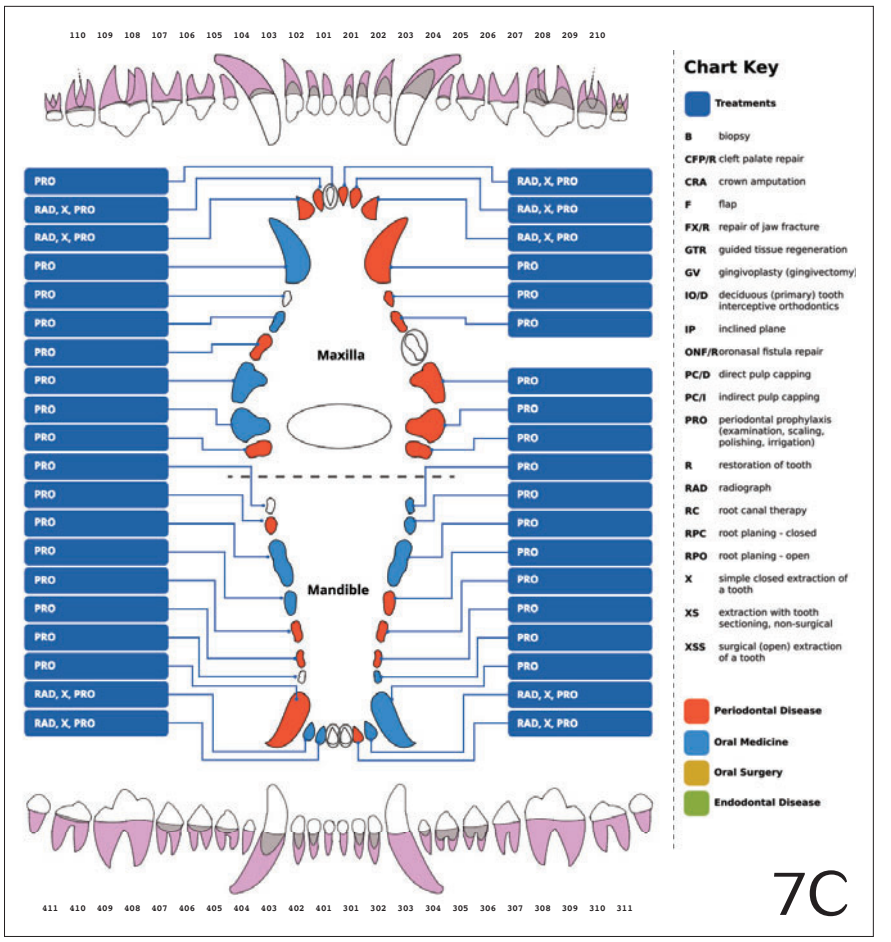


Figure 7C. Treatment performed.

be seen or probed on an anesthetized examination (Figures 6A and 6B). In animals with identifiable pathology on examination, radiographs showed other undetected pathology in approximately 50% of cases.

Charting. If a thorough examination is the foundation for veterinary dentistry, charting documents pathology and helps create a tooth-by-tooth treatment plan. Abnormal examination findings are noted on the chart, which becomes a "to-do" list to discuss with the pet owner either briefly while the animal is anesthetized or at the time of release to schedule a near-future treatment appointment (Figures 7A-7C).

Every professional oral hygiene visit should be clinically imaged and memorialized in a go-home report. These printouts serve as information and publicity sheets that clients share with others to commend your dental acumen. Most clients save them forever.

4. Prevent the preventable; treat the treatable

"Dentistry" is more than cleaning teeth and extracting those with advanced periodontal disease. Your dental practices' goals should be to prevent oral disease and to restore your patients' mouths to as pristine a condition as possible during the professional oral hygiene visit. Each tooth needs a decision based on examination findings to do one of the following:

1. Leave the tooth untreated because other than cleaning it does not need further care.
2. Note on the record to follow uncovered pathology at future visits because the mouth is functional and nonpainful or the client is not willing at this time to proceed with needed care.
3. Extract the tooth (teeth).
4. Refer for advanced dental care.

Actively advising clients how to prevent or decrease the progression of dental disease is imperative to your dental practice. Recognizing and treating dental disease is only two-thirds of a dental practice. Prevention is the remaining third and needs to be promoted to first place—prevention first! Fortunately, the VOHC (VOHC.org) provides us with a list of evidence-based products, which can help decrease the progression of plaque and/or tartar. Encouraging frequent (monthly) oral hygiene rechecks allows you to follow your patients' dental hygiene and make recommendations if needed on how to improve plaque and tartar control. In our practice we do not charge for those follow-up visits. Those clients who comply with daily home care really appreciate our commitment to keeping their pets' mouths healthy, translating into longer happier lives.

Getting 'er done

Kick-starting your dental practice is so worth it—everyone wins. How to get from here to there? Choose a staff member who is into dentistry and let him or her carry the torch. The goal is not to do more dentals. Instead the aim is to thoroughly diagnose and treat every case on the table, then follow with a tailored prevention program. You can do it.

Reference

1. Verstraete FJ, Kass PH, Terpak CH. Diagnostic value of full-mouth radiography in dogs. *Am J Vet Res* 1998;59(6):686-691.

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EQUINE | Surgery

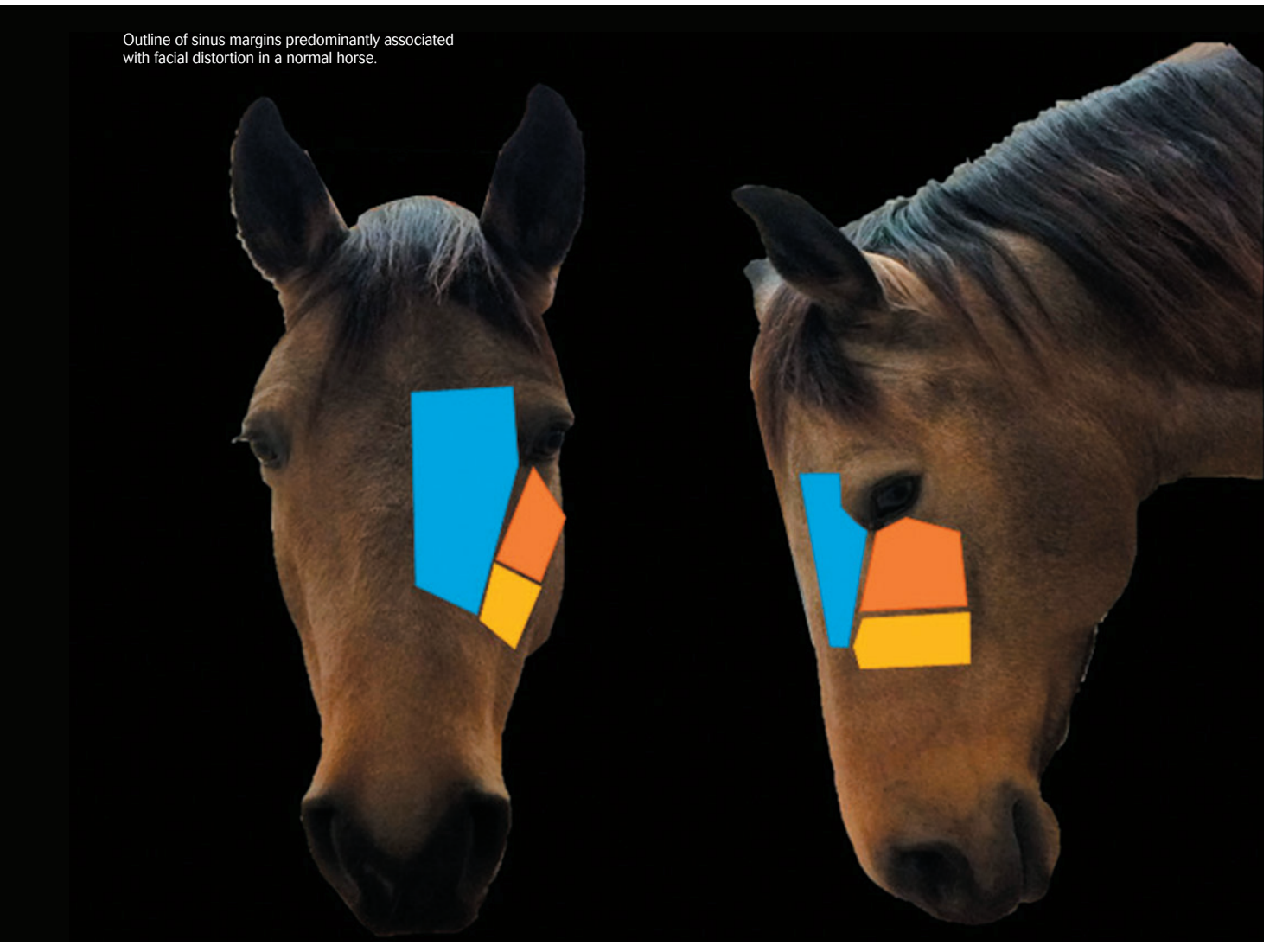
Surgery STAT: Facial deformity due to equine sinus disease

Although horse owners may fear the worst (and sometimes they're right), many conditions are highly treatable—and veterinarians can often manage the process right on the farm.

By Alison K. Gardner, DVM, MS, DACVS-LA, American College of Veterinary Surgeons

Slight facial asymmetry may be difficult even for very diligent horse owners to identify in the absence of trauma. In some cases there is gross massive distortion of the bones around the sinus with impediment of airflow before anyone realizes something is wrong.

Appropriate diagnosis of the disease causing deformation of the maxillary and frontal bones, sometimes accompanied by lacrimal and nasal bone involvement, may be delayed if the owner assumes the deformity is due to a untreatable disease. Indeed, squamous cell carcinoma, the most common malignant neoplasia of the nasal passages and sinuses,[1] carries a poor long-term prognosis, especially if it's associated with bony involvement. However, deformity of the bones around the sinuses is often secondary to more benign and treatable disease such as



Outline of sinus margins predominantly associated with facial distortion in a normal horse.

ALL IMAGES COURTESY OF DR. ALISON K. GARDNER

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News, medicine and business information for equine practitioners.

"The underlying cause of facial deformity can absolutely be diagnosed on the farm with minimal equipment."

sinus cysts, suture periostitis and, less commonly, ethmoid hematoma.[2]

Rarely do periapical intrasinus tooth root abscesses or primary bacterial sinusitis cause deformity, but veterinarians should also consider these differentials. The underlying cause of facial deformity can absolutely be diagnosed on the farm with minimal equipment. Treatment sometimes requires referral to a surgical facility, but it can often be performed with the horse standing under routine sedation and local anesthesia.

Equine sinus: a review of the anatomy

The paranasal sinuses in the horse are made of six paired sinuses (frontal, maxillary, dorsal, middle and ventral conchal, and sphenopalatine), each intricately associated with the others, either directly or indirectly. The nasal septum divides left from right sinuses. The rostral and caudal portions of the maxillary sinus are divided by a usually complete unfenestrated bony septum that may become disrupted by the underlying cause of distortion. These portions of the maxillary sinus communicate only indirectly through the opening into the nasal passage, i.e. the nasomaxillary aperture.

There is no division between the dorsal aspect of the frontal sinus and the dorsal conchal sinus (this space is therefore often called the "conchofrontal sinus") and it readily communicates with the caudal maxillary sinus through the large frontomaxillary opening. The thin bone separating the frontal sinus from the ventral conchal sinus can easily be broken down with a sponge forceps through a large frontal trephine or flap. The ventral conchal sinus communicates with the rostral maxillary sinus on its lateral border at the dorsal aspect of the infraorbital canal. The sphenopalatine sinus sits ventrally and axially to the other sinuses but is not usually involved in diseases causing facial distortion.

Exam and imaging

As always, begin with a good physical exam, making special note of any cranial nerve abnormalities, exophthalmos, or uneven airflow through the nares before imaging. I also recommend a careful oral exam, as squamous cell carcinoma may invade from the sinus into the oral cavity. Invasive neoplasms may also cause loosening of teeth.

Radiographs. Good-quality radiographs are essential for diagnosis of a space-occupying lesion, especially if diagnosis is to be made on the farm through needle trephination. At the very least, take lateral, dorsoventral and both oblique views to visually separate the sinuses from each other. Bones deformed by sinus cysts are often thinned, but lytic lesions are more consistent with aggressive neoplasia or fungal disease.

Suture periostitis, arising from the intersection of the nasal and frontal bones, is usually identified on a lateral view, as are ethmoid hematomas. The dorsoventral view is most helpful in identifying soft tissue opacity in the ventral conchal sinus, which runs axial to the dental arcades on a well-taken radiograph. Radiographs may also aid in determining sinus margins when the lesion distorts normal anatomy, although cross-sectional imaging may be necessary if distortion is severe.

Endoscopy. Endoscopy is not necessary but is useful as an ancillary diagnostic technique, especially if radiographs are equivocal. The nasomaxillary aperture can be evaluated, as can patency of each nasal passage. Ethmoid hematomas are often more readily identifiable on endoscopy than radiographically and may be treated with 10% formalin infusion through an endoscopic needle.

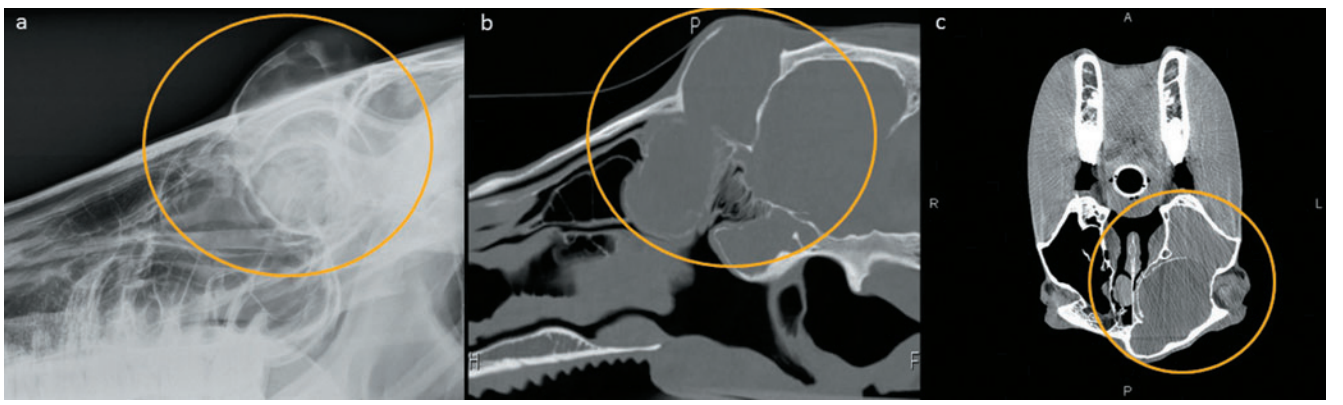
Computed tomography (CT). Cross-sectional imaging is useful for surgical planning but is available only at referral institutions. CT is indicated if more than one mass is suspected or if facial deformity is extreme.

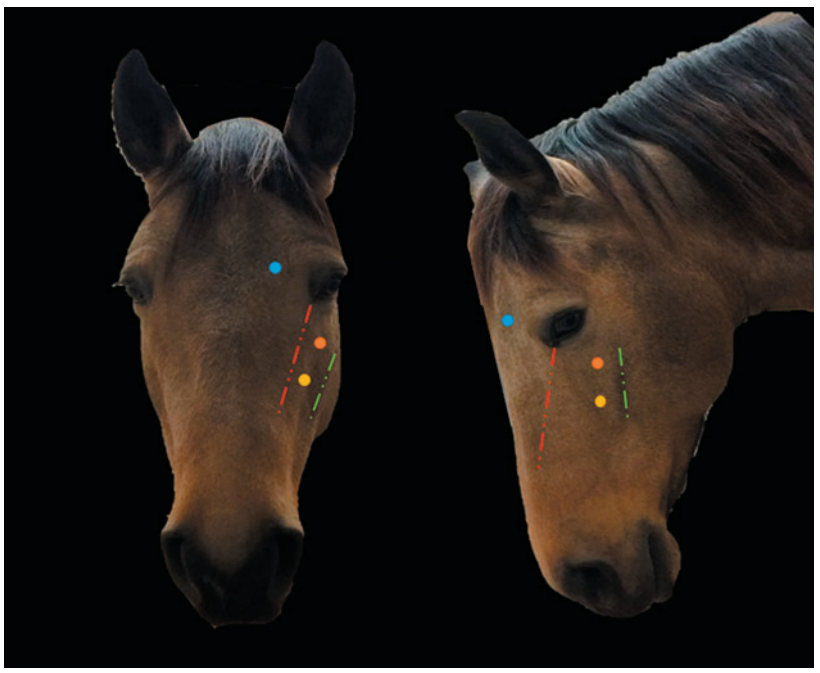
Trephination

To perform trephination you will need:

- Sedation for a 10- to 15-minute procedure
- 1 to 3 ml 2% lidocaine or carbocaine
- 14- to 16-ga needle and mallet or Steinmann pin and Jacob's chuck
- 16- to 18-ga catheter or fresh needles for sampling
- No. 15 blade
- Syringes for collection and flushing
- Sterile saline
- Extension set
- Skin staples.

Lateromedial skull radiograph illustrating round opacity in the frontal and caudal maxillary sinuses (a) corresponding to sagittal (b) and transverse (c) CT image (diagnosed as sinus cyst in surgery).





Sites for trephination of the sinuses and relevant landmarks.

Again, radiographs will aid in determining an appropriate sample site. Take care to avoid the cheek teeth, especially in horses younger than 6 years old. Also, keep in mind that trephination may be contraindicated when a mass of bony opacity is viewed on radiographs.

With the horse sedated, clip and sterilely prep the area overlying the mass visualized on radiographs or at the area of maximal distortion over the frontal or maxillary sinus.

Inject 1 to 3 ml of local anesthetic into the trephination site. Make a stab incision through the skin and periosteum with the blade. With the Steinmann pin

"A catheter affords greater length and less trauma to underlying tissue, but a needle may be needed for aspiration of soft tissue masses."

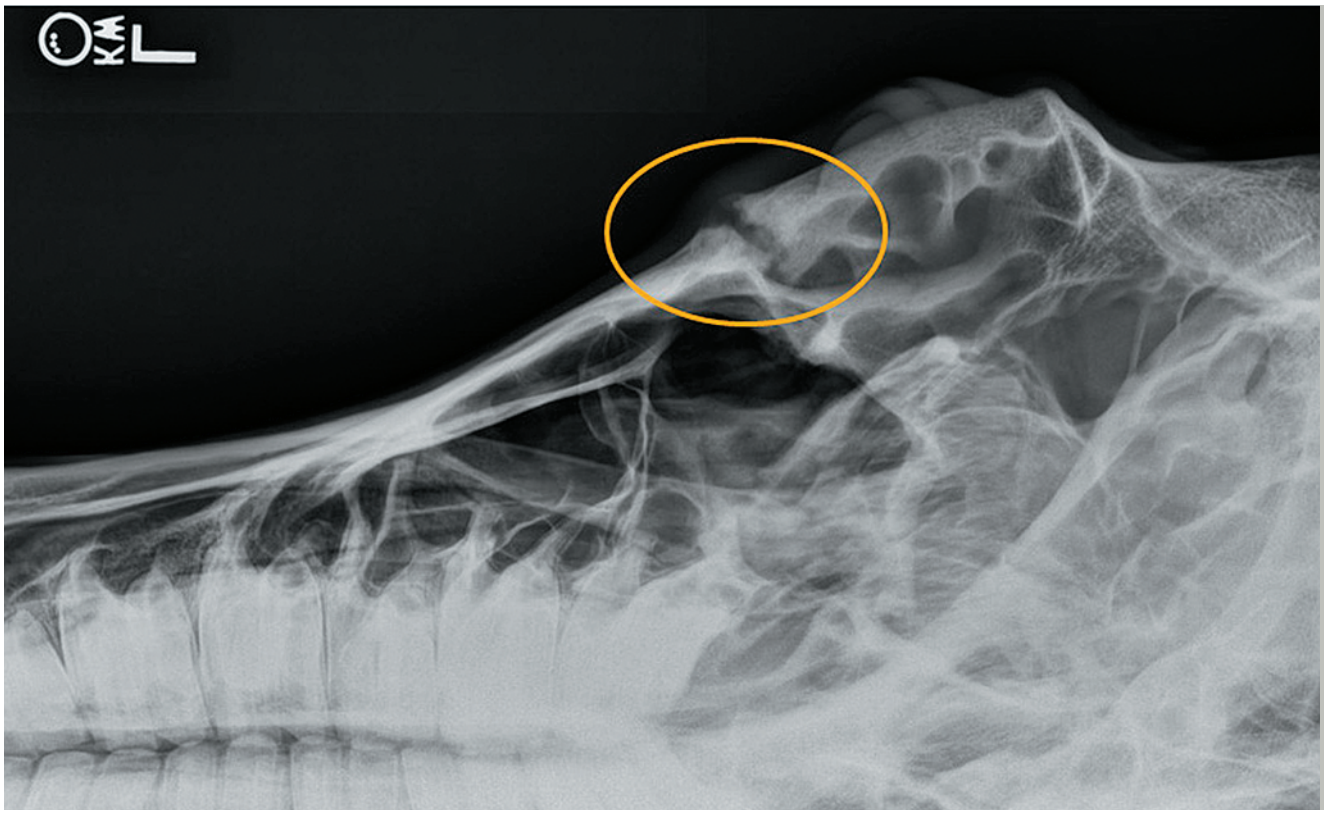
loaded into the Jacob's chuck with only about 2 to 3 cm exposed, apply firm pressure to the bone while holding the pin exactly perpendicular and applying a slow twisting motion. You'll feel a sudden loss of resistance when the bone is penetrated.

If you are using a needle as the trephination instrument, tap the needle gently with the mallet. It is important to hold the needle perpendicular to the skull, otherwise the hub may break off. Once the site is trephinated, remove the pin or needle if there is debris within the lumen and insert a 14-ga catheter or a fresh needle, advancing the catheter off the stylet once the catheter has advanced past the trephine hole. A catheter affords greater length and less trauma to underlying tissue, but a needle may be needed for aspiration of soft tissue masses.

After sampling, flush the sinus through with nonsterile or sterile saline. If the saline does not readily come out the ipsilateral nare, consider obstruction of the nasomaxillary aperture or frontomaxillary opening (if the frontal sinus is the site of trephination). After flushing the sinus, I choose to place one skin staple over the trephination site, both to prevent subcutaneous leakage of pus should sinusitis be present and also to mark the spot of trephination should the site need to be revisited.

Sinus flap

Sinus cysts are one of the most common causes of facial distortion in any age of horse. While extirpation and resolution can be achieved



Left oblique skull radiograph showing nasomaxillary incisive bone suture periostitis.

through larger-bore trephinations using a Galt trephine of 6.4 to 25 mm, surgical removal of the cyst lining is most effective through a frontonasal flap if it is in the frontal or caudal maxillary sinus and will avoid trauma to the tooth roots and infraorbital canal. Likewise, palliative care may be enhanced with debulking of a carcinoma through a flap. These flaps may be done standing, but referral to a surgical facility is recommended.

Anticipated outcome

A soft tissue opacity visible on radiographs is determined to be a sinus cyst when trephination produces honey-colored translucent fluid. Trephination in the field is most valuable for those owners who are open to surgery for a condition with a good to excellent prognosis, as with sinus cysts. Surgical debridement of the cyst lining is curative and airflow through an effective nasal passage may improve through remodeling, although the deformity will still be visible. Many neoplasias of the head, the most common of which is squamous cell carcinoma, carry a poor prognosis, and debulking of the mass should be considered merely palliative.

Sinusitis arising from inadequate drainage through the nasomaxillary aperture is common secondary to facial deformity. The nasal discharge is usually unilateral and is normally not malodorous, depending on the presiding secondary infection. Rarely is it green or fetid, which more often arises from tooth root abscesses or orosinal fistulas. Anticipate the need for sinus flushing through needle trephination to treat secondary sinusitis after surgical treatment (flap) for a condition causing facial deformity, as well as a two-week course of oral broad-spectrum antibiotics.

"All in all, many horses with gross facial distortion are often not treated immediately because of misconceptions about the underlying cause."

Suture periostitis is usually transient and only an aesthetic concern, although application of small plates can limit motion between the nasal, maxillary and incisive bones. Diagnosis can be made by radiography without any need for trephination (See image above).

All in all, many horses with gross facial distortion are often not treated immediately because of misconceptions about the underlying cause. Differentials include many treatable diseases, and diagnosis often can be made on the farm.

References

1. Head K, Dixon P. Equine nasal and paranasal sinus tumours. part 1: Review of the literature and tumour classification. *Vet J* 1999;157(3):261-279.
2. Tremaine W, Dixon P. A longâ€term study of 277 cases of equine sinonasal disease. part 1: Details of horses, historical, clinical and ancillary diagnostic findings. *Equine Vet J* 2001;33(3):274-282.

Dr. Alison Gardner is a boarded large animal surgeon and emergency clinician at The Ohio State University. Dr. Gardner has a clinical and research interest in sinus disease, equine gastroenterology and critical care. In her free time, she enjoys running, biking and traveling.

Surgery STAT is a collaborative column between the American College of Veterinary Surgeons (ACVS) and dvm360 magazine. To locate a diplomate, visit ACVS's online directory, which includes practice setting, species emphasis and research interests, at acvs.org.

9 apps for on-the-go equine practitioners

Ambulatory practitioners now have so much cool technology at their fingertips, it's a shame not to use it. Here's what we rely on in our veterinary practice. *By Kyle Palmer, CVT*

Tech for talking to horse owners

The modern smartphone is your friend. If you're anything like the equine veterinarians at our practice, a typical day includes 20 to 30 phone calls and multiple text messages. Doing that through the **texting app** that's built into your phone is easier. And most text apps keep a running dialogue of communication with each contact, which is very helpful when you need to call a client again the next day and that Post-It note you scribbled a phone number on has fallen under your car seat.

ATELIER211/SHUTTERSTOCK.COM

Tech for looking up medical info

Most practices I've been in (or at least the ones with veterinarians over the age of 35) have a fairly large library of expensive textbooks. Because of how expensive they are, and the space they take up, it's just not reasonable to have a set in each practice vehicle, or even to haul them around if you're a solo practitioner. Since every smartphone or tablet can reach the internet (provided you have a service contract), almost anything is available at the touch of a button.

> Plumb's Veterinary Drugs (available in most app stores) is an online version of the book most practitioners can't live without. While it does require a subscription, it's regularly updated.

> The Merck Manual (Professional Version) has the entire contents of the hard-copy book, including common procedures for almost everything.

> On top of the many specific apps available, the **iBooks** app on an iPhone or iPad, or the **Kindle Reader App** on others, would allow you to download almost any desired textbook or bring your own resources with you on the road in the form of PDF files.

Tech for scheduling calls

While most clinics invest in some form of practice management software, most systems struggle with constant contact for ambulatory practitioners. Our practice has long used IDEXX Cornerstone, which is great but has a mobile module that must be synced at the end of each day. Unfortunately, equine schedules (all schedules for that matter) tend to evolve throughout each day, and only having whatever schedule you started with isn't always helpful. To solve that problem, we don't use our practice management software for that at all.

We've found great success with an Outlook calendar on a clinic iPad that syncs with doctors' schedule on their smartphones. Changes are virtually instantaneous, and the same information can be accessed on multiple devices. When an urgent appointment request comes in via email after hours, we can do some scheduling from home on our phone. Prior to smartphones, we handed a doctor a schedule in the morning, then changed it several times by phone, requiring the doctor to pull over (if driving), grab a pen and paper and take notes. No more, thanks to the calendar app.

Tech for keeping records

I know some veterinarians travel with an assistant who can operate computerized medical records and create invoices, but I know many equine practitioners don't have that luxury. Voice-to-text apps are a wonderful way to create medical record notes that can be sent to the office or uploaded later in the form of text messages or emails.

There are many options to choose from, but Dragon Dictation is one app that seems to work well. Dictated notes can be sent in any form, making records on the fly very simple. Practitioners also shouldn't overlook their smartphone camera for medical records. Photos of various conditions also translate well to a JPG image that can be uploaded anywhere.

Tech for docs without a software suite

For practitioners without practice management software, the app **Saddlite V2 SS** offers the whole package. It's a subscription-based system that can be used for all aspects of practice—billing, medical records, prescriptions, etc. It can be used as a stand-alone system with an iPad on the road, or used between an ambulatory iPad and the home office.

For more reproduction-focused practitioners, the app **EquiBreedVet Pro** offers complete record-keeping and management of reproductive clients and patients. While it's also touted as a helpful app for breeders themselves, the benefits are clear for practitioners—tracking a broodmare's reproductive characteristics and maintaining a complete tracking of estrous cycles.

These examples are just the tip of the iceberg. If you can imagine it, someone has probably already developed it. (If not, hire some developers and go do it, entrepreneur!) Spend some time browsing your app store today and see how you can improve productivity at your practice.

Kyle Palmer, CVT, is a Firstline *Editorial Advisory Board member and a practice manager at Silver Creek Animal Clinic in Silverton, Ore. Please send your questions or comments to dvmnews@ubm.com.*

How app-ropriate

Still wondering what new apps are available to help you in veterinary practice, or which ones are worth purchasing?

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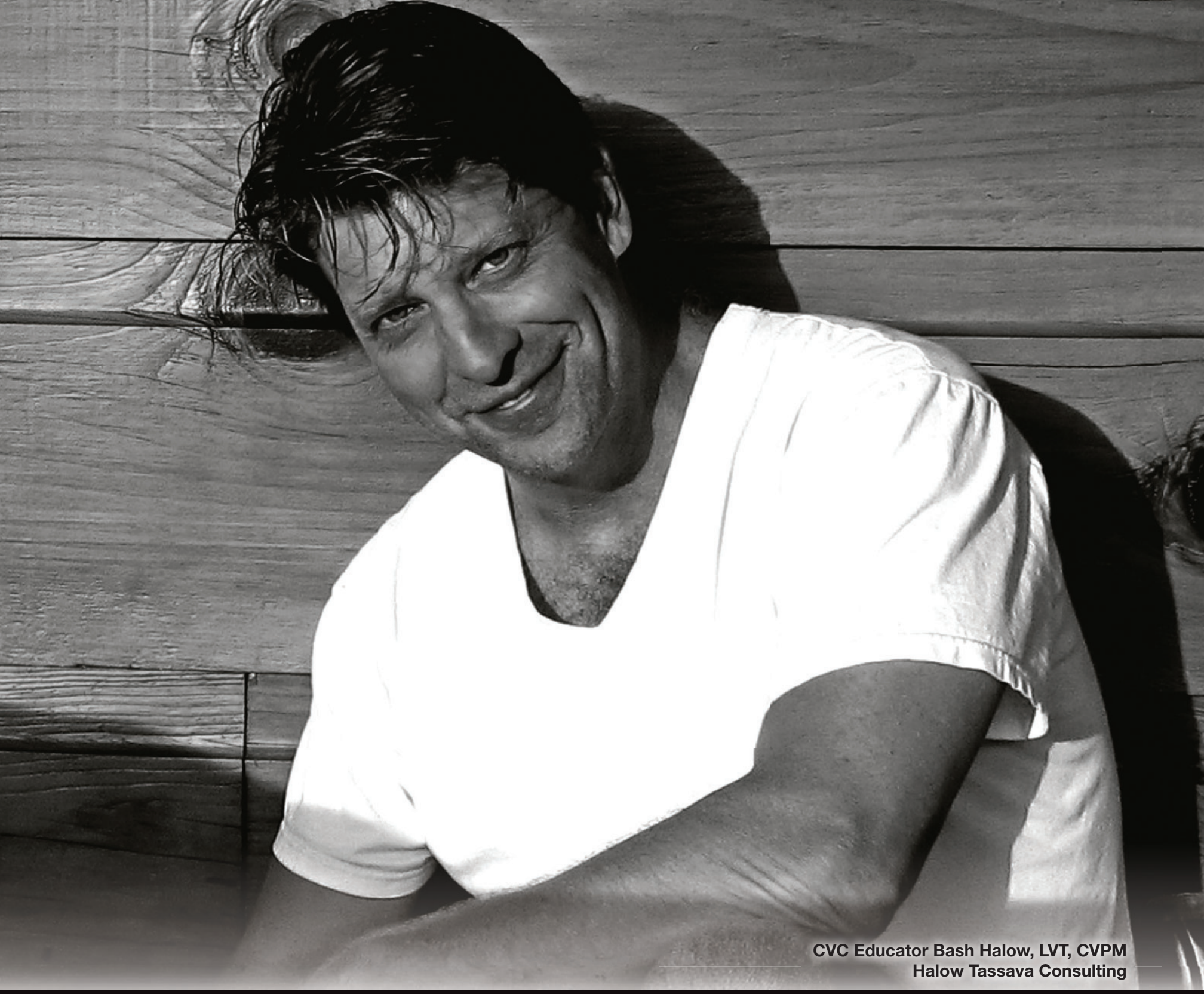

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UBM

>>> A laugh? A yawn? An exasperated whinny? Whatever it is, this horse is definitely the avatar of veterinary practitioners contemplating billing clients after a long day in the field.

Billing at night is *laughably annoying*

After traveling all day from farm to field to stable to clinic, what equine veterinarian wants to spend hours billing clients? Here's one possible solution for weary equine practitioners.

The third-party payment plan provider CareCredit offers a Pay My Provider program to all medical professionals (including dentists and physicians), but company reps think it may find a special place in the hearts of equine professionals. Veterinarians can electronically bill their clients with CareCredit, and those clients can electronically pay any old time they feel like it (sooner rather than later, of course).

We here at *dvm360* heard a sales spiel from CareCredit higher-ups about the program, but then we asked the company to share some stories from satisfied customers.

Kristen Grove, an office manager with West Coast Equine Medicine in San Diego, says her veterinarians and team members run into cell phone reception trouble all the time, hampering easy billing. And internet? Even worse in some places out in the Southern California hills. No horse owner wants to stand around trying to get a signal to pay a bill.

"This way our clients go to the website and pay on their own time," Grove says.

Clients can also be squeamish about giving out credit-card numbers during veterinary calls. And they're often too busy to call during business hours to make sure they're all paid up. "Now, clients go online and don't need to worry about giving their card number to anyone," Grove says.

DeAnn Hughes, DVM, owner of Southern Equine Veterinary Services in Knob Lick, Kentucky, says she just wants it all done on the visit: "I'm always looking for ways to complete all the paperwork in the field. Now, when I'm seeing clients, I literally pull out my iPad and let the client do the rest."

"I pull out my iPad and let the client do the rest"
- Dr. DeeAnn Hughes

And printers—don't get Dr. Hughes started on printers.

"This makes my printer go away. If I have to drag out my printer and connect through Bluetooth, it takes another five minutes."

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Spectrum Vet

Allergy test

The Spot Platinum Allergy Test is a reliable and advanced in-vitro test from Spectrum Vet. To create the Platinum system, Spectrum partnered with veterinarians, allergists, robotic engineers and other experts to improve its already strong existing technology.

For fastest response visit vetallergy.com/vet/allergy-testing/get-started

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Chemistry analyzer

The VetScan VS2 is a state-of-the-art chemistry, electrolyte, immunoassay and blood gas analyzer that delivers accuracy from just two drops of whole blood, serum or plasma. The VetScan VS2 is simple and intuitive, with precision reference laboratory quality results in 12 minutes, making it useful for veterinary clinics, mobile practitioners, research laboratories, and pharmaceutical and biotech companies.

For fastest response visit abaxis.com

Sound

Digital radiography system

The Sound Smart DR system features Musica intelligent image processing, delivering consistently high image quality across species, views and users. The system also offers balanced presentation of soft tissue and overlapping bone structures, realistic representation of anatomy, comfortable reading capabilities, and a hands-free medical image processor.

For fastest response visit soundvet.com/digital-x-ray/small-animal/sound-smart-dr

VetriMAX

Antihistamine cream for animals

AtopiCream Therapeutic Skin Repair is a steroid-free formulation for cutaneous use that contains diphenhydramine HCl 2%, fatty acids, ceramides and other skin-repair ingredients, including conjugated linoleic acid (CLA), lactic acid and vitamin E. AtopiCream is designed to restore the barrier function of the skin, thereby diminishing inflammation, transepidermal water loss and pruritus. With exclusive VetriSpheres Technology, AtopiCream Skin Repair offers a controlled, sustained release of active ingredients for better utilization over a longer duration of time.

For fastest response visit vetrimaxproducts.com

Kinetic Vet

Shampoo for horses, dogs and cats

EquiShield AO Shampoo is a non-medicated shampoo for horses, dogs and cats that contains aloe, oatmeal and essential fatty acids. The shampoo is gentle enough for everyday use and comes in 32-oz bottles and gallon-sized bottles.

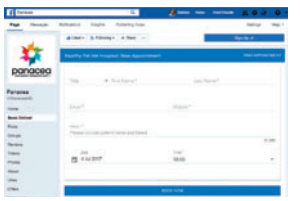
For fastest response, visit kineticvet.com

Orivet Genetic Pet Care

Canine, feline DNA tests

Available Life Plans and DNA tests offered by Orivet include full breed profiles, breed identification DNA testing, DNA disease screening, DNA profiling and parentage confirmation, and more. Results of tests are available to pet owners through a wellness dashboard.

For fastest response visit orivet.com



Panacea Cloud Software Limited

Veterinary Practice Management System

The cloud-based Panacea veterinary practice management and clinical records system allows pet owners to book and manage appointments in real time via the hospital's own website and Facebook page.

In many instances, Panacea software allows users the ability to migrate existing data from current practice management systems.

For fastest response visit panaceahq.com

DNTLworks

Console for dental treatments

The VCP II Veterinary Mobile Treatment Console has a higher working surface for convenient instrument access during standing dental procedures; recessed controls to prevent accidental damage; a scratch-resistant, aircraft-grade aluminum frame; automatic handpiece selection; and a piezoelectric scaler. An LED scaler is also available.

For fastest response, visit dntlworksvet.com

BabelBark

Newly redesigned website

BabelBark has updated its websites for BabelBark (for pet parents), BabelVet (for veterinary practices) and BabelBiz (for pet businesses). Each website is part of a complete and integrated online ecosystem, designed to help pet parents manage every aspect of their pet's life.

For fastest response visit babelvet.com

CareCredit

Easier, in-clinic credit approval

A private and secure digital experience that allows pet owners to apply for financing and get a credit decision immediately without leaving the veterinary hospital. Clients can also calculate their monthly payments based on the promotions a particular veterinary clinic accepts. Once approved, the pet owner can use their CareCredit credit card for same-day services, if needed.

For fastest response visit carecredit.com

What was super at SuperZoo

It'll make a lousy T-shirt: "Your favorite veterinary publication went to the pet retailer show SuperZoo in Las Vegas, and all we got you was awesome product news."

Veterinarians and team members: Would any of your clients like to know about these things? Would you want to stock them in your hospital or in your online pharmacy? Or maybe you want them all to yourself? No matter why you're interested in cool new pet products, here's what caught our eye at SuperZoo 2017, an enormous pet retailer show in Las Vegas:

Made in the USA ... for your dog to destroy

Caitec has unveiled eight Hero dog toys made in a solar-powered facility in New Jersey. Designs are inspired by Old Glory, with star balls and stripe bones and something that looks like a law enforcement badge ("You have the right to stick this in your mouth and wildly shake your head back and forth").

Here, close your eyes, and imagine. A rubber bone that looks a bit like a stylized flag. A disc-like toy with a star in the middle. Hey, you have a good imagination!

Are you pulling my leg?

No, I'm not pulling your leg; I'm pulling your rope. Specifically the rope tied to the end of the pole planted in the ground that is the Tether Tug.

Dogs like to pull. Some of them could do this all day, with small breaks to eat, drink, pee and sleep. This is for the pet parent with a tug-o-war-loving dog who doesn't have the time to play in the backyard for hours at a time.

The Tether Tug has different varieties catering to dogs of different sizes, and there are rope replacements and a soil stabilizer (for mushy terrain) available on the website.

Put a collar on it! (Or how about, don't do that?)

Three products from Suitical offer alternatives to the e-collar (we just presented a surgeon's take on a few at **dvm360.com/notanecollar**) and cooling off hot dogs.

The Recovery Suit for Dogs and the Recovery Suit for Cats are being marketed for a variety of conditions and situations: protecting and covering hot spots, wounds, surgical sutures, bandages, ointments and skins conditions as well as when a pet is incontinent or in heat. The design uses "a breathable, stretchy cotton/Lycra fabric" for better movement with a rear closure that's "effortless to fit."

The Recovery Sleeve offers left or right front-leg protection for dogs recovering with hot spots, wounds, sutures and so on.

The Dry Cooling Vest, filled with fresh water, begins cooling a dog up to 59 F below ambient air temperature for one to three days.

The company says it prevents heat stress during and after a walk in the sun, a trip in a car or anywhere else cooling is required.

Trigger points: What prompts pet owners to take action?

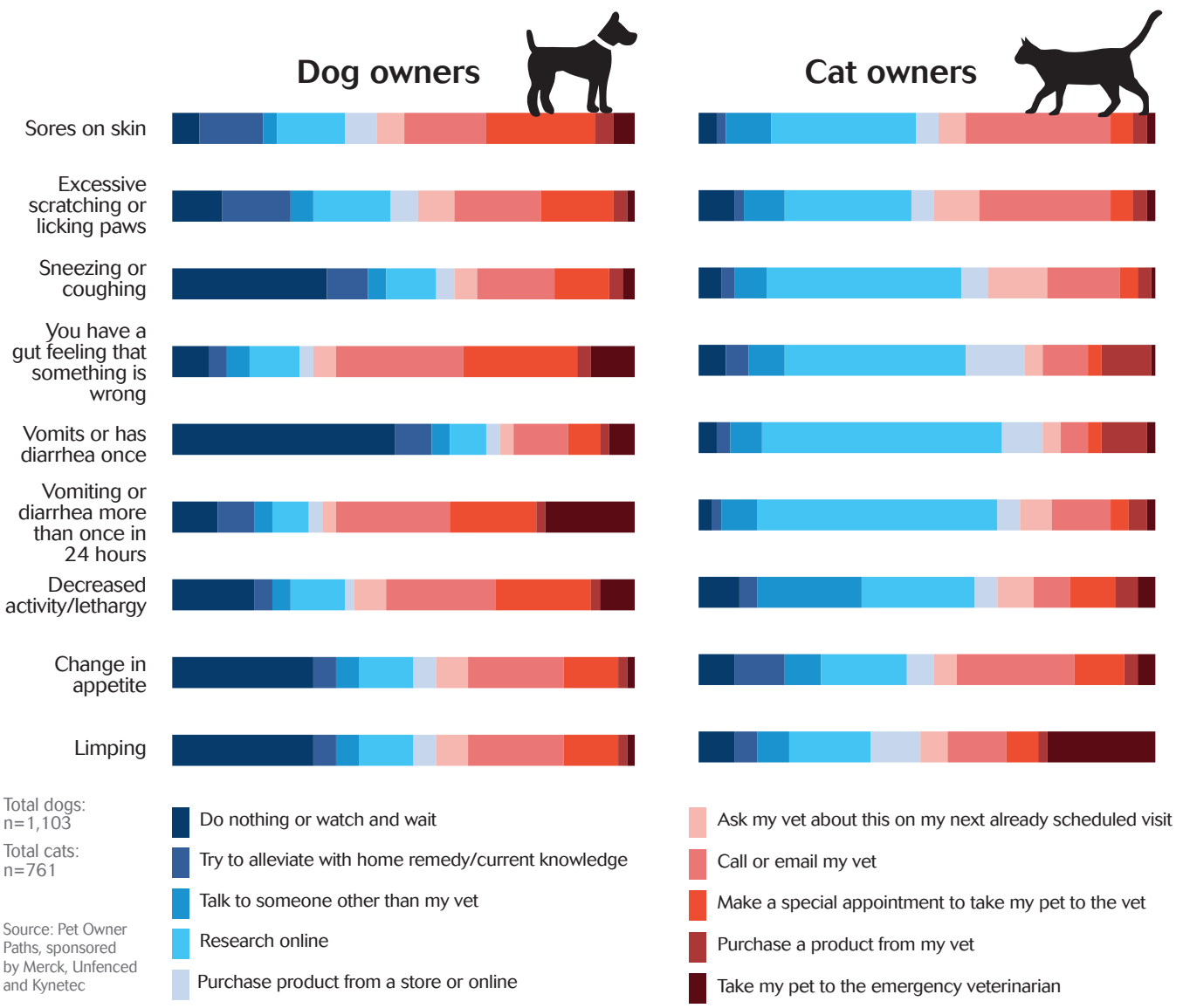
Pet Owner Paths research looks at clinical signs, client reactions.

Have you ever wondered what it is that finally gets that pet owner to pick up the phone and call your veterinary hospital? Or what makes the difference between a question, appointment request and sheer panic? The Merck-Unfenced Pet Owner Paths research, which looks at the steps pet owners take when making decisions about their pets' health, has taken some of the mystery out of it.

Researchers asked pet owners about specific clinical signs they might observe and what their response would be—the results are at right. Shades of blue represent those responses where you're not involved; shades of red and pink mean you are involved—the darker the red, the more intense the response seeking a veterinary team's involvement.

Some interesting highlights: For dog owners, a gut feeling that something is wrong or vomiting or diarrhea more than once in 24 hours drives the most intense response—in other words, dog owners are most likely to take their pet to an emergency clinic in these scenarios. For cat owners, limping is the most likely thing to trigger a trip to the ER or get a veterinarian involved. And finally, notice how wide those medium-blue "Research online" bars are for cat owners compared with dog owners?

Pet owners were asked: What action would you would take if you noticed the following clinical sign in your pet?



For cat owners, limping is the most likely thing to trigger a trip to the ER or get a veterinarian involved. And notice how wide those medium-blue "Research online" bars are for cat owners?

More from the Pet Owner Paths study

To learn about the differences between the ways millennial pet owners make decisions about their pets' care compared with older pet owners—and how and when both groups decide to involve a veterinarian—visit dvm360.com/pathsresearch.

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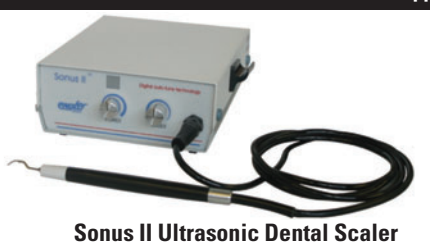

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The frameless feature allows for easy folding and storage (storage bag included).

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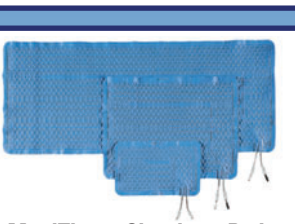

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For a full listing of events in 2017, visit dvm360.com/calendar

December 7-10, 2017
Fetch San Diego
(800) 255-6864, ext. 6
thecvc.com/sd

May 18-20, 2018
Fetch Virginia Beach
(800) 255-6864, ext. 6
thecvc.com/vb

August 17-20, 2018
Fetch Kansas City
(800) 255-6864, ext. 6
thecvc.com/kc

Here are the CE opportunities coming in the next few months

September 8-9
Equine Pre-Purchase Examination—A Discipline-Specific Interactive Approach
Dover, NH
(844) 870-6097
vetpd.com

September 8-10
Fundamentals of Dentistry—3-Day RACE-Accredited Series
Baltimore, MD
(410) 828-1001
animaldentaltraining.com

September 9
Veterinary Dental Extraction Course
Charlotte, NC
(941) 276-9141
veterinarydentistry.net

September 9-10
Dermatology for the General Practitioner
San Diego, CA
(619) 640-9583
sdcvma.org

September 9-10
San Diego County VMA Veterinary Conference—Dermatology
San Diego, CA
(619) 640-9583
sdcvmadeb@aol.com

September 10
Vet and Tech Dental Course
Charlotte, NC
(941) 276-9141
veterinarydentistry.net

September 11-12
Human Resources Bootcamp
Philadelphia, PA
(303) 674-8169
vmc-inc.com

September 13-16
Veterinary Management School (VMS)
Lakewood, CO
(800) 883-6301
aaha.org/vms

September 14-15
Financial Boot Camp
Cincinnati, OH
(303) 674-8169
vmc-inc.com

September 14-17
New England Veterinary Conference
Portland, ME
(800) 297-1749
nevma.org

September 15-16
Equine lameness Diagnostics (including Objective Gait Analysis)
Rockledge, FL
(844) 870-6097
vetpd.com

September 14-15
Financial Boot Camp
Cincinnati, OH
(303) 674-8169
vmc-inc.com

September 15-17
Principles of Fracture Repair
Las Vegas, NV
(866) 800-7326
wvc.org/course/principles-of-fracture-repair-3

September 16
31st Annual Feline Conference (A Day on Feline Nutrition)
Madison, WI
(608) 251-2300
apps.vetmed.wisc.edu/cereg

September 17
It's What's Up Front That Counts!
Milwaukee, WI
(303) 674-8169
vmc-inc.com

September 23
Veterinary Dental Extraction Course
Atlanta, GA
(941) 276-9141
veterinarydentistry.net

September 24
It's What's Up Front That Counts!
Chicago, IL
(303) 674-8169
vmc-inc.com

September 24
Vet and Tech Dental Course
Atlanta, GA
(941) 271-9141
veterinarydentistry.net

September 29
Pacific Northwest Veterinary Conference and Trade Show
Tacoma, WA
(425) 396-3191
wsvma.org

September 29-30
Equine Hoof Health
Middleton, WI
(608) 265-5206
apps.vetmed.wisc.edu/cereg

September 29-30
Evidence-Based Farriery for Equine Practitioners—2-Day Practical Course
Stillwater, MN
(844) 870-6097
vetpd.com/courses-detail.php

Sept 29-Oct 1
Creating a Profitable Business —Finance & Business Strategies for Equine Practitioners
Yellowstone, WY
(844) 870-6097
vetpd.com/courses-detail.php

Sept 29-Oct 1
106th Annual KVMA Meeting—44th Mid-America Veterinary Conference
Louisville, KY
(502) 226-5862
kvma.org

September 30
See the Pain, Treat the Pain—PM Session
Colchester, CT
(937) 642-9813
aimla.org

September 30
Advanced Veterinary Laser Therapy Interactive Continuing Education Workshop
Colchester, CT
(352) 792-1991
digatherm.com

Sept 30-Oct 1
Advanced Laparoscopic/Thoracoscopic Sugery
Athens, GA
(706) 542-1451
vet.uga.edu/CD/calendar

October 1
It's What's Up Front That Counts!
Phoenix, AZ
(303) 674-8169
vmc-inc.com

October 1-2
Core Surgery Procedures for the Small Animal GP
Las Vegas, NV
(866) 800-7326
wvc.org

October 1
Vet Vacation CE—North Carolina
Asheville, NC
(888) 488-3882
vetvacationce.com

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Lions, cobras and elephants—oh my!

Don't shrink from treating exotics. Dr. Robert Miller assures you that you've got this.

Reading the *JAVMA* "Veterinarians wanted" classifieds section, I am pleased to see the great number of ads that include "exotics." (Yes, at 90 years old, I still look at every page of my professional journals.)

I was trained in six domestic species. During my four years in veterinary school, only once did I see an exotic species—when a pet mountain lion was shown to us during rounds with what I later discovered to be an incorrect diagnosis—osteogenesis imperfecta, a congenital disease.

I learned a few years later that what that cat actually had was secondary nutritional hyperparathyroidism caused by an all-muscle-meat diet, which is calcium-deficient. I learned that is was epidemic in captive exotic feline species.

How did I learn?

I established a practice in Thousand Oaks, California, the main town in Ventura County's Conejo Valley, with a population of 1,250 people.

Why?

1. Despite its low human population, the Conejo Valley had an enormous animal population. This included many horse ranches and cattle ranches that used horses. I wanted to be sure that my mixed practice included horses.
2. The area had *never* had a local veterinary practitioner. All veterinary services came in from adjacent Los Angeles County or more populous western Ventura County.
3. Although this area today is suburbanized and is the home for many high-tech firms, back then the *only* industry in the valley was the wild animal industry, mainly used to supply Hollywood with *any* kind of exotic species they required. Unlike L.A. County, our county had very lenient zoning restrictions.

We had Jungleland, a huge zoo that included more than 100 big cats—lions, tigers, leopards, etc. Most of these were well-trained and, unbelievably today, were kept mostly in small cages and, if gentle enough, were walked in our main street for exercise and chained to the oak trees that lined the boulevard.

There was an elephant training center, a camel breeding farm, the headquarters for the Big John Strong Circus, Bird Wonderland, a snake and lynx farm with every conceivable species, and many, many people who just kept one or two animals for the infrequent but profitable requests from show business for their special animals.

The Clark family, for example, had a mature African male lion who shared their bedroom. Even more unusual, they had a large glass aquarium next to their bed that contained a full-sized spitting cobra.

I loved the variety and the challenges my practice provided. For a couple of years, I telephoned the veterinarians in leading zoos all over the world. Gradually, I realized that it was the blind leading the blind.

My boyhood hero was the African explorer, wildlife expert, taxidermist and adventurer Carl Akeley. I read his books many times and any other wildlife books I could find in the library.

With that background combined with my medical schooling and, above all, reverence for evolution and natural selection, I was able to do a good job for my exotic animal clients and developed a love and respect for wildlife medicine that enhanced my ability to treat domestic species.

I convinced many of my clients that carnivorous animals don't eat meat. They eat other animals, including bone and blood, which are rich in calcium. "Meat" is not!

I preached that chimpanzees should not be fed a diet limited to fruits and vegetables. I added foods of animal origin (egg, meat, a little cheese) and they thrived. Their teeth told me that they were omnivorous and not strictly vegetarian—a fact confirmed decades later by Jane Goodall, the renowned chimp scientist.

The point I'm trying to make is this: Don't shy away from exotic species patients simply because of a lack of familiarity or because you had no exposure to the species in school. Accept the challenge. Combine common sense with your medical training.

Today a huge wealth of data is available that was unimaginable during my early practice decades. Modern communication methods easily link us today with colleagues and other scientifically trained individuals.For those of us who are passionate about our profession, exotic animal practice can be both challenging and tremendously satisfying.

I never planned on such a practice before I graduated, but I have been so glad I discovered it. Most important, it greatly enhanced my understanding of domestic animal medicine. It made me a better doctor of veterinary medicine.

KAURIANA/SHUTTERSTOCK.COM

Robert M. Miller, DVM, is an author, cartoonist and speaker from Thousand Oaks, California. His thoughts in "Mind Over Miller" are drawn from 32 years as a mixed-animal practitioner. Visit his website at robertmmiller.com.

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*Source: Among veterinary brands. Survey conducted in February 2016 of small animal veterinarians who recommended oral joint health supplements.

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Other evidence of kidney disease?

- Inappropriate urine specific gravity (USG) of <1.030 in a dog or <1.035 in a cat
- Active urinary sediment, particularly casts, white blood cells, or bacteria
- Proteinuria or urine protein:creatinine (UPC) ratio >0.5 in a dog or >0.4 in a cat
- History of weight loss, decreased appetite, polydipsia, polyuria
- Physical examination findings, such as palpable kidney abnormalities
- Creatinine, BUN, and/or phosphorus above reference interval
- Creatinine increasing within reference interval
- Anemia
- Other diagnostic findings (abnormal kidney imaging, unexplained hypertension)

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Investigate

To identify an underlying cause, perform:

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- Infectious disease testing (Lyme disease, leptospirosis, ehrlichiosis, FeLV, FIV, FIP, toxoplasmosis)
- Diagnostic imaging (stones, pyelonephritis)
- History/possibility of toxin exposure?
- History/exposure to potentially nephrotoxic drugs?

For confounding conditions, assess:

- Hydration status
- Blood pressure
- Urine protein:creatinine ratio
- Thyroid status

Manage

Treat appropriately

- Underlying disease if identified
- Clinical dehydration
- Persistent hypertension
- Persistent proteinuria
- Hyperthyroidism

Provide kidney support immediately

- Feed kidney-supportive diet
- Provide fresh, clean water sources
- Discontinue all potentially nephrotoxic drugs if possible

Adjust anesthesia protocols

- Provide intravenous fluids, before, during, and upon recovery
- Provide oxygen, before, during, and upon recovery
- Maintain and monitor blood pressure and body temperature
- If needed, use narcotic for pain management

Monitor

Underlying or confounding disease identified

Monitor as indicated

Underlying or confounding disease not identified

Recheck in 2 weeks

SDMA returns to normal

- Kidney function has returned to normal
- Monitor confounding conditions and other underlying disease if present

SDMA remains increased but stable

- If SDMA and creatinine are stable, chronic kidney disease (CKD) is diagnosed
- Initiate appropriate treatment based on International Renal Interest Society (IRIS) CKD staging

SDMA continues to increase

- If SDMA and/or creatinine are increasing, consider ongoing, active kidney injury
- Perform additional diagnostics to determine cause and to guide treatment

Learn more at **idexx.com/takeaction**

*Symmetric dimethylarginine.

†SDMA reference interval is 0–14 µg/dL. However, in puppies, the SDMA reference interval is 0–16 µg/dL. SDMA reference interval studies are underway for kittens and greyhounds, and results may also be slightly higher and should be interpreted in light of other findings.

IDEXX