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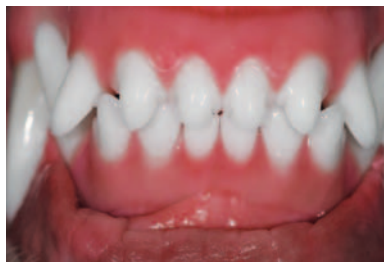
January 2018 | Volume 49 | Number 1 | dvm360.com

The ABCs of veterinary dentistry:

'M' is for malposition and malocclusion

page M1



New service promises an antidote to late night client calls

GuardianVets says after-hours pet triage with licensed veterinary professionals will bond pet owners to your practice.

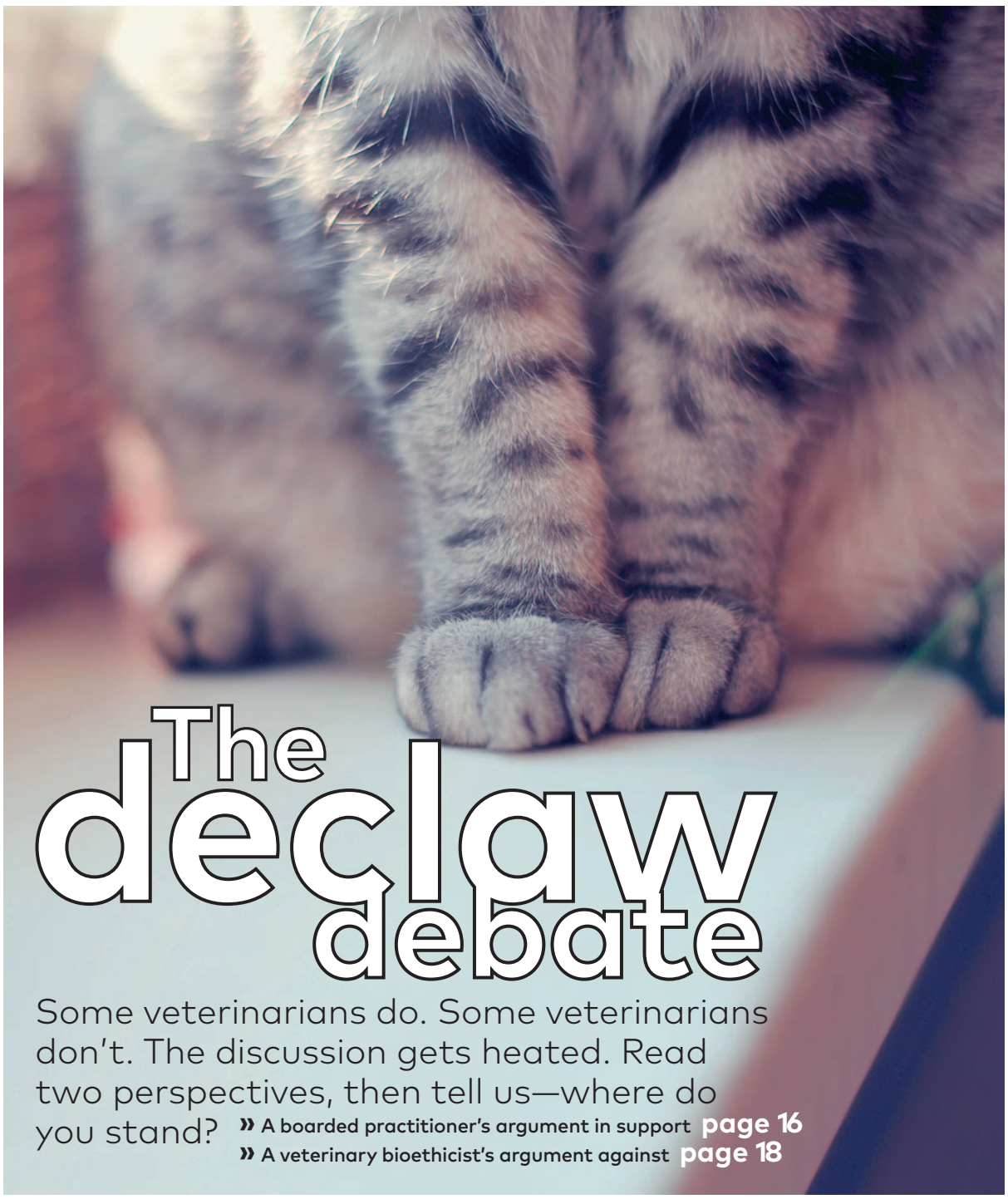
By Portia Stewart, Team Channel Director

"Hello?" you croak, rubbing the sleep from your eyes.

"Max is sick. I can't get him to eat." The voice on the other end of the phone is husky with tears. Your client speaks fast and low, a cadence of fear laced with panic. "Does he need to be seen?"

You've taken countless calls like this one. They're inevitably on an evening or weekend, after the clinic is closed. But now you've answered the phone, and so you face the Sophie's choice of veterinary medicine: Crawl out of bed as you tell the client you'll see her and Max at the clinic in 20 minutes … or send her to the emergency hospital, where she'll discover that an emergency call is a little more expensive than a daytime appointment with you. Plus, she'll likely be mad at (a) you for referring her, (b) the emergency hospital

page 22



The declaw debate

Some veterinarians do. Some veterinarians don't. The discussion gets heated. Read two perspectives, then tell us—where do you stand?

» A boarded practitioner's argument in support page 16
» A veterinary bioethicist's argument against page 18

fetch dvm360 CONFERENCE

Fetch dvm360 panel: Corporate practice

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Meet the 2017 Practice Manager of the Year

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Sorting paranoia from truth in a client's story

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Looking right into the eye of Hurricane Irma

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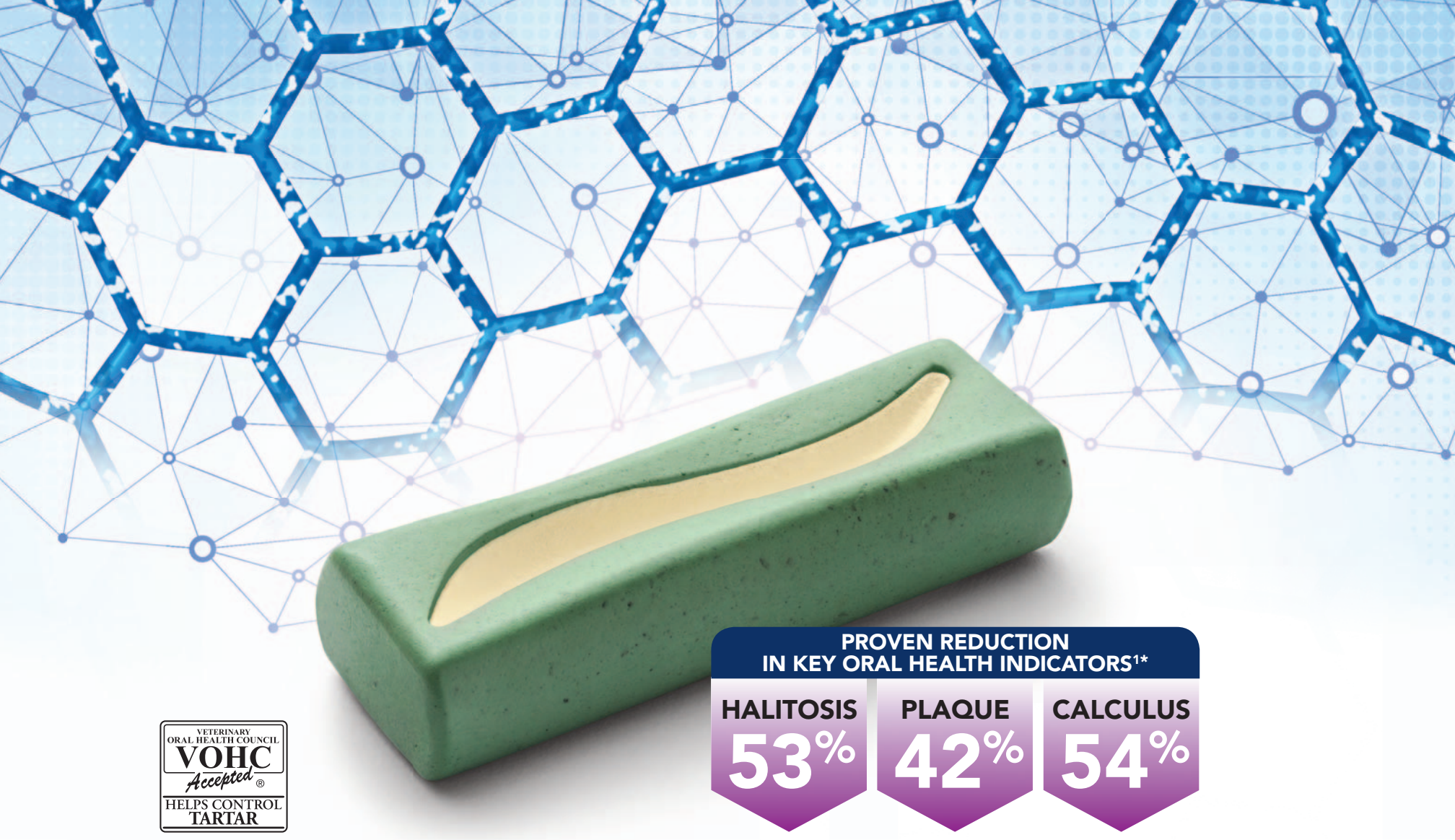

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References: 1. Data on file. **2.** Steinberg D, Beeman D, Bowen W. The effect of delmopinol on glucosyltransferase adsorbed on to saliva-coated hydroxyapatite. *Archs Oral Biol*. 1992;37:33-38. **3.** Vassilakos N, Arnebrant T, Rundegren J. In vitro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

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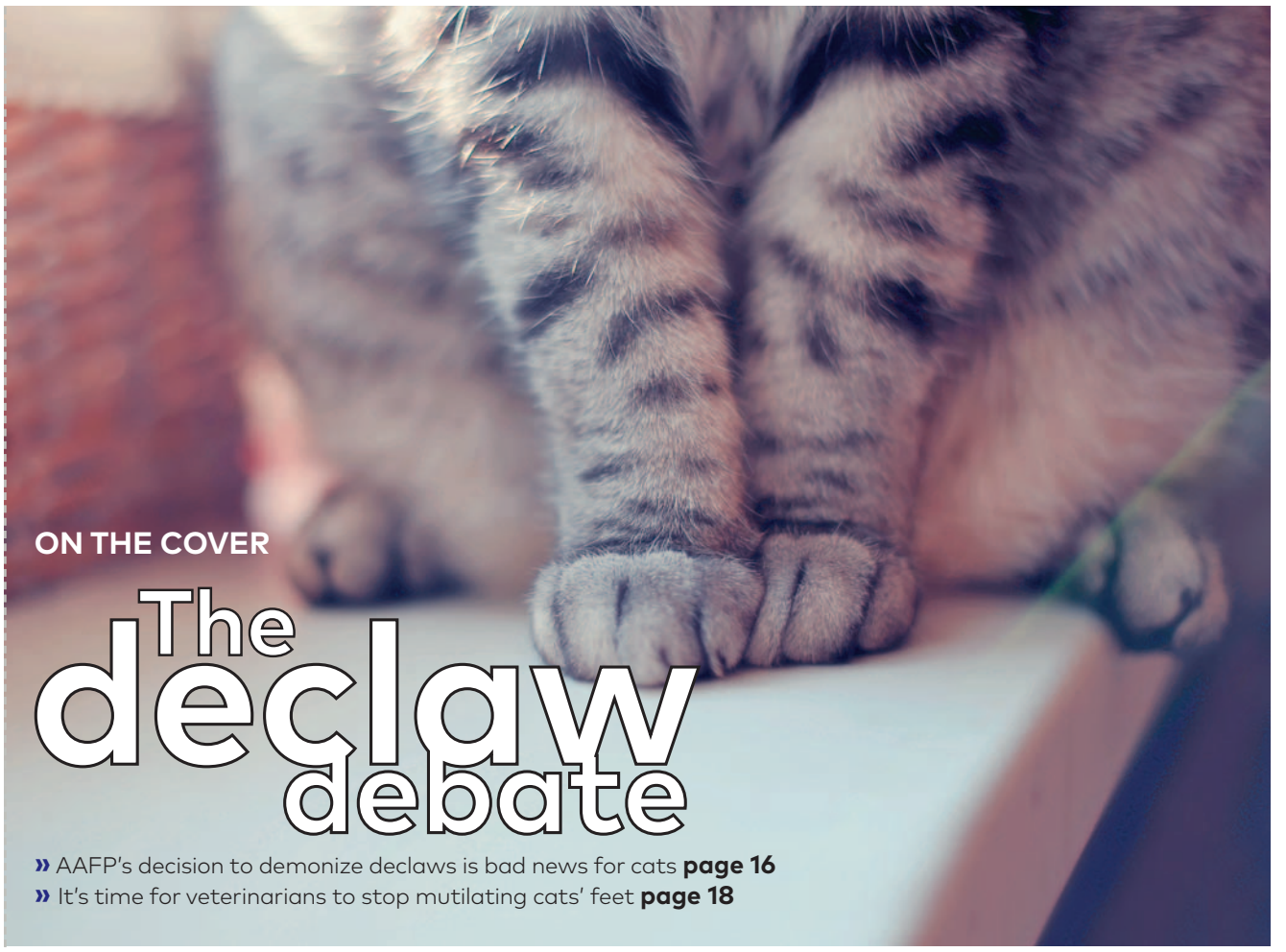

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Cats, claws and commentaries

It's easy to forget to be thoughtful in the noise of this debate.

I've had cats most of my life. And those cats have always had their claws. Not necessarily because I was so enlightened about feline welfare—my two cats growing up were indoor-outdoor, so we figured they needed their claws to survive, and we could always boot them outside to scratch a tree trunk. (Miraculously, they both lived to 19 or 20.)

The gentle fluffball I had in my 20s and 30s was easy. A few sprinkles of catnip on the scratching post, a few treat rewards after a good scratch, and she had it figured out. The cat I have now … well, we're still working on it. And we'd talked about replacing the couch anyway.

A few years ago a friend of mine adopted two beautiful Birmans. She took them to a veterinarian in the family to have them spayed, who told her he might as well take the claws since my friend would "be back soon anyway" to have the procedure done. He did all four paws on each cat. When I saw those cats afterward, they were bandaged, terrified, hiding from the world and in obvious pain. I felt sick.

But I also feel sick when tribes of activist bullies launch cyber-crusades against veterinary clinics and individual veterinarians who provide declaw services—no matter how responsibly and reluctantly these veterinarians do so. Some become the target of hate-filled social media campaigns just for refusing to join forces with these activist groups, whose erratic behavior often borders on the unhinged. (Do they not understand that their vitriol alienates many who may agree but who also espouse reason and rationality?)

Both sides of the declaw debate invoke shelters in their arguments—declawing prevents euthanasia, abandonment and relinquishment of cats; shelters are full of declawed cats with behavior problems. Both arguments are compelling. But without a clear body of evidence one way or another, it's all anecdotal: "I worked in a shelter and it's obvious to me that … " If it's as clear-cut as all that, get it published in *JAVMA*!

Personally, I found both our experts' essays in this issue (see pp. 16, 18) to be well-crafted and convincing. Based on the feedback we've already received, it seems that they both resonate with different segments of the veterinary population. My own opinions on declawing (or "amputation," if you prefer) have always been mostly anti but with some allowance for a responsible approach. I've had opportunity to examine those beliefs fairly deeply after working with these commentaries and the responses they've generated, and I hope they will provoke thought for you too.

I also hope we can all find some charity and grace toward those colleagues who disagree with us, most of whom are simply trying to do the best they can for the people and pets they encounter every day.

ILLUSTRATION BY PORTIA STEWART

Canine rabies: One vaccine to save them all?

A new study finds that rabies vaccines may have a protective effect beyond the deadly virus in dogs. *By Jason Stull, VMD, MPVM, PhD, DACVPM*

Canine rabies is common in many parts of the world. In Asia and Africa, rabies from dog bites kills more than 50,000 people each year. Large international efforts are dedicated to this public health crisis, including mass rabies vaccination of dogs. A recent publication suggests the canine rabies vaccine may have additional benefits to dog health beyond protection from rabies.[1] That's right—vaccinate for rabies, get rabies protection *plus* additional dog health benefits.

The study followed 2,500 households in South Africa over four years and found that dogs vaccinated for rabies had a reduced risk of canine death from any cause as compared to dogs not vaccinated for rabies. The greatest reduction was noted in very young dogs with a 56% reduced risk of death. This decrease in canine mortality was not explained by a reduction in deaths due to rabies alone. The researchers proposed that rabies vaccination boosted the immune system and may have provided enhanced defense against other diseases unrelated to rabies. Previous studies have similarly identified this nonspecific protective effect by rabies vaccination in children and animals, providing further support for the research team's current findings.

The research team's discovery is very exciting. If rabies vaccination extends the life of immunized dogs, this benefits both the dogs and people in the area. In order for a canine rabies vaccination program to be effective in reducing human rabies in areas such as Africa, a minimum percentage (threshold) of dogs in the region must be vaccinated. Public health groups often dedicate enormous time and financial resources to reach this threshold. If vaccinated dogs have additional health advantages over nonvaccinated dogs, this may ease the ability to reach and sustain this rabies vaccination threshold—having large human health benefits. And of course, more healthy dogs that live longer is something all of us can get behind.

It's important to recognize this study was performed in a low-income area of South Africa. Most dogs in the study were owned and free-roaming, with an average of two to six dogs per residence, and overall canine mortality was very high. Does that sound like your usual clientele? For this reason, the team's findings may not be applicable to dogs in North America. The research team acknowledged a variety of study limitations (e.g. manner in which data were collected, nonrandomized nature of the study).

The study did not specifically adjust for dog husbandry and preventive healthcare practices, so it's possible the observed health benefits may have been due to owner behavior (e.g. people who vaccinated their dogs for rabies also provided additional preventive veterinary care measures). However, as canine rabies vaccination in this low-income area was provided

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through free mass public (door-to-door) vaccination efforts, while other canine healthcare was not, the research team argues owner behavior may not have played an important role in their findings but do encourage additional work in this area to provide support for their conclusions. Nonetheless, this is an exciting finding for international rabies prevention efforts and veterinary medicine and may illuminate prevention of a disease that has challenged human health for centuries.

Reference
1. Knobel DL, Arega S, Reininghaus B, et al. Rabies vaccine is associated with decreased all-cause mortality in dogs. *Vaccine* 2017;35:3844-3849.

Dr. Jason Stull is an assistant professor at The Ohio State University and owner of Island Dog Consulting. He currently lives with his wife, two daughters and two dogs in Prince Edward Island, Canada.

Tufts seeking behavior study participants

After 35 years at Tufts University and the Cummings School of Veterinary Medicine, Nicholas H. Dodman, BVMS, DVA, DACVAA, DACVB, has retired but will remain a professor emeritus at Tufts, according to a university release. This will allow him to spend more time researching canine behavior as the chief scientific officer for the Center for Canine Behavior Studies (CCBS), which Dr. Dodman founded in 2014.

The CCBS team has developed a new canine behavior study that consists of two phases, the release states. The first phase is now seeking participation from veterinarians and dog owners. Any owner can participate by filling out an online survey that will remain open until Jan. 15, 2018. The second phase will be a follow-up survey of pet owners who identified in the first survey that their dog had behavior problems.

The CCBS team recently expanded with the addition behavior consultants Barbara Dwyer, BS, CBCC-KA, CPDT-KSA, CTC, Donna Gleason, MA, CDBC, CPDT-KA, and Vivian Zottola, MS, CBCC, CSAT, CPDT-KA.

The team intends to increase CCBS research efforts through more scientifically designed and peer-reviewed canine research, and plan to secure funding to obtain data analysis support from Qualtrics Stats iQ, the release says.

dvm360 Find it all here.

Care to participate?
You can learn more about the CCBS team's canine behavior study and fill out the participant survey by going to dvm360.com/tuftsbehavior.

Meet the 2017 Practice Manager of the Year: **Rebecca Rowe, CVPM**

From part-time veterinary receptionist to this year's recipient of the dvm360/VHMA Practice Manager of the Year award, here's how this manager earned the title. *By Hannah Wagle, Assistant Content Specialist*

Rebecca Rowe, CVPM, has accomplished a lot since she was promoted to practice manager at Seven Hills Pet Clinic in Loveland, Ohio. After dealing mostly with financial matters once she started, Rowe worked her way through hospital operations helping to improve and standardize how her clinic functions.

Now she's the 2017 dvm360/Veterinary Hospital Managers Association (VHMA) Practice Manager of the Year.

As part of her entry, Rowe talked about how she changed her clinic's suggestion box to be used by team members instead of clients, then putting those suggestions to work in team meetings. She launched a satellite clinic for her hospital, where they rented office space and ran the clinic as a wellness center 15 minutes from the main hospital. Along with these, she shared tons of examples of running better meetings and keeping up on continuing education. All of these set her up to be this year's winner.

And when she found out she won?

"I was surprised and elated," Rowe says. "Especially after reading stories about the other finalists. We're lucky to have so many wonderful leaders in the veterinary community.

"I want to thank dvm360 and the VHMA, who have given me this award and generous prizes," she says. "I'm looking forward to the VHMA events in 2018. They'll be a great opportunity to meet other managers and share ideas. This is a great honor and a way for me to stay connected to the veterinary community."

After receiving a surprise phone call from current VHMA President Jim Nash, VHMA Executive Director Christine Shupe and outgoing VHMA President Brian Conrad, CVPM, as well as dvm360 Business Channel Director Brendan Howard, Rowe says she was rendered speechless: "I couldn't believe it. After the call, I texted my husband, family and friends, then I went out for a nice dinner to celebrate."

Rebecca Rowe, CVPM, with dvm360 Business Channel Director Brendan Howard at the Fetch dvm360 conference in San Diego.

"Rebecca is an outstanding practice manager because she's so solution-focused," says Shupe. "She's not deterred by setbacks or challenges. She concentrates on the actions that will move the situation forward."

And now that she's been named Practice Manager of the Year, Rowe says there's still much more she'd like to accomplish.

"One threat that looms over us all is another economic downturn," Rowe says. "In the recession of 2008, we tightened our belts and became more efficient. But, so did our clients. They began consulting with the internet rather than their vet. They also started spending less on preventive medicine."

That's a problem most veterinary practices are experiencing, and one this practice manager has plenty of thoughts about.

"We and our clients have carried these lessons into the current market. So, it's our job to help our clients look to us for their answers again," Rowe says. "One way to do this is through better customer care. Make your clients want to come to see you.

"Our veterinary hospitals offer expertise and manufacturer-backed guarantees," she says. "Clients can't get that at the supermarket."

These seem like daunting problems to take on, but Rowe has confidence in herself as well as the rest of the veterinary profession.

"Challenge is good," she says. "When we work in a challenging environment we become better, more productive and less wasteful. My friend has a favorite saying: 'Calm waters never make a good sailor.'"

Nash seems to agree with Rowe's determination and confidence in change.

"Rebecca is an incredible practice manager who is raising the bar for her team and colleagues," he says. "She's the example of how VHMA members are making a difference in our communities and our industry. Practice Manager of the Year is a well-deserved award for someone as committed to success as Rebecca."

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And the winner is ...

Practice Manager of the Year Rebecca Rowe, CVPM, was selected from 10 fantastic finalists. You can read more about each and the great ideas they have at dvm360.com/pmoy.

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ENT-0064

Eye injuries associated with Osurnia and Claro, FDA warns

Ear drugs have accidentally contacted eyes of both people and dogs, causing harm and irritation, according to reports.

The FDA has issued an alert to veterinary professionals and pet owners about reports of eye injury and irritation in both people and dogs after the application of canine ear medications Osurnia (Elanco) and Claro (Bayer) to dogs, the agency states in a release.

The drugs are FDA-approved to treat ear infections and are intended to be administered by veterinary professionals. Each contains the antibacterial drug florfenicol and the antifungal drug terbinafine, combined with a different steroidal anti-inflammatory drug.

Most of the exposures have occurred during or shortly after application of the medication to the dog's ear or ears, the FDA states. In some reports the eye injuries happened after the product was applied and the dog shook its head. Other reports state that the medication splashed into the person's eyes, according to the release.

As of October 17, the FDA had received two reports of corneal ulcers in people, both veterinary technicians, after accidental eye exposure to Osurnia. To date, no reports of corneal ulcers have been reported with the use of Claro; however, other injuries such as eye irritation, redness, burning, stinging and itchiness have been reported in veterinary personnel, pet owners and others who were near the dog after application of Osurnia or Claro to the dog's ears, the agency says.

The FDA has also received 10 reports of corneal ulcers in dogs associated with the use of Osurnia and 10 reports associated with the use of Claro. Other clinical signs reported include eye irritation, conjunctivitis, squinting and eye pain after application of the medications to dogs' ears.

The FDA is advising people administering Osurnia and Claro to take care to prevent contact of these medications to their eyes and the eyes of people nearby. Precaution should also be taken to prevent the medication from getting into the patient's eyes. If accidental exposure occurs, seek medical care, the release advises.

Veterinary professionals and pet owners are encouraged to report adverse drug events to the manufacturer at the numbers below. The manufacturer is then required to report these events to the FDA, the release states.

To report adverse drug events for Osurnia, call Elanco at (888) 545-5973.

To report adverse drug events for Claro, call Bayer at (800) 422-9874.

Nationwide pet insurance raises funds to fight cancer

Insurance company social media campaign boosts awareness, includes donation to the Animal Cancer Foundation.

Throughout the month of November, which is National Pet Cancer Awareness Month, Nationwide and the Animal Cancer Foundation partnered to increase awareness and raise money to fight pet cancer, which is the No. 1 disease-related killer of dogs and cats, according to a Nationwide release.

"Shine the spotlight on your amazing pet by sharing a special photo or story that shows what it means to you to fight pet cancer," a post on the Animal Cancer Foundation's website read. "Post a public post on Facebook, Twitter or Instagram using the hashtag #CurePetCancer and help support awareness and research."

During the month of November, Nationwide donated $5 to the Animal Cancer Foundation, up to $50,000, for every photo, story or statistic shared on Facebook, Twitter or Instagram using the hashtag #CurePetCancer.

For more information, visit **curepetcancer.com**.

In 2016, Nationwide processed more than 78,000 insurance claims for cancer diagnosis and treatment in pets, making cancer-related conditions one of the most common types of medical claim, accounting for more than $23 million in medical expenses for Nationwide members, according to the company.

The most common cancer-related claims and the cost to treat them

1. Malignant skin neoplasia—**$975**
2. Lymphosarcoma—**$1,524**
3. Splenic neoplasia—**$1,268**
4. Hepatic neoplasia—**$854**
5. Bone or joint neoplasia—**$1,269**
6. Thoracic neoplasia—**$660**
7. Bladder neoplasia—**$1,346**
8. Anal sac neoplasia—**$1,458**
9. Malignant oral neoplasia—**$1,450**
10. Brain or spinal cord neoplasia—**$1,693**

Is your veterinary practice **forward thinking** about **forward booking?**

No? Then it might be time to check out tips from these inspiring contest winners trying to talk clients—and your practice managers—into forward booking. *By Brendan Howard, Business Channel Director*

What does it take to successfully create change in veterinary practices?

In the case of a contest this year from veterinary advocacy group Partners for Healthy Pets and the Veterinary Medical Association of Executives, it was a turnkey campaign. To promote forward booking—the practice of making the next veterinary appointment during the current appointment—the two organizations created tools for state VMA directors to share with hospitals: advertisements, newsletter content, Facebook posts, letter templates and more.

They also pledged $10,000 in prizes for practices associated with those VMAs to create and share what's been working in forward booking in their hospitals this year.

To further inspire, we've got a few tips from some of the winners about their entries and their efforts in making sure pets don't leave hospitals without the helpful reminder of the next visit on the books.

"When you give clients the opportunity to say 'no,' it's hard to go back."

What do you call it?

"We started forward booking back in 2009. We call it 'pre-appointing.'"

What's your goal?

"Seventy-five percent of appointments. We don't always make it, but we do have clients fill out a pre-appoint card and we compare the number of those with the number of wellness exams and figure the percentage from there."

What's your biggest hurdle?

"New staff tend to have the most difficulty. They're in the habit of asking clients 'yes' or 'no' questions, instead of saying, 'I'll book your appointment for next year on a similar date and time, a few weeks before the due date. That way, if you need to reschedule for a more convenient time, there's time to do so.' When you give clients the opportunity to say 'no,' it's hard to go back."

"We let them know that no one knows what they're doing a year from now, but when they get the reminder postcard, we can find a time that best suits their schedule."

How's it going?

"Some clients still don't want us to pre-appoint, which is why our numbers fluctuate, but the majority are getting used to it and expect it from now on. We're really just fine-tuning now—sending out the reminder card after checking the address for accuracy and the pet to make sure they're still with us, and verifying that the appointment date/time is still with the DVM they want to see."

—Bobbie Cotton, practice manager, Animal Family Veterinary Care Center, Davenport, Iowa

What do you call it?

"We call it pre-appointing, for ourselves and with clients."

What's your biggest hurdle?

"At first, the room assistants were reluctant. It felt like just another thing they had to do on top of getting notes filled in for the doctor, checking out in the room, and the rest. However, within a few months, they had a routine down."

How's it going?

"We began forward booking in May 2016. By the end of 2016, we had 171 appointments booked. As of mid-November 2017, we had 818 appointments booked. We're already seeing a huge jump in owner compliance. Now our clients love it. They usually ask, 'Are you going to send me that little postcard?' or, 'Can we schedule this like we did last year?' Clients love it. We let them know that no one knows what they're doing a year from now, but when they get the reminder postcard, we can find a time that best suits their schedule."

—Laurel Brewster, practice manager, SouthCare Animal Medical Center, Spokane, Washington

Meet some forward thinkers

First prize—$2,500
> "The Ghost—Forward Booking" video from Animal Healthcare Clinic of Southlake in Southlake, Texas.

Second prize—$1,000
> "Forward Booking Works" video from Fayetteville Animal Clinic in Fayetteville Tennessee.

Go forward (get it?) and check out the hard work from the first-place and second-place winners of the "Forward Booking Works!" testimonial contest, run by Partners for Healthy Pets with the Veterinary Medical Association Executives. These spell out the benefits of forward booking to veterinary clients, team members—and, now, you. See the complete list (with honorable mentions) at **vmae.org/forward-booking-contest-winners**.

Fear Free certification to launch in April

Ceva Animal Health veterinarians to conduct practice visits.

Fear Free practice certification will be offered to qualifying veterinary hospitals starting in April, according to a release from the Fear Free organization. Veterinarians employed by Ceva Animal Health, maker of Feliway and Adaptil pheremone product lines, will be conducting onsite visits to determine if practices meet certification requirements.

"Fear Free is excited to leverage Ceva's existing talent of highly qualified, educated and passionate veterinarians for practice certification," says Marty Becker, DVM, founder of the Fear Free program. "This collaboration will allow Fear Free to offer a larger number of certification visits with a highly trained team at affordable rates to hospitals."

More than 20,000 veterinary professionals have enrolled so far in the Fear Free training and certification program for individuals—designed to help veterinarians and team members reduce fear, anxiety and stress in veterinary patients—since it launched in 2016, organizers say, and interest in a practice-level certification has been high.

Fear Free leaders say practices that become certified will have successfully implemented Fear Free into all aspects of their business, from culture and leadership to client education, staff training, and facility and patient experience, which will be evaluated during an onsite visit.

Practice certification will be conducted by Ceva veterinarians, who in their capacity as Fear Free consultants "are committed to visiting the practices as representatives of Fear Free and to conduct thorough and impartial certifications," the Fear Free release states. "Products will not to be mentioned unless they are part of an established Fear Free Practice standard."

"The Ceva veterinarians are committed to becoming fully immersed in Fear Free, and will receive extensive training prior to practice certification launching," Dr. Becker says.

"Our veterinary services team and territory managers know firsthand how adoption of Fear Free protocols improves the experience of the pet, the pet owner, and even hospital staff, leading to more frequent and more in-depth appointments," says Ceva CEO Craig Wallace. "We look forward to helping veterinary hospitals become certified by embracing the Fear Free approach, which benefits all involved."

The Fear Free certification program is based on the input of a 160-member advisory panel consisting of board-certified veterinary behaviorists, veterinary practice management experts and other leaders in the field, the release states.

Pricing services is complicated

If veterinary fees were held at or below inflation, we'd all go broke.

I have just read "The pricing struggle" in the September issue of *dvm360* by Drs. Rebecca Brake and Michael Dicks of the AVMA's Economics Division, which concludes that as a profession we should hold our prices at or below the rate of inflation. I have been at the highest levels of corporate veterinary medicine, manufacturing and animal-related not-for-profit work, and recently I have come to own and operate a successful veterinary practice. I believe I speak from an extensive career background that is unique in the profession.

The AVMA's latest study telling us all about consumer behavior related to price is one-dimensional and ignores most of what faces any owner of a veterinary practice. Let's first look at just a few items that drive pricing changes. In my practice, Antech has raised my lab prices an average of 6 percent every year for the last 10 years. That goes for every manufacturer and service provider I deal with and in some cases the increase has been far greater.

There has been tremendous consolidation of veterinary distribution and manufacturing companies, which has done nothing but drive cost of goods and services higher at rates far exceeding the rate of inflation. Prescription-related nutritional products from all the manufacturers have reached a point that the $100 bag of dog food is a reality despite bags and cans getting smaller to hide true pricing changes to the consumer. In my practice we have also raised our veterinary and technician wages at least 5 percent per year over the last 10 years to make sure we are competitive in attracting and retaining the best talent we possibly can. Let's also look at changes in the marketplace, from "Doc Google" to 1-800 PetMeds and more—including practices promoting anesthesia-free dentistry.

The very next article in your publication, about the Merck-Unfenced Pet Owner Paths research study on what prompts a pet owner to take various actions, raises more questions about the AVMA study. Just look at cat owners' preference for seeking information from online sources! The AVMA "experts" would probably say they do that because our prices in veterinary practice have gotten too high. If that is true why are there such stark contrasts between dog owners and cat owners using online resources? Do cat owners value their pets differently than dog owners do? I don't think so, but I have no study to prove that theory, just years of practical hands-on experience. If cats had diarrhea all over the owners' favorite rugs rather than in the cat box, I think the differences between cat and dog owners would be far less!

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The article also blames practice management experts for telling us all to raise prices and relating that advice to decreasing client visits. Wait just a minute! Those same practice management experts also told us not to raise fees on price-sensitive services that could be easily shopped by consumers. If you followed that advice you wouldn't even be able to keep up with inflation because there's no possible way to raise lab prices and other less-shopped service fees to make up for the 60 to 70 percent of prices you're not increasing due to the shoppability of those other services.

The AVMA experts are misguided to draw such simplistic conclusions regarding consumer pricing and practice profitability. With all the outside pricing pressures—including cost of goods and services, employee salaries and benefit costs, just to name a few—how can the AVMA "experts" possibly expect that I hold prices at or below the rate of inflation? That is a recipe for going broke quickly. It is also a recipe for making our veterinary wages less and less over time because we can't afford to pay living wages to our staff.

In the service industry, the price-value equation is not all about price. You can have the lowest prices and poor client satisfaction and therefore poor value despite your low prices. It is a dynamic marketplace out there, and the AVMA had better start looking at all those factors and providing sound recommendations.

—Larry Hawk, DVM, MBA
Auburndale, Massachusetts
AVMA member since 1978

Author's response

Dr. Hawk, thank you for taking the time to read and respond to our article on prices of veterinary services.

The AVMA and specifically the Veterinary Economics Division do not ever attempt to place blame for any outcome that the profession has experienced. The role of the economist is first to identify the problem. The fact that veterinary prices have increased faster than inflation and that this has led to a decline in the demand for veterinary services is measurable and has been observed throughout the profession. This is a problem for the profession. Our only "advice" is to measure the impact of any price increase to insure that total revenues don't decline as a result.

We are certainly aware that costs of goods sold have increased, which places veterinary practices in a situation of rising costs and stagnant median household incomes where price increases above inflation will require clients to reduce their purchases. Some will choose to reduce or eliminate veterinary services while others will not.

We also did not (due to space constraints) talk about value-price or value-cost relationships. Raising prices above the rate of inflation is possible without adverse impacts on revenues if the value perceived by clients increases. Further, it is possible to maintain value by reducing costs through increased efficiency or substitution of inputs.

The point of the article was simply to identify a persistent problem in the industry, that raising prices without changing any other components of the practice will reduce the number of clients, the amount of services each client purchases, or both. Declining numbers of clients or services per client increases the costs of all services to all clients as well as reducing revenues and partially offsetting the price increases.

—Michael Dicks, PhD, Director,
AVMA Veterinary Economics Division

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Yes, I declaw

AAFP's decision to demonize declaws is bad news for cats

By Robert Neunzig, DVM, DABVP (canine/feline; emeritus)

I read with disappointment that the American Association of Feline Practitioners (AAFP) has taken a harder stance against declawing, as it is sure to result in more cats being relinquished and even euthanized. What is most disturbing is that it is based on a false premise. The AAFP rightfully states that scratching is normal behavior for cats. While that is true, the removal of a cat's claws does not prevent scratching but rather prevents the destruction of a person's property or self with those nails.

In fact, any veterinarian who has performed declaws routinely for years—or decades, in my case—knows that cats without claws not only still scratch but can also catch mice, rats, chipmunks, squirrels, birds and small reptiles—albeit with a lower success rate, which I suspect these small indigenous wildlife appreciate.

As with spays and neuters, I find that most complications related to declaws are the result of surgical error or poor procedure.

Yes, some declawed cats do get outside, but in my experience this has not caused an increased hardship for such cats, even though I do not recommend that declawed cats go outside.

Beyond the false assumption that declaws prevent scratching, I would suggest that much anti-declaw reasoning unfolds as follows: If a cat had a choice it would want to keep its claws. A cat needs its claws to protect itself. Onychectomy is a painful procedure and subject to complications. And cats that are declawed often become biters. Here are my responses to those statements.

Choice: If a cat had a choice it would also want to keep its genitals and breed, want to go outside and hunt, and certainly want to eat meat rather than dry cat food. My point is that we put our pets through a lot of things that if they had a choice they would decline. However, we selectively pick declaws to demonize.

Protection: A cat's claws do not do a great of job protecting the cat from large dogs, coyotes or other large animals, or from automobiles or poisonings. Cats rarely if ever get into fights with wildlife such as raccoons, possums, foxes or skunks. Ironically, a declawed cat that gets in a fight with another cat usually has less severe wounds as it is at a disadvantage so tends to run away rather than stand its ground. Thus the wounds are less severe and usually located on the cat's posterior rather than face, which is safer and easier to treat.

Pain: There is no question that there is some pain associated with a declaw, just as there is with a spay or neuter or any other surgical procedure. This pain is temporary and is easily managed with the proper use of analgesics, just as is true of any procedure that causes a pet pain or discomfort. So why do we selectively pick out declaws to demonize?

Complications: In regard to surgical complications, if we held spays and neuters to the same standards that we do declaws, no one would be performing spays or neuters. Complications do occur with all procedures and, as with spays and neuters, I find that most complications related to declaws are the result of surgical error or poor procedure. We should not demonize a procedure because of a veterinarian's deficiency.

Biting: It has been shown that almost half of cats older than 6 or 7 years of age develop some level of arthritis. So one must ask in regard to cats that start biting that are declawed, is it due to the declaw or to aging and arthritis? After doing thousands of declaws over my 40-year career, I can attest that declaws in no way result in a cat starting to bite.

I am not suggesting here that every cat should be declawed, but rather that it should be determined on a case-by-case basis. I also do not have an argument with veterinarians' ethical obligation to offer cat owners all options to curb inappropriate

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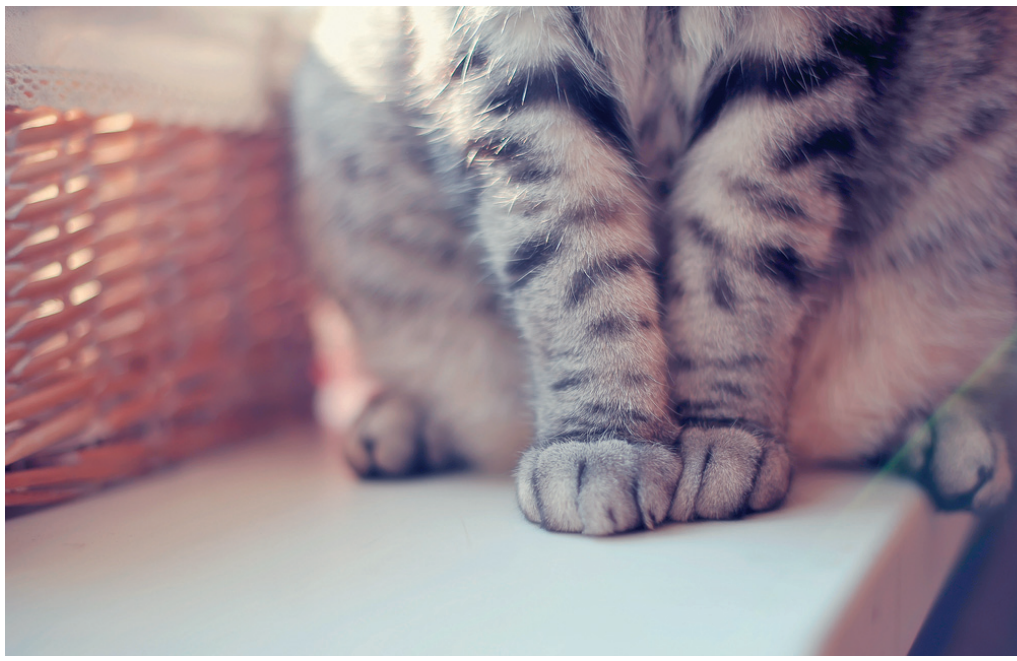
No, I won't declaw

It's time for veterinarians to stop mutilating cats' feet

By Robin Downing, DVM, DAAPM, DACVSMR, CVPP, CCRP, CVA, MS

I applaud the American Association of Feline Practitioners and the fact that it has (finally) taken an appropriate stand against the mutilation of cats through toe amputation. I am saddened that any compassionate veterinarian would object. It is worth remembering that we are one of the only developed nations on the earth that still allows it.

Amputating the last phalanx (P3) of the toes of cats was once considered a "commodity" procedure, commonly performed by well-intentioned veterinarians. As time has passed and our understanding of feline pain, biomechanics and quality of life has evolved, we now recognize many downsides to this procedure and truly no upside.



When nerves are cut—as they are in feline toe amputation—the probability that the cat will develop neuropathic pain is exquisitely high.

For the purpose of this commentary, let's consider three distinct perspectives on the issue of feline toe amputation:

- The clinical bioethical perspective
- The pain perspective
- The biomechanics perspective.

Clinical bioethical perspective

Cats are sentient beings with moral agency who, it has been recently argued, should be approached with the same consideration as nonverbal children.[1-5] It behooves us to consider them within the context of the foundational principles of clinical bioethics.

The four cornerstone principles of clinical bioethics have been described as respect for autonomy, nonmaleficence, beneficence and justice.[6] Let's look at each of these in turn as we examine the clinical bioethics of feline toe amputation.

Respect for autonomy means we must consider cats' preferences. If cats could be given a choice between being subjected to multiple toe amputations and maintaining intact feet, one can easily make the case that cats would prefer intact toes and feet, avoiding the pain and disfigurement associated with multiple toe amputation.

Nonmaleficence means "do no harm" or "avoid harm." The question then becomes, does amputating all of a cat's front toes (P3s) cause harm? Amputation is painful, potentially for the rest of the cat's life. It also forever alters the way a cat walks, prevents natural (scratching) behavior, and forever prevents the cat from being able to defend itself by fighting or climbing to escape a threat. Clearly toe amputation causes harm.

Beneficence means to act in a being's best interest. Can we truly argue that amputating all of any cat's third phalanges of the front toes is ever in that cat's best interest? It appears that the answer to this question is a self-evident "no."

Justice is the fourth cornerstone principle of clinical bioethics. Translating this for application in veterinary medicine focuses on fairness. The relevant question to ask is if amputating the third phalanx of each of a cat's front toes could ever constitute fairness to the cat within the context of its life and lifestyle. Considering all of the compromise that toe amputation creates, as a formally trained clinical bioethicist, I respectfully submit this does not reflect fairness.

Pain perspective

Multiple studies have demonstrated that most cats receive woefully inadequate pain prevention and management for procedures like spays and neuters—procedures far less traumatic than multiple toe amputations. The pain literature clearly demonstrates that acute pain poorly managed at the time of the trauma often leads to permanent pain states. This means ongoing, self-sustaining, chronic maladaptive pain that constitutes lifelong torture.[7,8]

The few studies that have evaluated either the presence of leftover bone fragments or regrowth of sharp bone spurs after toe amputation demonstrate

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Yes, I declaw

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scratching, including declaws.

What the AAFP fails to recognize is the very important advantages of declawing.

Some cats will just not stop destroying furniture regardless of how many scratching posts are purchased or training efforts are implemented.

As we all know, giving a cat medication is not always easy for pet owners, and a cat without front claws does make that job a bit easier; therefore compliance is better.

Young children, often in spite of a parent's best efforts, will frequently pick up cats in precarious ways. Should the cat become frightened or just aggravated and try to escape, the risk of a facial injury to that child is real. A child should not have to carry a facial scar through life. A declaw eliminates this risk.

We have an aging population as well as a population with many more immunodeficiency diseases. Those citizens who are on blood thinners or are immunocompromised cannot afford to be scratched without the risk of significant deleterious consequences. Again, declawing eliminates this risk.

It has been shown that inside cats in general live much longer and healthier lives than outside cats. So is it not better to declaw and live with a very temporary period of discomfort if that will result many years of high-quality life away from disease and injury? I think the answer is obvious.

During my 40-year practice life I have literally performed 2,000 declaws or more. I have also declawed my own cats—I would not have a cat that was not declawed, as I think they make much more desirable pets. So with decades of experience and observation I can safely say I am not aware of a single pet owner who was disappointed after I declawed their cats. In fact, I have probably received as many thank-you's and statements of gratitude from declaws as I have with any other procedure I performed.

In closing, I have no problem with the AAFP's desire to fully inform veterinarians and pet owners about options other than declaws to alleviate destructive and in some cases risky behavior. I would also suggest that the AAFP, rather than running away from declaws, develop standard procedures for the procedure and immediate aftercare when a declaw is performed. I believe this would eliminate or minimize the horror stories we have all heard or read about.

In the end, to demonize a declaw is truly tragic and will surely result in more cats being abandoned and even killed.

Dr. Robert Neunzig graduated from The Ohio State University in 1976 and achieved ABVP canine/feline status in 1983, becoming recertified in 1983 and 2003. He has owned several veterinary practices since 1980, retiring from active practice in 2009. He is currently the medical director of the Gaston County Low Cost Spay/Neuter clinic in Gastonia, North Carolina.

No, I won't declaw

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that an embarrassingly large number of cats suffer from this extra bony tissue.[9] These sharp shards perpetually poke at the underside of the skin at the end of each toe stump, making every step like walking on needles or nails.

Finally, we know from pain physiology that when we sever a nerve, there is a high risk of creating self-perpetuating neuropathic pain. Humans most commonly develop neuropathic pain as a result of conditions such as amputation, direct nerve trauma, shingles and diabetes. People who develop neuropathic pain can describe how it feels, so we know the unremitting torture they endure each and every day—tingling, burning, electric-like pulsed pain, pins and needles. We also know that once chronic maladaptive neuropathic pain is in place, these people report ongoing challenges relieving pain.[10-12]

We know from pain and neurology research that companion animals are "wired" precisely as we are. When nerves are cut—as they are in feline toe amputation—the probability that the cat will develop neuropathic pain is exquisitely high. These cats can go on to develop many different aberrant behaviors. These may include:

- reluctance to walk on certain surfaces
- reluctance to jump onto or off furinture, window ledges and so on
- overgrooming of feet or legs. These cats must walk on their painful feet!

Biomechanical perspective

Finally, we must consider how feline toe amputation forever alters the biomechanics of the patient.

When a cat is subjected to toe amputation, in addition to having the last bony phalanx removed, all of the surrounding tendons and ligaments that attach to that bone are severed. This changes the architecture of the feet, thus changing the biomechanics of how the feet work. Because approximately 60 percent of the cat's body weight is carried on the front feet, altered biomechanics changes the way the entire body moves. If we superimpose chronic maladaptive neuropathic pain in the feet onto altered front foot biomechanics, we amplify the downstream implications of the cat moving in an abnormal fashion. The altered biomechanics can significantly interfere with the cat's ability to exhibit normal cat behaviors.

We also know that the vast majority of cats 10 years of age and older suffer from degenerative osteoarthritis (OA) in at least one joint.[13,14] The majority of cats who develop OA in later life have it occur in

their equivalent of the human lower back—where the spine and pelvis come together. When the biomechanics of movement are altered, so are the forces generated throughout the body's joints—in particular the joints of the spine.

The repetition of ergonomically unsound movements over time creates microtraumas to these joints, which can contribute to the development and progression of OA. Then, OA contributes to ongoing chronic maladaptive pain in these cats. As both a board-certified specialist in rehabilitation and a pain expert, I find this completely preventable, endless cycle of altered biomechanics and chronic maladaptive pain to be a call to action.

Conclusion

The bottom line is that amputating the last phalanx of the toes of cats violates those cats on many levels—bioethically; from an acute pain perspective; from a neuropathic pain perspective; from a biomechanical, movement and lifestyle perspective; and from an OA and chronic maladaptive pain perspective. It is time for this arcane and barbaric mutilation procedure to be removed from the veterinary surgical lexicon.

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Dr. Robin Downing, who holds a master's degree in clinical bioethics, is a diplomate of the Academy of Integrative Pain Management and the American College of Veterinary Sports Medicine and Rehabilitation, a certified veterinary pain practitioner and canine rehabilitation practitioner, and director at the Downing Center for Animal Pain Management.

Researchers make breakthrough in feline infectious peritonitis trial

Cats with feline infectious peritonitis (FIP) went into remission after being treated with a novel antiviral drug in a clinical trial, according to a release from Morris Animal Foundation, which funded the study. Researchers from Kansas State University and the University of California, Davis, published their results in September 2017 in the *Journal of Feline Medicine and Surgery*.

The study, by Yunjeong Kim, DVM, PhD, DACVM, of K-State, and Niels Pedersen, DVM, PhD, of UC Davis, was a small trial to investigate whether a novel antiviral drug could cure or extend the lifespan and quality of life for cats with FIP, the release states.

The trial was conducted with 20 client-owned cats that presented with various forms and stages of FIP, which were then treated with the antiviral drug. At the time of publication, seven cats were still in disease remission.

"We found that most of the cats, except for those with neurological disease, can be put into clinical remission quickly with antiviral treatment, but achieving long-term remission is challenging with chronic cases," says Dr. Kim in the release.

Peanut, one of the cats that participated in the study.

Photo courtesy of Yunjeong Kim, Kansas State University

The best response to long-term treatment was seen in kittens younger than 16 to 18 weeks of age that had a particular form of FIP. Cats with neurological disease associated with FIP did not respond well to the drug.

The antiviral drug still needs to be commercialized before it will be available for veterinarians to use.

> Continued from the cover

for charging her for its expertise and overhead—or, most likely, (c) all of the above.

Yeah, totally what you dreamed you'd be doing with your life when you were 6 years old.

Enter John Dillon. He's not a veterinarian. He used to work in finance as an investment banker, but don't hold that against him. His life changed about a year and a half ago when he adopted Patrick, a boxer bloodhound rescue pooch he found on Petfinder.

"He changed everything for me," Dillon says. And he does mean everything. Like where he lives and what he does for a living. Patrick is the reason Dillon launched GuardianVets, a veterinary triage service that offers after-hours coverage for veterinary practices and their clients in the Midwest. Here's how it all unfolded. (P.S. We know what you're thinking. Telemedicine! He can't get away with this! Wait. Read on, and we'll explain what his service is—and isn't.)

An energetic bundle of trouble

It began two weeks after Dillon adopted Patrick. After a day of romping at the park, Patrick collapsed on the couch, groaning.

Dillon freaked.

Was he sick?

Did he eat something?

"A million things were going through my head," Dillon says. "My veterinarian was closed, so I called the emergency clinic. Of course, they only tell you that if you think it's an emergency, you need to come in."

Dillon ended up at the emergency hospital. And it turned out Patrick was just tired.

"The second time, he's chewing on a pig's ear and he swallows it. So now I'm thinking, is this gonna get stuck in his intestinal tract? Are they gonna have to cut him open if I wait? Is it easier if I have him regurgitate it now?" Dillon says.

So again Dillon took Patrick to the emergency hospital. And again he was completely fine.

The third time, on a Saturday trip to the dog park, Patrick was running full speed ahead with a pack of dogs and slammed into a fence.

"And he starts limping," Dillon says. "One of the other pet owners says, 'Well there goes your first ACL injury.' Can you imagine? Someone plants that into your head like a stick of dynamite."

Dillon quickly noticed a trend in his experiences. These unexpected events all happened on evenings and weekends, when his regular veterinarian was closed. And when he called an emergency practice, the message was the same:

"If you think it's an emergency, you need to come in."

In each of these circumstances, Patrick was fine. But the experience made Dillon wonder if there was someone who could help him assess whether his pet was experiencing a true emergency—and avoid the cost of an emergency visit if his pet didn't need immediate care. What he wanted: the ability to talk to a veterinarian to help him make the right decision about when to seek treatment for his pet immediately—and when he should wait instead and take his pet in during the veterinarian's regular business hours.

Tele-triage, explained

Some practices try to offer round-the-clock ability to talk to a veterinarian—but this can mean the doctors are essentially always on call. Dillon's goal: to offer the service of an on-call veterinarian to benefit pet owners—and offer relief for veterinarians who desperately need time off.

Dillon says he's received an amazing response to his service—particularly from spouses of veterinarians.

"I've been very careful to work in conjunction with the veterinary community on how to build this up properly. For example, there are a lot of other companies that try to do basically telemedicine. And we stay away from that," he says.

Dillon says his company practices triage, not telemedicine. The key difference: GuardianVets does not offer diagnosis or treatment.

Here's how the service works: Say a client calls you after your clinic is closed. Instead of voicemail or an answering service, a veterinarian answers your phone. In the course of what is often a five- to 10-minute phone call, the doctor takes a history and uses rule-outs to determine whether the pet is experiencing an emergency that requires immediate attention at an emergency facility or if it should be seen at its regular veterinary hospital the next day.

"Because pet owners have to go through their vet practice to reach us, we're able to bond the client more closely to their primary practice. And if the issue isn't emergent, then we'll help them schedule an appointment for the next business day," Dillon says.

GuardianVets says its service will put an end to the calls that drag you out of sleep.

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But what does a DVM have to say?

Dear reader, we know what you're likely thinking right now: "This guy's not a veterinarian. What does he know about my business?" That's why we talked to the veterinary technician and veterinarians who advise Dillon and provide triage services for GuardianVets.

Meet Benjamin Bergstom, DVM, MS, DACVO. He's a veterinary ophthalmologist and executive advisor for GuardianVets, and he has a very particular reason for getting involved with this company. He says it addresses a pain point he feels too keenly.

"One of the worst things is coming in to see an emergency that probably could have waited until the following day, and the client just spent $300, and that was their paycheck for the week," Dr. Bergstrom says. "It's a horrible feeling as a veterinarian. It's difficult to see people who want to do what's best for their pet, and that's why they're here," Dr. Bergstrom continues. "But if they could have had someone tell them that their pet could wait to be seen? That to me is one of the biggest things, and it's why I want to be involved in this."

Katherine Donohue, DVM, the director of veterinary affairs for GuardianVets, says the service acts as a safety net for pet owners who are struggling to sort out their pet's signs—and it offers a feeling of control for pet owners in scary situations. "Clients are grateful to have a trained professional to run things by," she says.

William Freeman, BS, LVMTg, the veterinary technician director for GuardianVets, agrees. "The biggest thing is getting to that client's concerns and addressing them," Freeman says.

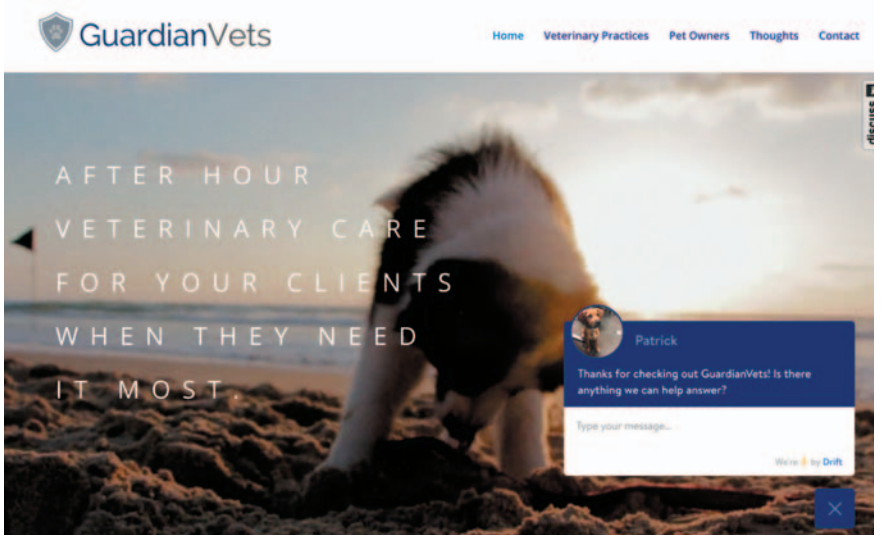
An alternative to Dr. Google?

John Dillon would love to help you solve your Dr. Google problem.

His premise? GuardianVets keeps pet owners from Googling medical questions, asking their friends on Facebook or taking anecdotal advice from their uncle. Instead, Dillon says, with his service, pet owners speak to a licensed professional who can determine whether it's an emergency instead of having clients diagnose their pets alone at home.

"The industry can chastise Dr. Google all we want, but we need to offer an alternative," Dillon says. "With this service we're saying that for any medical issue, you need to call your doctor. Veterinarians don't often think about how many customer touchpoints they have per month. When you post something on social media, how do you measure its success? It's engagement. It's a relationship. It's talking."

Dillon maintains that when practices use GuardianVets services, client engagement goes up, which translates into more appointments. "Not just existing clients but new clients because you're advertising as being available after hours," Dillon says. "That's the power of being there for clients when they want it."



"When you're dealing with a very concerned client with a nonemergent case, what they need more than anything else is just somebody to talk it out with," Dr. Freeman continues. "And a lot of times phone calls will start with clients who are on the verge of tears. Their voices are breaking. They're out of breath. And giving them the opportunity to be listened to is the best thing we can do."

Currently only veterinarians talk to pet owners, but the company is beginning to use credentialed technicians to start screening calls. Dillon says the GuardianVets system doesn't yet integrate with things like video or medical records because developers are still trying to figure out how to responsibly implement those features into their triage model.

To that effect, Dillon's team of veterinarians is developing in-house triage protocols. They've presented their model to the AVMA board and are seeking to align their internal best practice standards to AAHA to make sure those protocols are at the highest level of medical excellence.

"Everything we've done has been from the veterinary perspective first," Dillon says.

He says he plans to build machine learning into the GuardianVet protocols as well. And as the number of hospitals—and pet owners—they work with continues to grow, so will the data they collect, which will help them continue refining triage protocols over time.

"It's a level of information I don't think the industry has had before," Dillon says. "Over time, we'd like to integrate the pet's medical records. This happens in human healthcare already."

Dillon points to the work Northwestern Memorial Hospital, an academic medical center in Chicago, has done with predictive analytics.

"If you're in the ER, they can look at your vitals in real time, and they have algorithms in place that help the doctors and nurses know if you're likely to go critical at any point in time, based on thousands of other records from thousands of other patients," Dillon says.

Ultimately, Dillon hopes to use this information to create guidelines to offer better triage care and share them with the profession. He also plans to share case studies and recordings of GuardianVets' calls with colleges of veterinary medicine to help train future veterinarians in triage.

But do you really need this service?

If you talk with Dillon, he'll likely make this case: You're probably spending time and money to market your practice, and you're not looking at the phone calls you're inadvertently turning away after hours. These are phone calls that could lead to appointments with clients who want to see you.

Most practices, he says, report that they get about one voicemail a day after hours. That's seven a week, and roughly 28 a month. "So if you have an average transaction charge of about $100 per client, that's $2,800 you're leaving on the table," Dillon says. And, he adds, most people don't leave a voice message when they call—so the potential is actually much greater.

"Why are you spending so much money on outside marketing, when your clients are trying to reach you after hours?" he asks. "Those are customer touchpoints. You want to make sure your clients know they can reach your practice anytime, and you're not sending them anywhere else, unless it's an emergency and you're sending them to the ER."

You've still got questions

Of course you do. Healthy skepticism is an awesome trait in a medical professional. So here's the part where we try to anticipate your biggest questions—and offer Dillon and his team a chance to try to satisfy your appetite for answers.

What does it cost? GuardianVets is a monthly subscription service with a sliding fee scale based on the number of veterinarians at your practice. Dillon says the number of vets per practice gives him a good proxy for the demand for the service at a practice. You do not pay more if your clients use the service more, and once you've subscribed, the calls are free to your clients.

Who's answering my phone? The company hires from a large pool of applicants and screens carefully for triage and soft skills, including the ability to offer a friendly greeting and take a solid history. Veterinarians have extensive experience in practice and specifically in an emergency setting.

GuardianVets has also built decision-support software that underpins the conversations they have with clients. But, Dillon says, they rely on professional experience of the veterinarian rather than the software.

Veterinarians who answer calls undergo extensive training on the ABCs of triage. Key issues must be sent to the ER, and they have policies for toxin ingestion that include immediately reaching out to pet poison control.

"Pet owners have the difficult job of communicating what they think is wrong with the pet and the vet has the super-difficult job of assessing the clinical signs," Dillon says. "So there's a lot of training that goes on in the background, and we take that super-seriously."

Let's talk VCPR. Yes, let's. First, let's answer the big question. How can these veterinarians who are answering your phone possibly have a valid veterinarian-client-patient relationship (VCPR) with the pet and the pet owner? They don't. That's why they don't offer a diagnosis or treatment. Instead, their mission is to help pet owners answer one simple question:

What will my clients think of this service? "Clients are thrilled that they don't have to pay for this service provided by their practice," Dillon says. If it's not an emergency, "they get to see their doctor as soon as it's convenient."

If you're wondering whether your clients will use this service, Dillon says the practices he works with get more calls when clients realize they can call after hours. "And they may come in more often—more than once or twice a year," Dillon says. "We're increasing touchpoints. It leads to happier pet owners, and the practice sees more appointments. So far, it's been a win-win."

What are these vets telling my clients? GuardianVets records all their calls—and provides them to you, along with write-ups of the calls. Dillon says in many cases the hospital's practice manager will listen to the calls each day. And GuardianVets will keep track of your practice's preferences and tailor them to you.

"We touch base with our practices to make sure we provide the information in a form that is usable to the practice," Dr. Donohue says. "For transparency, we record everything."

How do you handle clients who can't be calmed down? "In the triage tree, if I've got a client who can't be calmed down, then they need to be seen," Dr. Donohue says. "They're either seeing something that can't be verbalized or they need to have their pet assessed."

Who's legally responsible for the actions of this after-hours veterinarian? GuardianVets veterinarians take out their own personal liability insurance, and that follows them where they practice. "But the first line of defense is good customer service," Dillon says. "Second is our triage protocols. Insurance is the last line of defense."

How do GuardianVets doctors draw the line between what needs to be seen and what doesn't need to be seen? "My answer is always that's a trick question. Because the answer is they always need to be seen. It's just a matter of how soon," Dillon says. "We're not a substitute for a physical visit. If anything, we're going to bond the client more closely to you. If the pet needs to be seen right now, we're going to refer to the ER. The client's going to like the fact that you were there for them when they needed it. If it can wait, they're going to appreciate the fact that they can talk to someone."

So what do *you* think?

We know you've got more questions (and opinions, too). Email us at **dvm360@ubm.com**.

They already have a lot to remember.
Give them one less thing to forget.

No matter how busy life gets, at least you'll know your patients are protected from fleas and ticks with BRAVECTO®

Prescription-only BRAVECTO® provides up to 12 weeks* of extended protection against fleas and ticks with just one dose. Good for patients, good for compliance, good for your practice.

Ask your Merck Animal Health Rep about BRAVECTO® or visit Bravectovets.com

BRAVECTO® (FLURALANER)

Also available as a topical application.

*BRAVECTO® kills fleas and prevents flea infestations for 12 weeks. **BRAVECTO® Chew** kills ticks (black-legged tick, American dog tick, and brown dog tick) for 12 weeks and also kills lone star ticks for 8 weeks.

Important Safety Information

BRAVECTO Chews for Dogs: The most common adverse reactions recorded in clinical trials were vomiting, decreased appetite, diarrhea, lethargy, polydipsia, and flatulence. Bravecto has not been shown to be effective for 12-weeks' duration in puppies less than 6 months of age. Bravecto is not effective against lone star ticks beyond 8 weeks after dosing. **Please see Prescribing Information on page 26.**

BRAVECTO® (FLURALANER)

Flavored chews for dogs.

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

Description:
Each chew is formulated to provide a minimum dose of 11.4 mg/lb (25 mg/kg) body weight.

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

Indications:
Bravecto kills adult fleas and is indicated for the treatment and prevention of flea infestations (*Ctenocephalides felis*) and the treatment and control of tick infestations [*Ixodes scapularis* (black-legged tick), *Dermacentor variabilis* (American dog tick), and *Rhipicephalus sanguineus* (brown dog tick)] for 12 weeks in dogs and puppies 6 months of age and older, and weighing 4.4 pounds or greater.

Bravecto is also indicated for the treatment and control of *Amblyomma americanum* (lone star tick) infestations for 8 weeks in dogs and puppies 6 months of age and older, and weighing 4.4 pounds or greater.

Dosage and Administration:
Bravecto should be administered orally as a single dose every 12 weeks according to the **Dosage Schedule** below to provide a minimum dose of 11.4 mg/lb (25 mg/kg) body weight.

Bravecto may be administered every 8 weeks in case of potential exposure to *Amblyomma americanum* ticks (see **Effectiveness**).

Bravecto should be administered with food.

Dosage Schedule

Body Weight Ranges (lb)	Fluralaner Content (mg)	Chews Administered
4.4 – 9.9	112.5	One
>9.9 – 22.0	250	One
>22.0 – 44.0	500	One
>44.0 – 88.0	1000	One
>88.0 – 123.0*	1400	One

*Dogs over 123.0 lb should be administered the appropriate combination of chews

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

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

Warnings:
Not for human use. Keep this and all drugs out of the reach of children. Keep the product in the original packaging until use, in order to prevent children from getting direct access to the product.

Do not eat, drink or smoke while handling the product. Wash hands thoroughly with soap and water immediately after use of the product.

Precautions:
Bravecto has not been shown to be effective for 12-weeks duration in puppies less than 6 months of age. Bravecto is not effective against *Amblyomma americanum* ticks beyond 8 weeks after dosing (see **Effectiveness**).

Adverse Reactions:
In a well-controlled U.S. field study, which included 294 dogs (224 dogs were administered Bravecto every 12 weeks and 70 dogs were administered an oral active control every 4 weeks and were provided with a tick collar); there were no serious adverse reactions. All potential adverse reactions were recorded in dogs treated with Bravecto over a 182-day period and in dogs treated with the active control over an 84-day period. The most frequently reported adverse reaction in dogs in the Bravecto and active control groups was vomiting.

Percentage of Dogs with Adverse Reactions in the Field Study

Adverse Reaction (AR)	Bravecto Group: Percentage of Dogs with the AR During the 182-Day Study (n=224 dogs)	Active Control Group: Percentage of Dogs with the AR During the 84-Day Study (n=70 dogs)
Vomiting	7.1	14.3
Decreased Appetite	6.7	0.0
Diarrhea	4.9	2.9
Lethargy	5.4	7.1
Polydipsia	1.8	4.3
Flatulence	1.3	0.0

In a well-controlled laboratory dose confirmation study, one dog developed edema and hyperemia of the upper lips within one hour of receiving Bravecto. The edema improved progressively through the day and had resolved without medical intervention by the next morning.

For technical assistance or to report a suspected adverse drug reaction, contact Merck Animal Health at 1-800-224-5318. Additional information can be found at www.bravecto.com. For additional information about adverse drug experience reporting for animal drugs, contact FDA at 1-888-FDA-VETS or online at http://www.fda.gov/AnimalVeterinary/SafetyHealth.

Clinical Pharmacology:
Peak fluralaner concentrations are achieved between 2 hours and 3 days following oral administration, and the elimination half-life ranges between 9.3 to 16.2 days. Quantifiable drug concentrations can be measured (lower than necessary for effectiveness) through 112 days. Due to reduced drug bioavailability in the fasted state, fluralaner should be administered with food.

Mode of Action:
Fluralaner is for systemic use and belongs to the class of isoxazoline-substituted benzamide derivatives. Fluralaner is an inhibitor of the arthropod nervous system. The mode of action of fluralaner is the antagonism of the ligand-gated chloride channels (gamma-aminobutyric acid (GABA)-receptor and glutamate-receptor).

Effectiveness:
Bravecto began to kill fleas within two hours after administration in a well-controlled laboratory study. In a European laboratory study, Bravecto killed fleas and *Ixodes ricinus* ticks and reduced the numbers of live fleas and *Ixodes ricinus* ticks on dogs by >98% within 12 hours for 12 weeks. In a well-controlled laboratory study, Bravecto demonstrated 100% effectiveness against adult fleas 48 hours post-infestation for 12 weeks. In well-controlled laboratory studies, Bravecto demonstrated ≥93% effectiveness against *Dermacentor variabilis*, *Ixodes scapularis* and *Rhipicephalus sanguineus* ticks 48 hours post-infestation for 12 weeks. Bravecto demonstrated ≥90% effectiveness against *Amblyomma americanum* 72 hours post-infestation for 8 weeks, but failed to demonstrate ≥90% effectiveness beyond 8 weeks.

In a well-controlled U.S. field study, a single dose of Bravecto reduced fleas by ≥99.7% for 12 weeks. Dogs with signs of flea allergy dermatitis showed improvement in erythema, alopecia, papules, scales, crusts, and excoriation as a direct result of eliminating flea infestations.

Palatability: In a well-controlled U.S. field study, which included 559 doses administered to 224 dogs, 80.7% of dogs voluntarily consumed Bravecto within 5 minutes, an additional 12.5% voluntarily consumed Bravecto within 5 minutes when offered with food, and 6.8% refused the dose or required forced administration.

Animal Safety:
Margin of Safety Study: In a margin of safety study, Bravecto was administered orally to 8- to 9-week-old puppies at 1, 3, and 5X the maximum label dose of 56 mg/kg at three, 8-week intervals. The dogs in the control group (0X) were untreated.

There were no clinically-relevant, treatment-related effects on physical examinations, body weights, food consumption, clinical pathology (hematology, clinical chemistries, coagulation tests, and urinalysis), gross pathology, histopathology, or organ weights. Diarrhea, mucoid and bloody feces were the most common observations in this study, occurring at a similar incidence in the treated and control groups. Five of the twelve treated dogs that experienced one or more of these signs did so within 6 hours of the first dosing. One dog in the 3X treatment group was observed to be dull, inappetant, with evidence of bloody diarrhea, vomiting, and weight loss beginning five days after the first treatment. One dog in the 1X treatment group vomited food 4 hours following the first treatment.

Reproductive Safety Study: Bravecto was administered orally to intact, reproductively-sound male and female Beagles at a dose of up to 168 mg/kg (equivalent to 3X the maximum label dose) on three to four occasions at 8-week intervals. The dogs in the control group (0X) were untreated.

There were no clinically-relevant, treatment-related effects on the body weights, food consumption, reproductive performance, semen analysis, litter data, gross necropsy (adult dogs) or histopathology findings (adult dogs and puppies). One adult treated dog suffered a seizure during the course of the study (46 days after the second treatment). Abnormal salivation was observed on 17 occasions: in six treated dogs (11 occasions) after dosing and four control dogs (6 occasions).

The following abnormalities were noted in 7 pups from 2 of the 10 dams in only the treated group during gross necropsy examination: limb deformity (4 pups), enlarged heart (2 pups), enlarged spleen (3 pups), and cleft palate (2 pups). During veterinary examination at Week 7, two pups from the control group had inguinal testicles, and two and four pups from the treated group had inguinal and cryptorchid testicles, respectively. No undescended testicles were observed at the time of necropsy (days 50 to 71).

In a well-controlled field study Bravecto was used concurrently with other medications, such as vaccines, anthelmintics, antibiotics, and steroids. No adverse reactions were observed from the concurrent use of Bravecto with other medications.

Storage Information:
Do not store above 86°F (30°C).

How Supplied:
Bravecto is available in five strengths (112.5, 250, 500, 1000, and 1400 mg fluralaner per chew). Each chew is packaged individually into aluminum foil blister packs sealed with a peelable paper backed foil lid stock. Product may be packaged in 1, 2, or 4 chews per package.

NADA 141-426, Approved by FDA

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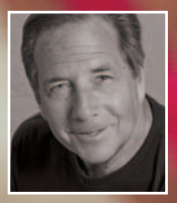


Shades of fear:

Sorting paranoia from truth

A devoted pet owner's behavior has changed. The veterinary team wonders if they should step in—and how far they should take their concerns.

Willow Tree Vet Hospital is a busy place. The three doctors, eight technicians and three receptionists are both efficient and compassionate. The facility has been a staple of its small suburban community for the past 40 years, operating under the philosophy that total veterinary care doesn't stop with patients—it's just as important that clients be compliant and assist their pets as a vital part of the healthcare team.

Lisa has brought her miniature poodles to Willow Tree Vet Hospital for 25 years. But with her third dog, Tootsie, things have begun to change. During her office visits she has started talking to the staff excessively about issues with her husband—including how he treats the dog. As the weeks go by Lisa comes to the clinic in an increasingly agitated state. She's convinced that her husband is intentionally mistreating Tootsie. But examinations on multiple occasions show a healthy, well-maintained pet. Soon the staff is spending hours with Lisa and Tootsie every time they come in.

The head technician decides to bring this issue to the attention of Dr. King, the hospital owner. Dr. King calls a meeting to hear team input. It becomes clear that a devoted client's behavior has changed significantly, and the team thinks she's become irrational and unstable. Dr. King says their mission as a clinic is to assist both the patient and the pet owner. He emphasizes that they aren't mental healthcare professionals and must be careful about invading a client's privacy. The team decides that Dr. King will meet one-on-one with Lisa to present his observations and see if he can be of any assistance.

Dr. King meets with Lisa in his private office. First he asks about Tootsie. Then he tactfully brings up his concerns about the recent change in Lisa's moods and conversations at the clinic. She tells Dr. King she's been a client for 25 years and he knows how devoted she is to her dogs. She then tells him about her husband's intentional mistreatment of her and the dog. Dr. King asks if she has sought any outside assistance to help manage the home situation. She replies that when she calls the police and the humane society they do nothing.

Based on this conversation, Dr. King concludes that Lisa is experiencing a significant emotional disorder. At this point, he tells her that in spite of everything Tootsie is doing fine and that in the future she has to call him personally before coming to the clinic. Lisa agrees to this but doesn't understand why nobody wants to help her with her abusive husband's behavior.

Dr. King feels he has an allegiance to this longtime pet owner and that she deserves his empathy—but he also has a practice to run. He doesn't think it's his place or obligation to intercede further. He has informed Lisa of his availability and reassured her of Tootsie's well-being, and in his lay judgment he doesn't believe she's a threat to herself or her dog. Some of his staff think he should call social services as well as her family in an effort to help, but Dr. King finally says, "Enough is enough."

Do you think Dr. King handled this situation correctly? Let us know at **dvm360@ubm.com**.

Rosenberg's response

Veterinarians are caregivers. The desire to help pets and their owners has to be tempered with both compassion and reality. I think Dr. King's actions were appropriate. This situation was stressful for both the pet owner and the veterinarian. This, added to the other emotional stresses that clinicians deal with day in and day out, can take a toll on the doctor's ability to function positively in the workplace.

It's important to wear your professional "hat" at all times. Give it your best, have confidence in your decisions, and don't take the stress home with you at the end of the day. This is an excellent formula and philosophy that will allow you to happily help your pet patients for decades to come.

Dr. Rosenberg is director of the Voorhees Veterinary Center in Voorhees, New Jersey. Although many of his scenarios in "The Dilemma" are based on real-life events, the veterinary practices, doctors and employees described are fictional.

AVMA EYE ON ECONOMICS

Michael Dicks, PhD

The year ahead: Things are looking bright

Most signs point to 2018 shaping up well for veterinarians and veterinary team members.

For many, 2017 was a great year to be a veterinarian. Here are a few facts to support that statement:

> The debt-to-income ratio (DIR), an indicator of how much society values a veterinarian relative to the cost of educating and producing that veterinarian, fell from roughly 2:1 to 1.84:1.

> The net present value (NPV) of the DVM degree, a measure of the lifelong value of getting a veterinary education, increased for both men and women.

> Finally, veterinary unemployment fell from 1.5 to 0.5 percent, and in aggregate, the supply of veterinarians continued to be less than needed to meet the demands of consumers of veterinary services.

These trends should continue into 2018 and even beyond, according to the macroeconomic indicators we've studied in the AVMA Economics Division.

DIR details

The DIR fell as a result of strong increases in starting salaries and an increase in the percentage of new graduates who started their careers with zero debt (a 54 percent increase from 2015 to 2017) (see Figure 1). One reason the DIR didn't fall further was that tuition and fees at colleges of veterinary medicine increased significantly—again.

The tight veterinary labor market will likely mean big gains in 2018 starting salaries too. And if the trend of more students graduating with zero debt continues, we should continue to see a drop in the DIR.

While this is generally good news for the profession, skyrocketing tuition is a cause for concern as it will continue to drive prices for veterinary services higher. This will drive demand for veterinary services lower if veterinary price increases outpace the growth in median household incomes.An additional concern is the growing percentage of new graduates with a DIR over 2:1.

NPV: Good and bad

Because real (adjusted-for-inflation) starting salaries for new graduates are increasing, the lifelong earnings of veterinarians are also increasing, in turn driving an increase in the NPV of a DVM degree (see Figure 2). However, because of the shift in age distribution in the profession—as well as changes in gender composition, geographic location, percentage of veterinarians who own practices, and distribution across practice types—the mean income for the profession is declining. This trend will likely accelerate in 2018.

The market basket

The market for veterinary services, like all services, depends on the "market basket" of expenditures that consumers "select" and the rate at which the prices of goods and services inside that basket change in relation to consumers' incomes. Real median household income measures household income after taking into account weighted price increases for the items in the basket.

This means that at least some pet owners bought more goods and services from veterinary practices than they had previously. These increased expenditures materialized as additional demand for veterinarians.

Median household income will continue to increase through 2018, setting the stage for an increasing demand for veterinary services. Growth in veterinary incomes should continue through 2018, and both the DIR and NPV should improve.

FIGURE 1

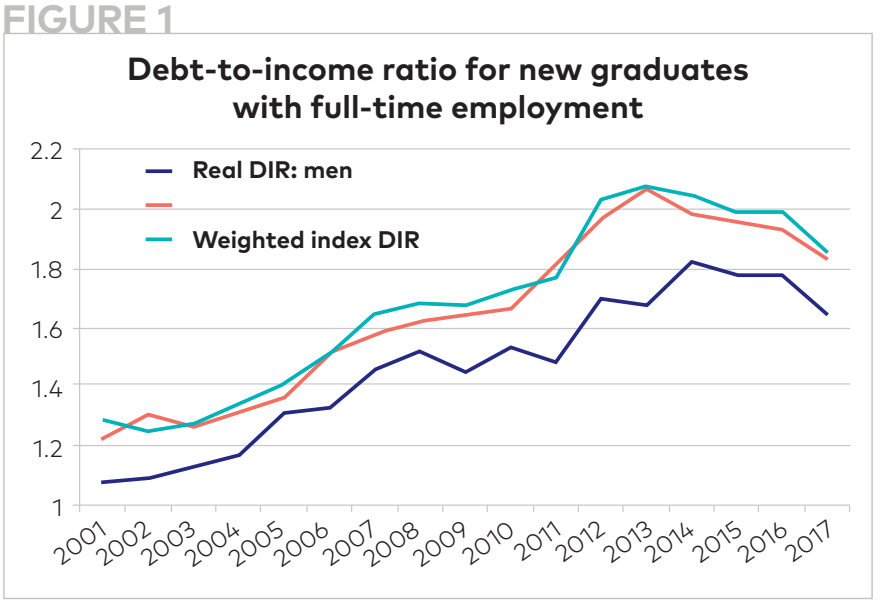


FIGURE 2

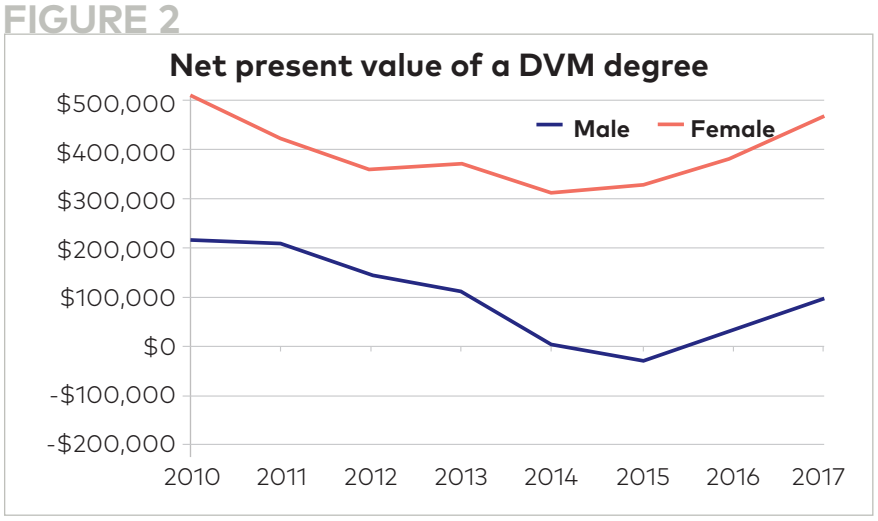
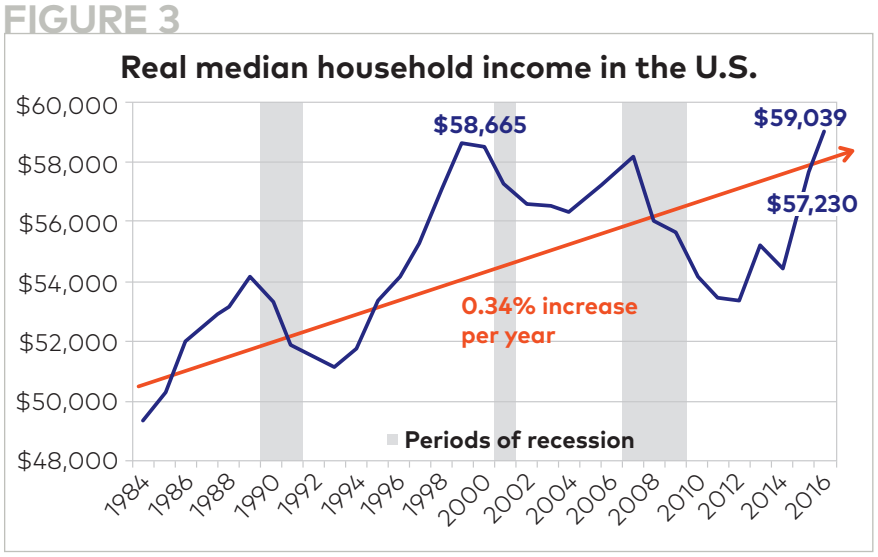


FIGURE 3



However, tax reform now working its way through Congress will reduce federal government revenue, leading to further pressure on state and local government budgets, which will further diminish public education funds. The response of public educational institutions will likely be to increase the number of seats filled, increase tuition and fees, or both. Higher tuition and fees will mean greater debt loads for many students, and increasing the number of seats will reduce starting salaries for new graduates. Either action will eventually lead to a higher DIR.

Economic considerations

The U.S. economy should continue to expand for 12 to 18 months, and the already low U.S. and veterinary unemployment rates will increase wage pressure. This does not mean a recession is 12 to 18 months out; it simply means continued moderate economic growth is expected for this period.

This continued growth is built on business and consumer expectations of legislative and regulatory changes, such as healthcare reform, lower taxes, better trade conditions and less government regulation of business, which is expected to lower business costs, improve profits and increase business investment. The current economic expansion may well become the longest expansionary period in recent U.S. history.

One drag on the economy, however, is housing costs, which are rising quickly in major markets as a result of inadequate supply and increasing demand. The hurricane-related disasters in Florida and Texas, where nearly 20 percent of housing growth takes place, will suck up existing construction resources to repair and replace damaged housing, further tightening the supply of homes and driving housing prices even higher. These rising prices will add to the tight labor market and further bid up the cost of labor—and thus the costs of goods and services.

As a result, veterinary practices will face growing labor and supplies costs, and owners must carefully evaluate the effect of rising "input" costs on profitability—they must ensure that any increases in veterinary pricing don't lead to a net loss in total revenues because of clients' unwillingness to pay the higher prices. As noted in a previous column, keeping price increases within range of inflation will likely not impact client purchases. If your practice has not experienced revenue growth over the last 24 months, you may want to consider focusing on a high-volume business model.

In conclusion: While the big-picture economic trends are, as always, a mixed bag, more signs point to a good year to year-and-a-half ahead than those that point negative. Wise veterinarians will make decisions accordingly, so that whether times are good or bad, they will be in the best position possible for financial success.

AVMA | Veterinary Economics

Dr. Michael Dicks is director of the AVMA's Veterinary Economics division.

From dog catching to veterinary school

Persistence (and impressive dog-roping skills) led Dr. Robert Miller not only to his dream, but also to a lifelong friend and mentor.

In the spring of 1951 I had earned my bachelor's degree in agriculture from the University of Arizona. I had also been turned down for the fourth consecutive year for admission to the Colorado A&M School of Veterinary Medicine. The competition was fierce due to the post-World War II GI bill (which gave returning soldiers the opportunity for education and training, among other services), and I had been advised to establish legal residency in a state with a veterinary school to facilitate admission.

I chose Colorado. I had spent the previous three summers working in that Rocky Mountain state and at the time wanted to spend my life there, preferably in a ski town in order to be conveniently close to my favorite sport.

I spent the summer working for the U.S. Forest Service with a string of pack horses. With the onset of winter I was no longer needed by the Forest Service, so I drove to Denver to see if I could find a job.

First I went to one of the big meat processing companies and flaunted my ag degree in animal husbandry. They offered me a job as a sales rep, traveling through Colorado, Wyoming and Montana. I gladly accepted and then was told that all the job applicants had to work for 30 days on the slaughterhouse floor before beginning their permanent job. I agreed to do so and was shown into a huge windowless room and assigned to a sausage machine.

After I left the plant I sat down outside and choked back tears. I was about to spend 200 hours of my life in an unbearable room doing a hateful job. I had just finished a Forest Service job riding every day through glorious forest, surrounded by magnificent alpine peaks.

I went back into the meat packing plant and told the interviewer I had changed my mind.

"Fine with me," he said.

I had visited the Denver Zoo the previous day and I got an idea. I went to the government office that hired zoo employees. I loved zoos.

Again, waving my bachelor of science degree, I applied to be a zookeeper. I was told that I was well-qualified.

"When can I start work?" I asked happily.

"Oh, not for a long time," was the reply. "There are 62 qualified applicants ahead of you."

I was crushed. Of course, I hadn't mentioned that I was a veterinary school applicant and would quit the moment I was accepted to school.

"Gosh," I said. "I'm so disappointed. I'd do anything to work with animals."

"Well," the interviewer responded, "we do have one animal job, but you wouldn't be interested in it."

I asked why not.

"It's working for the country veterinarian Dr. Anderson at the dog pound."

I said I'd take it.

"It only pays $247 a month," he cautioned.

I confirmed I'd still take it.

"It's a dog-catching job," he warned.

I told him I still wanted the position.

"If that's what you want, it's fine with me," the interviewer finally conceded.

For the next year I worked as a dog catcher in Denver. The city had just suffered a rabies epidemic and Dr. R.K. Anderson, who became my lifelong mentor, colleague and friend, had instituted a landmark program of stray dog control and mandatory rabies vaccination.

I set a record for the largest number of stray dogs captured in a single day in Denver (28). The Denver Post featured a two-page spread on me titled "Denver's Roping Dog Catcher." Yes, I used my cowboy roping skills to capture strays.

Near the end of the year Dr. Anderson had me address county officials to plead for a higher wage for dog catchers. I did so, arguing that the risks and skills were equal to those policemen and firefighters experienced, so dog catchers ought to start at the same $400 monthly salary. It was declined, but I did get a $100 increase to benefit future pound personnel.

I had always loved dogs, trained them successfully and got along with them very well, but during that year with Dr. Anderson, a future professor and canine behaviorist, I learned so much more.

I adopted a collie-shepherd mix from the pound and named him Red. He was one of the best dogs I'd ever had and I trained him to help me catch strays.

Dr. Anderson wrote a letter of recommendation for me, which I never saw, and sent it to the veterinary school at Fort Collins. When I was finally accepted, I was told I was at the top of 700 qualified applicants.

I received my letter of admittance and, as I told Dr. Anderson I would, quit my dog-catching job and went back to my beloved Rocky Mountains to work horseback for my last summer before starting veterinary school.

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

More Miller

Find the legacy of Dr. Robert M. Miller's columns and cartoons written for *Veterinary Medicine* magazine online at dvm360.com/miller.

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Specialists: Partnering with a generalist can open the door to a career path you may not have considered.

Once veterinary specialists complete their training and manage to successfully navigate the board certification process, they have many career paths and opportunities available to them. Increasingly, boarded doctors are highly sought after by large multispecialty veterinary practices, emergency centers and corporate veterinary practice groups.

In addition, there is always the option—though it requires a high risk tolerance and an entrepreneurial streak—for specialists to open their own brick-and-mortar practice. For many boarded specialists, this works out fine, provided that the location demographics support such a career path. Most of these practices, naturally, open in large cities where there is a sufficiently strong patient base to support the overhead costs associated with owning a specialty clinic.

In less densely populated areas, there's another option—sharing space in a general practice hospital.

In this scenario, the boarded doctor practices in a generalist's brick-and-mortar clinic, perhaps as an independent contractor or a subtenant. It can work out well if the location is large enough to house the specialist, who carries out their own private practice within the confines of somebody else's premises, whether owned or rented.

I have some personal experience in how successful this specialist-generalist relationship can be. A few years ago, one of my clinics provided space to a board-certified radiologist who worked one day a week in our community of about 100,000 people. On other days of the week, this gentleman provided similar services to other moderate-sized communities while maintaining a headquarters in a large clinic about an hour away.

It was a win-win-win: Clients didn't need to travel hours in order to obtain expert ultrasonography, we loved having quick access to the expertise, and the other hospitals in our area could fill up the radiologist's dance card for a full day of work—for which he received all of the fees directly—no muss, no fuss.

That radiologist later moved on to another nearby practice with more available space than ours, but we continue to use his services regularly. Our clients love the convenience and we like being able to offer it.

But not all subtenant or space-sharing relationships work out so well. As with any relationship, there can be glitches and snafus along the way. These can ordinarily be ironed out, then committed to a legal agreement of one type or another. Here are some precautions to consider.

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Christopher J. Allen, DVM, JD | LETTER OF THE LAW

Get insurance figured out

Having been a New York City insurance attorney in a former life, I tend to look at all business relationships from the perspective of liability and risk. Sharing space creates a new insurable relationship among multiple parties. Potential risks must be identified, their coverage costs quantified and the sharing of the related expenses negotiated.

Consider this example: Dr. Cardiologist enters into an agreement with Dr. General to use one of her exam rooms to perform ECGs every Wednesday. Dr. Cardiologist operates as a professional corporation with one employee: himself. One Wednesday, Suzie the receptionist is kind enough to help Dr. C lift an obese mastiff onto the exam table and the poor girl luxates her L4-5 intervertebral disc.

After Suzie's emergency back surgery, the adjuster from Dr. G's worker's compensation carrier investigates and finds out the mastiff was referred to Dr. C for evaluation by some third-party veterinarian. The adjuster determines it is not a worker's comp case under Dr. G's policy. Rather, he believes, the cardiologist's insurance carrier should have to pay the receptionist's hospital bill.

But naturally, operating as a one-man band, Dr. Cardiologist has no worker's compensation policy. The result: a big insurance fight, insurance company lawsuits, and a huge increase in Dr. General's worker's comp policy premium after the company finally covers Suzie. When sued to contribute, Dr. C's liability carrier drops him.

Define the relationship

Before the first heart is auscultated or the first skin scraping examined, the specialist and the generalist clinic owner need to determine exactly what their legal relationship is going to be. For example, does the general practitioner own the building or is she herself a tenant? If she owns the building, is she charging the specialist rent as a landlord? And there are these related issues:

> If the specialist is paying rent to a clinic owner who also owns the building, does the commercial fire and liability policy cover acts and omissions of a tenant?

> If the specialist is paying rent to a clinic owner who leases the building from a third-party landlord, is subtenancy permitted under the lease or is it a breach of the lease terms?

> If subtenancy is permitted under the underlying lease, is there an obligation to obtain written permission from the landlord?

Even if subtenancy is permitted with building owner approval, there may be legitimate reasons for the landlord to deny permission to the subtenant. No. 1 is parking. If the subtenancy is likely to cause a shortage of off-street or on-street parking, the landlord may be adamant in his disapproval. This is particularly true in the instance of a shopping center or multi-occupant commercial space.

Define the roles of the host clinic's staff

Don't get caught in the "Suzie the receptionist" trap. In a perfect world, each space-sharing specialist would bring along his own fully insured technician or helper. But in this imperfect world, it's best for generalist and specialist to agree on who in the practice is authorized to assist the specialist. Technically, that individual should be compensated by the specialist and therefore covered by worker's compensation insurance. Remember that whoever's business (specialist or generalist) pays a comp claim is the one who will get socked for several years with premium hikes.

Another practical issue involving staff: Who collects the fee on behalf of the specialist? Is the specialist paid by each client at the time of service or are the charges invoiced to the referring clinic? The least desirable option is for the general practice receptionist to collect the money. That arrangement adds an extra layer of risk (regarding misappropriation of funds or miscalculation of fees). It also ties up front-end staff and the resulting slowdown can become annoying to the general practice owner—especially when clients begin to complain about "slow service on Wednesdays when that other doctor is here."

Establish occupancy guidelines in writing

Finally, consider the logistics of shared occupancy. Here are some important questions to work out:

> Will the specialist have a key to the veterinary practice? If so, it's best to notify the liability carrier of both the specialist and the generalist.

> If the specialist's fees are billed and collected by the generalist's front-end staff, how will the invoicing be separated? Will the specialist have access to clinic financial records if she suspects foul play by a clinic employee who's billing out her services?

> How will the specialist's occupancy be paid for? Straight rent? A percentage of revenue? Discounted services for the building owner's own cases?

Properly organized, with both parties tending carefully to the details of the relationship, it can work out very well for a specialist veterinarian to work out of an established general veterinary practice. However, neglecting to work out the details ahead of time can be costly. If a problem arises later, it can leave both parties with a sour taste for the space-sharing concept—and possibly for each other.

Dr. Christopher Allen is president of Associates in Veterinary Law PC, which provides legal and consulting services to veterinarians. Call (607) 754-1510 or email info@veterinary-law.com.

How judgy is too judgy?

Where's the line between appropriately righteous indignation regarding pet owners' choices and inappropriately judging those choices? Drs. Greenskin and Codger seem to differ. Where do you fall?

Winter is setting in at our favorite veterinary hospital, yet our two veterinarians' schedules are unrelenting. So, it's another hectic afternoon following missed lunch breaks ("lunch break" has become an office punchline, but nobody's complaining as business is good). Staff members are hurriedly scarfing down sandwiches one bite at a time when the coast is clear (no clients looking their way). Far from a day like any other, on this busy day a notable distinction between the young and the old is going to become painfully apparent.

You're a poor excuse for a pet owner!

Veterinary associate Dr. Greenskin exits exam room 2 with a solemn look on her face as she locates one of the outpatient technicians.

"This is going to be bad," she starts. "I just can't believe Ms. Ded waited this long to bring Doornail in!"

The new technician, a big burly fellow named Seabass, is all too eager to play into Dr. Greenskin's tone and sentiment.

"Oh boy," Seabass says, "Not another one, Doc! I told her three days ago when she called that this couldn't wait. Why can't these dumb morons just listen to us? We can't fix their animals if they don't bring them to us in time!"

Both professionals seem to bask in their supreme mastery of all things pet-related as they put together a punishing estimate for Ms. Ded. It's a miracle Seabass can even see his way to the keyboard through his nonstop eye-rolling over this "poor excuse for a pet owner."

Exchanging knowing looks, the magnificent duo decide to print the estimate for the pink-juice special.

"Yeah, we might as well just give her that one first and save us a whole bunch of time," Seabass growls.

You're doing your best!

Meanwhile, Dr. Codger is overheard through the open door of exam room 3.

"It'll be all right, Mr. Sepsis!" says Dr. Codger. "I completely understand. Life gets in the way, and I know you want the best for your poor girl, Drippy. Rest assured, we're going to work with you to keep you two together."

Between sobs, the pet owner is heard making some pretty dire deliberations.

"Do what you need to do, Doc," says Mr. Sepsis. "I just knew it was time to put her down. At 4 years old, she's lived a good life and we got a couple really nice litters out of her. But she hasn't eaten in weeks and I know it's time."

Dr. Codger stays cool and calm as he continues: "There aren't any guarantees, but with some good strong antibiotics and surgery this evening, we should be able to get her all patched up!"

With a knowing grin, Dr. Codger adds, "She won't be able to have more pups, but I know that isn't your main concern right now. My staff will be right in to discuss some options with you."

Dr. Codger catches Seabass between rooms just in time.

"Let's get some numbers going for Mr. Sepsis' dog, Drippy. I haven't seen a pyometra this bad in a long time. He'll need some options, but let's work with him to get this dog to surgery."

Seabass is on top of his complaining game this afternoon and chimes in: "That grumpy old Mr. Sepsis doesn't care about any of his dogs. I'm surprised he didn't drag her out behind the barn and shoot her himself!"

Seabass revs up his best eye-rolls and immediately senses he should tone it down. Dr. Codger is glaring at him, and Seabass immediately feels about two inches tall. Although Dr. Codger says nothing for what seems like 20 minutes, "probationary 60-day initial employment" rings loudly in Seabass' ears. Dr. Codger takes a moment to insert his philosophy into the budding technician's professional development.

"The important thing is that the client is here and the pet is here," begins Dr. Codger. "Now it's up to us to be compassionate and caring. If we can't do that, then what can we do? I need to go check on a patient. Please keep me updated as to the arrangements you make with Mr. Sepsis. We'll start prepping the OR and treatment areas."

Seabass toils away uncomfortably. It sure is a lot more fun working with the younger doc! Maybe he can arrange his work schedule to cover days that Dr. Codger's off—oh, wait, Dr. Codger's never off. Come to think of it, pretty much all of the clients seem to adore Doc Codger. And he's so old that he must know just about everything. Seabass is torn: Should he gravitate toward the young up-and-comer, or does the wisdom of the ages potentially have more to offer? He plans to reflect a bit more on the situation later, but for now there's work to do.

How judgy is too judgy?

Was Dr. Greenskin just having a bad day, or is Dr. Judgy McJudgyface here to stay? Was it the stress talking, or even worse, might she have learned some of these traits from colleagues and mentors? Is it an inherent quality among veterinary professionals that she unwittingly and subconsciously absorbed the often-blogged-about God complex?

And what has shaped Dr. Codger's very different approach? Does it have something do with his training taking place just as the Pleistocene ended, leading to lifelong guilt for having failed the woolly mammoth? Or did he get his demeanor and semblance of sincerity over time based on his own trials and tribulations?

We're all hoping for the best for poor Drippy and Doornail, but will the veterinarians' varying approaches have any effect on case outcome?

Will any dialogue be had in the clinic about the pet parent's assumed role as Supreme Ruler of All Animal-Related Incidents?

Find out next time in "Old School, New School"!

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

ILLUSTRATION BY RYAN OSTRANDER

MEDICINE | Dentistry

The ABCs of veterinary dentistry: 'M' is for malposition and malocclusion

The goal of veterinary orthodontic correction isn't a pretty smile but pain-free, functional occlusion. *By Jan Bellows, DVM, DAVDC, DABVP, FAVD*

"Are those braces on dogs' teeth?" This question, posed to me by a fellow passenger on my return flight from a veterinary conference, caused me to put my current task (subject-tagging images of dogs' and cats' mouths on my computer) on pause. I explained that in cats and dogs, the goal of orthodontic correction isn't a pretty smile but pain-free, functional occlusion.

What happens when you peek into the mouth of a patient and note that one or more teeth are out of place? Hopefully you don't quickly close the mouth, hoping that the pet owner didn't spot the problem. (Out of sight, out of mind.) It's much better to let your client know when something isn't right in their pet's mouth and explain what it will take to fix a poor or nonfunctional bite. But before you can recommend orthodontic care for your patients, you'll need to embrace the concepts of malposition and malocclusion.

Occlusion

Occlusion refers to the relationship between the maxillary and mandibular teeth when they approach each other, as occurs during chewing or rest. Normal occlusion exists when the maxillary incisors just overlap the mandibular incisors (Figure 1A), the mandibular canines are equidistant from the maxillary third incisors and the maxillary canine teeth, and the premolar crown tips of the lower jaw point between the spaces of the upper jaw teeth in a saw-toothed fashion (Figure 1B). Flat-faced breeds, such as boxers, shih tzus, Boston terriers, Lhasa apsos and Persian cats, have abnormal bites that are recognized as normal for their breed in which the mandibular jaw protrudes in front of the maxillary jaw, altering the above tooth-to-tooth relationship (Figures 2A and 2B).

Malocclusion and malposition

Malocclusion refers to abnormal tooth alignment. Skeletal malocclusion occurs when jaw anomalies result in abnormal jaw alignment that causes the teeth to be out of normal orientation. Dental malposition occurs when jaw alignment is normal but one or more teeth are out of normal orientation.

When dental malposition or skeletal malocclusion causes trauma to other teeth or oral soft tissues, the condition is termed poorly functional or

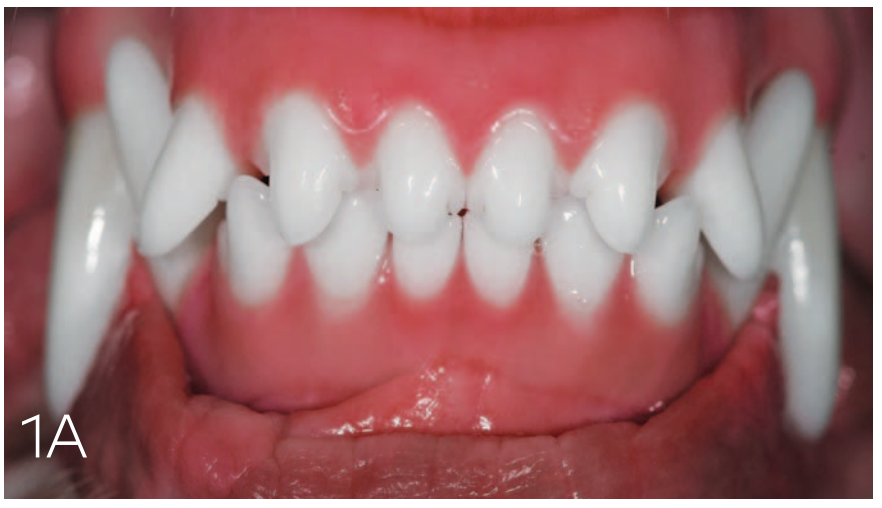

Figure 1A. Normal maxillary incisor overlap.

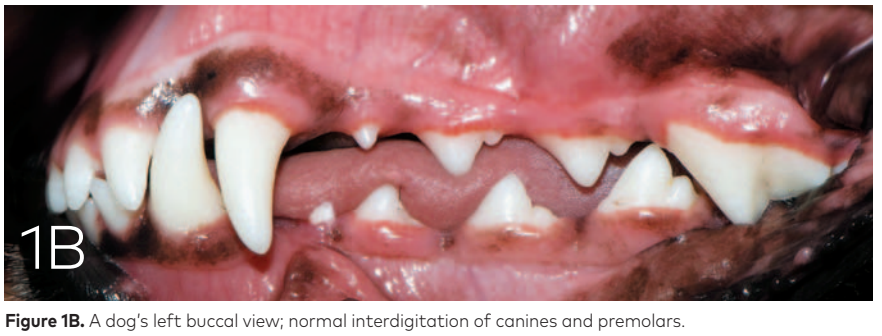

Figure 1B. A dog's left buccal view; normal interdigitation of canines and premolars.

Dogs, dentistry and data

41% of millennial dog owners say they have their dogs' teeth cleaned at a veterinary clinic, compared with only 25% of older owners. And with a greater number of dogs coming in for cleanings, you'll have increased opportunities to spot malocclusion and malposition and save patients' sore mouths.

Source: Pet Owner Paths research, sponsored by Merck, Unfenced and Kynetec

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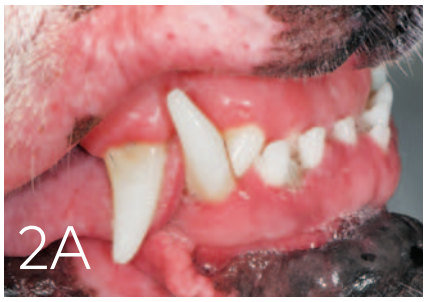

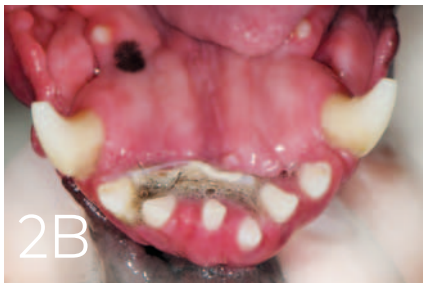

Figures 2A and 2B. Normal but painful nonfunctional rostral occlusion in a boxer. Note the maxillary incisors penetrating the mandible.

nonfunctional and treatment is indicated. Therapy options include moving or removing the offending or offended tooth or teeth, or surgically creating additional space for the malpositioned tooth to occupy without causing trauma.

Skeletal malocclusion

Here are some of the common terms associated with abnormal jaw alignment:

Mandibular distoclusion (also called overbite, overjet, overshot, class 2, and mandibular brachygnathism) occurs when the lower jaw is shorter that the upper and there's a space between the upper and lower incisors when the mouth is closed. The upper premolars will be displaced rostrally (toward the nose) compared with the lower premolars. Mandibular distoclusion is never normal in any breed (Figures 3A and 3B).

Mandibular mesioclusion (also called underbite, undershot, reverse scissor bite, prognathism, and class 3) occurs when the lower teeth protrude in front of the upper teeth (Figure 4). If the upper and lower incisor teeth meet each other edge to edge, the occlusion is an even or a level bite.

Maxillary mandibular asymmetry (also called wry bite, especially by breeders) is a skeletal malocclusion in which one side of the jaw grows differently from the other side (Figures 5A and 5B).

Dental malposition

Abnormally placed teeth can result in the following conditions:

Figure 3A. A cat's mandibular distocluson and asymmetry.

Figure 3B. A cat's mandibular distocluson.

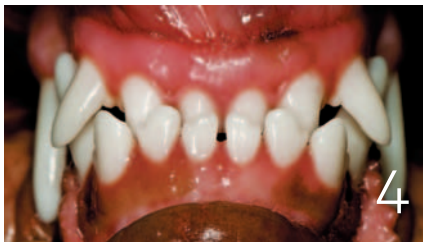

Figure 4. Mandibular mesioclusion in a dog.

Rostral cross bite occurs when the canine and premolar teeth on both sides of the mouth are normally aligned but one or more of the lower incisors are positioned in front of the upper incisors (Figure 6).

Mesioverted mandibular canines (also called lingually displaced canines or base narrow canines) occur when the lower canine teeth protrude inward, impinging on or penetrating the maxillary gingiva (Figure 7). Often this condition is due to retained deciduous teeth. The resulting trauma can be alleviated through tooth movement, crown reduction and restoration, or extraction.

Rostroverted maxillary canines (also called lance canines) may be inherited (Shetland sheepdogs are prone to this condition) or developmental secondary to retained deciduous teeth (Figure 8). Treatment includes moving the maxillary canine caudally with the help of orthodontic brackets and elastics, crown reduction and restoration, or extraction.

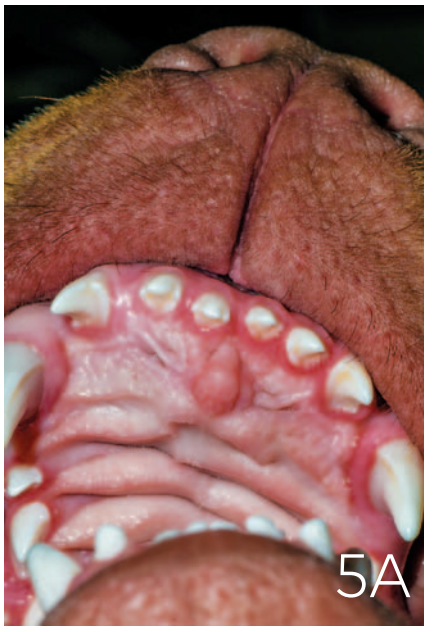

Figure 5A. Maxillary mandibular asymmetry in a dog.

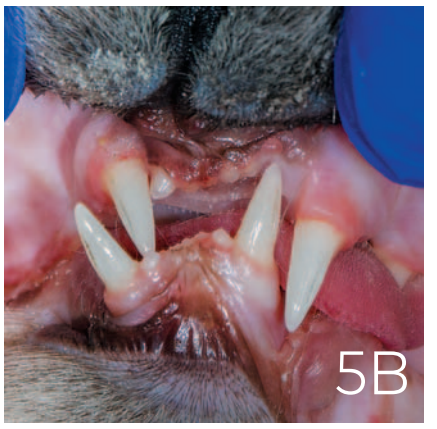

Figure 5B. Maxillary mandibular asymmetry in a cat.

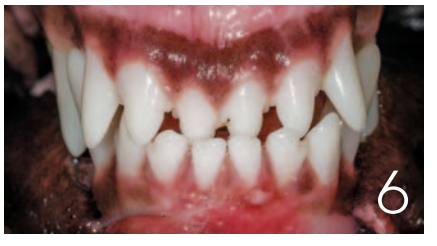

Figure 6. Rostral cross bite.

Figure 7. Mesioverted left mandibular canine.

Figure 8. Rostroversion of the maxillary canine in a Shetland sheepdog.

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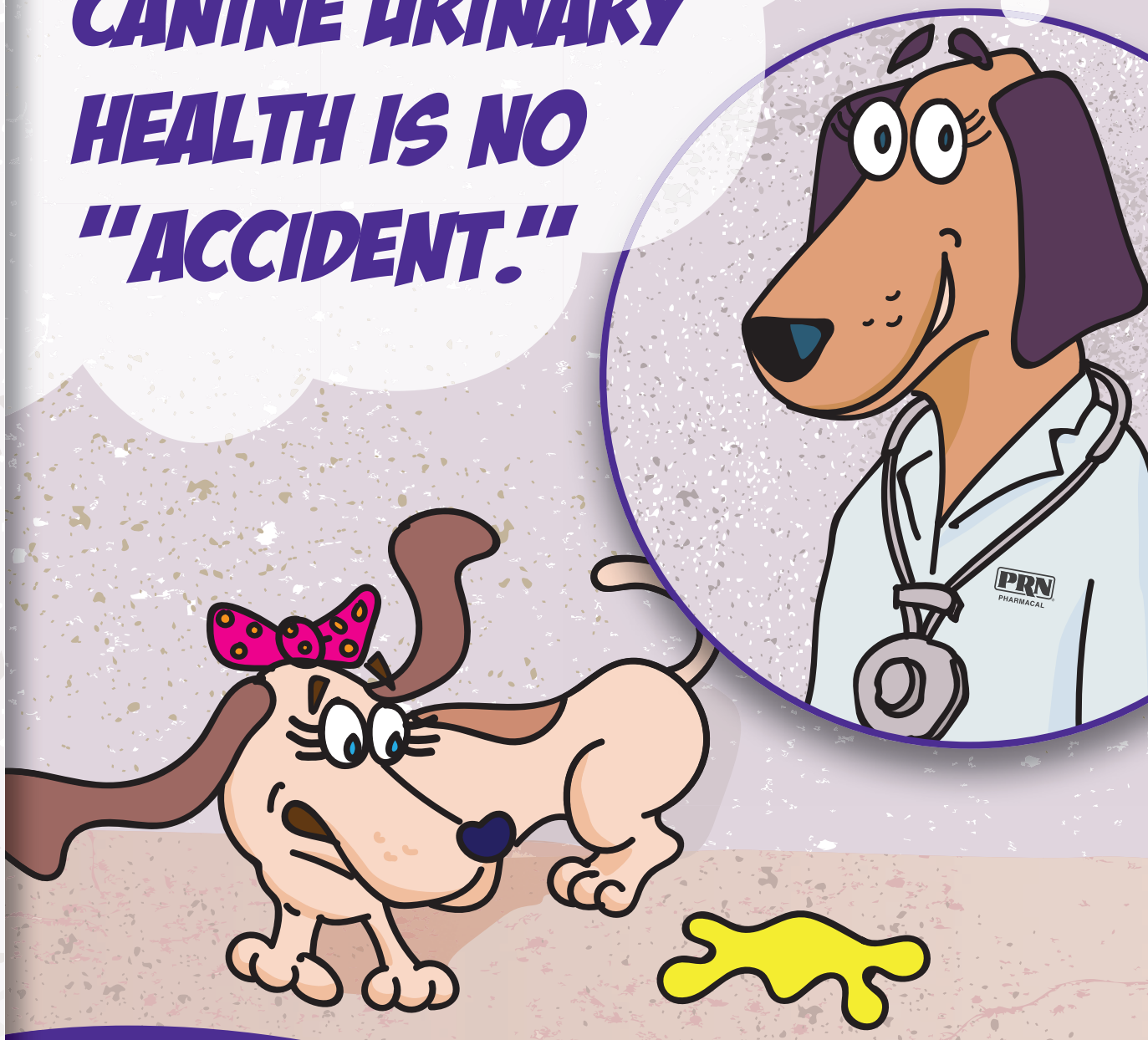

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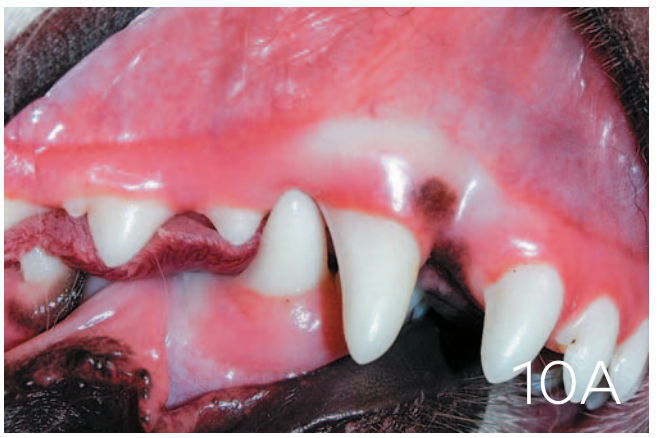
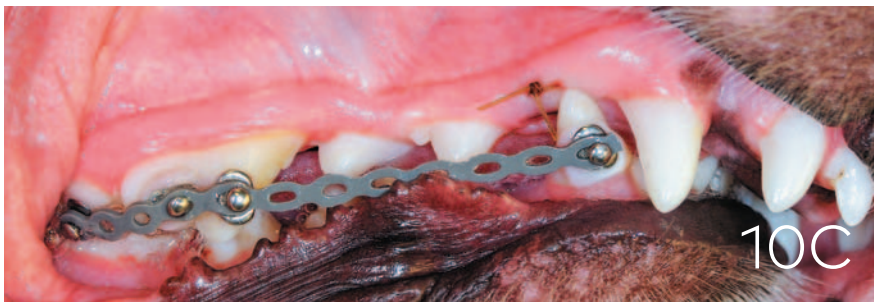
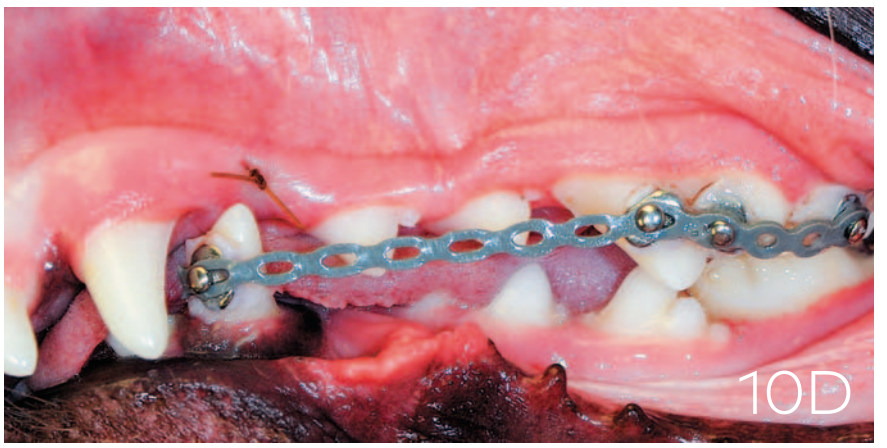
Figure 9. The left mandibular canine tooth is malpositioned but functional.



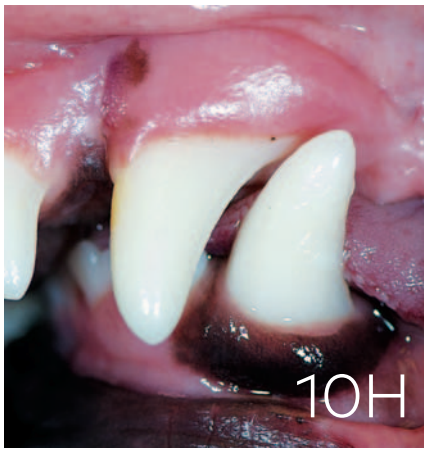
Figures 10A and 10B. Right and left mandibular canines impinging on maxillary gingiva.





Figures 10C and 10D. Orthodontic brackets and elastics are used to move a maxillary canine caudally after extraction of the right and left maxillary first premolars.

Figures 10E and 10F. Laser gingivoplasty creates an inclined plane to push mandibular canines labially.



Figures 10G and 10H. Functional occlusion is created.

Your patient has an abnormal bite. Now what?

The challenge with examining every dog and cat that comes through your clinic for evidence of malocclusion or malposition is that your exams will uncover many abnormalities. However, this also means you will have more opportunities to improve your patients' health. Consider these basic orthodontic concepts when tailoring a treatment plan for each patient with orthodontic anomalies.

Is the abnormality functional?

If a tooth is out of place but isn't interfering with other teeth or with eating, and if it isn't penetrating the gingiva, a functional bite exists (Figure 9). To repair a functional bite for cosmetic or show purposes isn't necessary and is considered unethical.

When abnormally positioned teeth interfere with other teeth or penetrate the gingiva, a poorly functional or nonfunctional bite exists, and something needs to be done.

Options for correction. Here are the techniques and procedures that can improve quality of life in an animal with malocclusion.

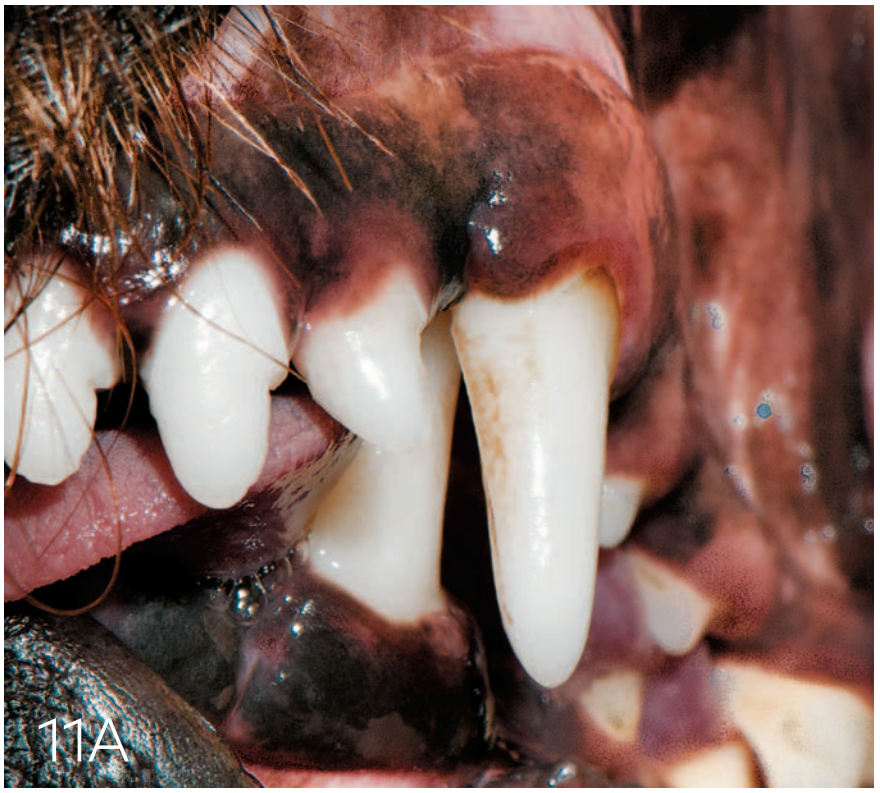


Figure 11A. Malpositioned left mandibular canine impinging on palatal gingiva.

Figure 11B. Left mandibular canine with reduced crown before restoration.

Figure 11C. Restored crown on reduced canine; impingement resolved.

1. Extraction. Extraction of the offending or offended tooth (or teeth) usually results in immediate relief. Extraction of the canines can be challenging, so consider referring if you aren't comfortable with the procedure or the possible surgical consequences.

2. Tooth movement. Moving malpositioned teeth to functional positions can be both challenging and rewarding. Teeth are moved surgically or through the use of inclined planes, orthodontic brackets and elastics (Figures 10A-10H). Orthodontic movement is an advanced dental procedure that should be performed only by someone with a thorough understanding of dental anatomy, physiology and orthodontic principles.

3. Crown reduction and restoration. Decreasing canine or incisor crown height will often resolve gingival impingement or penetration. This procedure preserves the vitality of the tooth through vital pulp or root canal therapy and restoration with light-cured composite (Figures 11A-11C). You can place a metallic crown for extra protection.

Understanding and embracing orthodontic correction will create smiles on your clients', patients' and team members' faces. Everyone wins.

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Unlucky leaky Lucy: When that Labrador's gotta go gotta go right now

This update on treating urethral incontinence in dogs calls for less frequent administration of PPA, the most common form of treatment. Get the whole picture from veterinary internist Dr. India Lane. *By Sarah J. Wooten, DVM*

The sudden urgency to go outside. The telltale spots on the bed or couch. According to Fetch dvm360 conference speaker India Lane, DVM, MS, EdD, DACVIM, abnormal micturition—not holding or storing urine appropriately, resulting in urine leakage due to urethral incompetence—is common in big female dogs.

How it's supposed to work

Remember all those classes in neurology and urology? If not (no judgment!), here's a quick review of how urine is normally stored and voided, courtesy of Dr. Lane, who is the vice president of academic affairs and student success and a professor of small animal medicine at the University of Tennessee.

The ability to void and hold in urine relies on a specific set of muscles and nerves and an intact spinal cord. The nerves that power these muscles exit to the higher levels of cognition in the brain. When dogs (and people) need to store urine, they need:

- A bladder that responds to sympathetic control from beta receptors and that relaxes and expands as it fills
- The bladder neck muscles to contract together under sympathetic control via alpha adrenergic receptors to close off the entrance to the urethra
- A set of striated muscle that gives basal tone to the urethra while the dog is awake and reflexive tone when abdominal pressure changes
- A healthy urethral mucosa.

Dogs that have urethral weakness or incompetence are typically otherwise healthy but leak intermittently while resting. The problem is usually noticed in young adult large-breed dogs that leak small amounts. According to Dr. Lane, the prevalence of urethral incontinence in spayed female dogs over 40 pounds may reach 20%, with onset usually about two to three years after an ovariohysterectomy. In general, the overall prevalence of classic urinary incontinence in spayed bitches is significantly lower—around 5%, Dr. Lane says. Urinary incontinence is much less common in small dogs.

What goes wrong

When it comes to the root cause of urinary incontinence in female dogs, veterinary medicine is still banging the drum of "We don't know." Certainly, there is the effect of reproductive hormones on urinary tissues, such as changes in collagen and receptor responsiveness, but there's still no clarity on the root cause, Dr. Lane says. Anatomic conformation has been called into question, such as a shortened urethra or hypoplastic vulva, but those changes can also be seen in dogs that are not incontinent. When it comes to the effects of hormonal changes, Dr. Lane says all hormones need to be considered, not just circulating estrogen. Chronic elevation of follicle-stimulating hormone (FSH) and luteinizing hormone (LH) from the pituitary gland seems to be involved as well, she says.

Diagnosis depends on the clinical skills of the veterinary healthcare team—you don't need much more than a history, signalment, physical exam and evaluation of response to therapy. Dr. Lane recommends ruling

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out a urinary tract infection with a urinalysis and urine culture.

How to treat it

A person can learn how to exercise and increase the tone of the striated muscle, but good luck teaching a Rottweiler to do Kegels! In veterinary medicine, Dr. Lane says treatment is currently limited to manipulating alpha receptors with alpha agonists or reproductive hormones to create more continuous tone in the urethral smooth muscle.

When it comes to medication for incontinence, the key is to set your client up for success by communicating that it will be a bit of trial and error, because every dog is an individual and responds differently to medication.

PPA. Phenylpropanolamine (PPA), still the mainstay of treatment, is a sympathomimetic that increases the release of norepinephrine at the adrenergic receptors in urethral smooth muscle. Dr. Lane likes PPA as a trial drug because it not only helps her differentiate classic urinary incontinence from other conditions such as vaginitis or pollakiuria, but it also helps dramatically increase quality of life for the client who is frustrated with the incontinence. PPA can cause hypertension, tachycardia and behavioral changes, but those effects are rare. Dr. Lane recommends checking blood pressure every six months to a year in dogs treated with PPA that have concurrent renal disease, cardiac disease or hormonal disorders.

Here's something new! Dr. Lane says that based on accumulated clinical experience, PPA may need to be given less frequently than we previously thought. According to urethral pressure profile studies, once-a-day dosing is preferable to three times a day because of downregulation of adrenergic receptors.[1,2] Dr. Lane used to begin PPA therapy with administration three times daily and then decrease from there, but her new recommendation is to start with once-a-day administration and increase frequency if needed to control incontinence.

If you have a patient with urinary incontinence that has seemed to stop responding to PPA despite increasing the dosage or frequency, then the problem may be too much of a good thing. Dr. Lane recommends prescribing a washout period and then restarting with once-a-day administration. Tell the client that some patience is needed, and they may need to do some laundry while you sort out therapy. Some dogs need even less-frequent dosing—every other day or even every three to four days. As far as whether morning or nighttime administration is better, Dr. Lane says it varies. She recommends starting with evening administration to control incontinence at night. If the dog experiences sleeplessness or restlessness, switch to morning administration.

Pseudoephedrine. If you have some clients who are breaking bad and giving their dogs pseudoephedrine for incontinence, this drug certainly works the same way. However, Dr. Lane recommends gently suggesting to these clients that the drug is less effective than PPA and less selective. It may help to remind them how they feel when taking cold medication—the bottom line is nobody likes restlessness or tachycardia due to "medicine head," including dogs.

Estrogen. Estrogen works synergistically with PPA to treat urinary incontinence by enhancing alpha-adrenergic activity. It can also be used independently of PPA, says Dr. Lane. In women, estrogen supplementation helps urethral mucosal health, enhancing mental cognition and urinary bladder capacity. There are few studies in dogs on these effects, but there are a fair number of studies in women, and Dr. Lane thinks we can extrapolate somewhat from these studies to dogs. Estrogen replacement in postmenopausal women not only improves signs of menopause, but in the lower urinary tract it helps maintain capillary blood flow in the urethral mucosa and submucosa, which contributes to the cellular health of the vagina and urethra. The urethra in both dogs and humans is a folded structure, and it's both the sticky mucosa and the folded structure that contribute to creating a seal. Estrogen improves the stickiness of the mucosa and the collagen that supports the urethra and bladder neck.

>*DES.* Diethylstilbestrol (DES) is a reliable preparation for treating dogs with urinary incontinence and requires a short loading phase, says Dr. Lane. She says to administer DES once a day for a week and then transition to a low frequency of treatment once every seven to 14 days. The continence rate for dogs treated with DES is 60% to 80%.

>*Estriol.* If you can't get DES, try estriol, marketed as Incurin, Dr. Lane suggests. The loading phase is several weeks, followed by maintenance with once-a-day or every-other-day administration. If you want to try conjugated estrogens, Dr. Lane recommends keeping the dog on once- or twice-a-day administration (loading) until the owners have noted two weeks of continual continence; then you can drop the dose to the lowest possible dose.

A note on monitoring. Use estrogens with care in patients with known immune-mediated diseases. Dr. Lane recommends performing a complete blood count before starting treatment, one month after starting treatment and then, if everything looks good, once a year.

How to prevent it in the first place

The risk of female urinary incontinence goes up in dogs that are spayed when younger than 3 months of age. Dr. Lane says a recent study[3] showed that in big dogs you may be able to reduce their likelihood of developing urinary incontinence by delaying an ovariohysterectomy a "little bit." This study does not determine whether you should spay before the first heat cycle or after for large breeds. To prevent urinary incontinence in big dogs such as golden retrievers, Old English sheepdogs, Labradors, Dobermans and Rottweilers, Dr. Lane says, "Let's not be in a hurry to spay at 6 months; wait until 8 or 9 months if we can, and continue to wait for more data."

What if it doesn't fit the classic picture?

If your patient doesn't have a classic presentation, it's time for look for systemic or other urinary tract comorbidities. If you don't find anything and are still unsure whether or not your patient is incontinent and want a definitive answer, consider referring to an internal medicine specialist for a urethral pressure profile or cystoscopy.

References
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Fetch dvm360 educator Dr. Sarah Wooten graduated from UC Davis School of Veterinary Medicine in 2002. A member of the American Society of Veterinary Journalists, Dr. Wooten divides her professional time between small animal practice in Greeley, Colorado, public speaking on associate issues, leadership, and client communication, and writing. She enjoys camping with her family, skiing, scuba and participating in triathlons.

Enrichment: Why old dogs and cats *need* new tricks

Play and activity in pets may stave off cognitive decline and improve cognition in those already starting to slope downward.

By Julia Albright, MA, DVM, DACVB

As medical science extends the lifespan of pets, age-related cognitive decline in cats and dogs is on the rise. Clinical signs associated with cognitive dysfunction—often characterized by the acronym DISHAA: **d**isorientation, social **i**nteractions, **s**leep-wake cycle disturbances, **h**ouse soiling, **a**ctivity changes (apathy or aimless wandering) and increased **a**nxiety—are reported in almost half of dogs over the age of 10 and 30% of cats over the age of 11.[1]

Clinical signs associated with cognitive dysfunction are reported in almost half of dogs over the age of 10 and 30% of cats over the age of 11. Nondrug interventions (like exercise and environmental enrichment) are showing exciting physical and mental benefits across species.

Fortunately, more veterinarians and pet owners are not accepting these as inevitable aging changes. Pharmaceuticals and nutraceutical supplements to enhance neuron functioning or reduce oxidative damage should be implemented immediately after signs are reported.[2] But nondrug interventions such as exercise and environmental enrichment are showing exciting physical and mental benefits across species.

In one study, older dogs receiving environmental enrichment plus an antioxidant diet showed the most improved cognitive scores, while environmental enrichment alone improved scores more than the group given the dietary treatment without enrichment.[3] Physical activity has been shown to slow the progression of Alzheimer's disease in people.[4] Increased perfusion to brain tissue, decreased body weight, upregulation of growth factors and improved synaptic plasticity may all be molecular mechanisms underlying the benefits of enrichment and activity therapies.[5]

Enrichment can be described as providing enhanced environmental stimuli. For our companion animals this means not just meeting their basic needs for health, nutrition and safety, but also providing low-stress and predictable social interactions, play, outlets for other natural behaviors, and sensory-stimulating opportunities. Of course, medical issues such as metabolic disease, dental disease and orthopedic pain should be addressed before starting enrichment activities in senior pets.

Some practical enrichment ideas you can pass on to your clients include:

>Providing food toys or puzzles that encourage manipulating the device to receive food. Many commercial products are available and DIY ideas can be found on various websites.

>Hiding food pieces around the house to simulate searching behavior.

>Taking dogs on outdoor walks to provide some aerobic exercise and sensory exposure; in physically debilitated animals, a pet stroller or car rides can provide the sensory experience. (Note that many dog owners think placing the dog in the backyard can substitute for walks. However, outdoor time in the typical backyard does not provide the same benefits because of the lack of novelty and activity.)

>Providing safe outdoor time for cats with bungee harnesses or cat-specific fencing. Screened porches or outdoor enclosures do not encourage as much activity as walks or large fenced areas, but placement in sight of butterfly gardens or bird feeders increases the sensory stimulation.

>Ensuring there is vertical space for cats both indoors and outdoors to help foster activity and provide safe places in a multicat household.

>Spending a few minutes each day on reward-based basic obedience or simple trick training—a great method for mental stimulation and appropriate social interaction, especially in less mobile animals.

>Encouraging play even in older animals. A play partner should support the appropriate level activity and not pester or distress the older animal. Toys can also be a good outlet for older animals but daily rotation, food and owner facilitation may be necessary.

Evidence suggests that attention to environmental enrichment may make the most impact if started in median-aged animals.[6] Ask clients about clinical signs of cognitive dysfunction and start supplements, activity and enrichment early.

References

References for this article can be found at **dvm360.com/newtricks**.

Dr. Julia Albright is an assistant professor of veterinary behavior and PetSafe Chair of Small Animal Behavioral Research at the University of Tennessee's College of Veterinary Medicine.

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EQUINE | Business

Mixed practice: Will it save equine practice—or kill it?

Equine veterinarians have added small animal services to subsidize revenue. Here's a look at the long-term effects. *By Kyle Palmer, CVT*

When equine practitioners hit the economic downturn in 2009, many of them began looking for other ways to stay busy and service their practices financially. For some the solution was to diversify, and in most cases that diversification meant taking on companion animal work. It made a lot of sense: They could continue to serve their equine clients but would have the added bonus of paying their bills and staying in business.

It worked for many practitioners. But what will the long-term effects be? Will mixed practice save equine practice, or will it be the thing that ultimately kills it?

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How it works out

Many of the mixed practices I know personally share similar characteristics. Single or majority ownership resides with a longtime and extremely popular veterinarian who practices, at least primarily, on horses. Without that well-regarded mostly equine owner, these practices probably wouldn't be mixed—they would simply be companion animal clinics.

Incompatible goals

That still doesn't answer the question, though. Does mixed practice benefit equine work—or does it just damage it?

Based on feedback I've received while recruiting, I've concluded that most new graduates are focused on a future in either small animal or equine medicine.

Many of these practices also struggle to find and keep associates. Based on feedback I've received while recruiting, I've concluded that most new graduates are focused on a future in either small animal or equine medicine. Veterinary job seekers with a foot in each arena are a rapidly dwindling group.

Of that dwindling group, those who do take a mixed practice job often leave between their first and second year for one of two reasons: (1) The "horse doctor" part of them is not getting enough opportunity to hone their equine skills and develop a client base (in part because of the long shadow cast by the owner/primary equine practitioner), or (2) they no longer feel competent to see intermittent horse appointments and dread the fact that they're responsible for equine emergencies—which are often the cases they're least comfortable with.

It's a considerable conundrum. On one hand, mixed practice provides an opportunity to diversify the client base and subsidize equine work. On the other hand, mixed practice is indirectly pushing some practitioners away from equine work.

To add to the dilemma, many of these longtime owners are now looking for someone to buy their mixed practices, in whole or in part, and they're hitting a wall. Since their associates aren't carrying the equine practice flag at the level they are, those associates simply have no interest in buying that part of the business. Can an owner retire comfortably if he or she can sell the business only as a companion animal practice? Probably not. Those owners need to be finding other ways to save for retirement rather than planning for practice sale proceeds to provide their main funding source.

Here's my view: I think it damages it.

Dr. Owner simply can't be the practice's equine anchor and help one or more associates get ready to step into his or her role at the same time. Successful practice takes practice—equine practice especially. From being comfortable around the animal, to feeling qualified to handle the really, really hard stuff, to being able to provide competent reproductive services, to helping diagnose and resolve difficult lamenesses—you have to do it all of the time to stay sharp.

It is the rare practitioner (and I do know a few) who can hold onto their clients' confidence in both equine and small animal practice. Many clients—regardless of whether they're wrong or right—are convinced that the best horse doctor at your practice can't also be the best small animal doctor in the building. If you are that rare exception, you may find it hard to sell your mixed animal practice even if you do split off the equine portion for all of the reasons described above.

Another characteristic of the mixed practice owners I know is that all of them—every single one—has built a noncorporate practice with certain values that they desperately hope to pass on once they're no longer involved. These veterinarians have a deep, deep connection to the clients who helped them build their practices and dread the idea of giving even the smallest hint of their future retirement—which makes a gradual transition difficult as well.

So mixed practice is not the long-term salvation of equine practice, despite some short-term reasons it might appear otherwise. Those clients who do like the one-stop shop aspect are usually reluctant to accept the equine doctor's associates as viable alternatives. Instead they keep a veterinarian from another practice on speed dial for those times when their favorite doc isn't available. That is simply not as often the case with those same clients when they schedule a small animal appointment—they'll see any one of several practitioners.

Small animal: a killer

In the end, I think mixed practice is more of a threat to long-term equine careers than it is a benefit. A new graduate who joins a mixed practice intending to see horses on a regular basis is likely to be disappointed. For all of the same reasons many owners have looked to companion animal work to subsidize equine revenue, so must a mixed practice make that same decision internally.

While a full equine schedule might be six to eight stops during the day, that same number of clients represents one to two hours of the day for companion animal doctors. Simply put, when a huge day comes around (and the economy in most areas is back and strong), an associate can service more demand in the building than on the road. It's not that their companion animal clients or patients are any more important than equine ones; it's that one group simply outnumbers the other. By the same ratio, six to eight equine clients per day compares to 25 to 40 small animal clients, so the emergencies, or needy client appointments, increasingly draw an associate from one need to the other.

In the Pacific Northwest, almost every practice with more than one strong equine practitioner is equine only. It's just a case of how those relationships have been built and how clients perceive their veterinarian. For an associate veterinarian who wants a strong and stable equine following, it's likely only going to happen where that's the only species listed on the door.

Kyle Palmer, CVT, is a frequent contributor to dvm360.com and dvm360 *magazine, a* Firstline *Editorial Advisory Board member and a practice manager at Silver Creek Animal Clinic in Silverton, Oregon.*

Doug Parker and John, right, competing in October 2017.

Champion roping horse recovers from botulism with help from UC Davis

After spending 26 days at the university for treatment, and many more months of recovery, the horse is back to his champion roping ways.

John, an 11-year-old American quarter horse gelding, and his owner and rider, Doug Parker, had worked for years to qualify for the World Series of Team Roping in Las Vegas, finally making that dream a reality by qualifying in 2016. Just before they were set to compete, however, John contracted botulism, so Parker raced him to the University of California, Davis, veterinary hospital to try to save his life, according to a university release. Botulism had killed one of John's stablemates.

"After what happened to our other horses just two weeks earlier, we got him to Davis as fast as we could," Parker says in the release, recalling two other horses in his herd of 25 that were treated for botulism at UC Davis. One didn't survive. Parker says John looked just as bad as the one that had passed away, so he wasn't optimistic.

Parker was determined to save his horse, as he'd searched a long time to find an equine athlete with the potential to compete at the highest levels of roping. He worked with the UC Davis equine specialists to do everything he could for a positive outcome for John.

John spent 26 days hospitalized for treatment. During that time he received antitoxin plasma and supportive care that included intravenous fluid therapy, anti-inflammatories and vitamin E, the release states. He was unable to stand without help, so faculty, staff and students at the large animal clinic used the facility's large animal lift to help him stand. Once standing, John was disconnected from the lift so he could move around freely and lie back down when he wanted.

John gradually became stronger. On the 22nd day of his hospitalization, he stood unassisted for the first time, though he needed minor assistance from the lift until day 26, when he stood unassisted again, the release says. His care team decided

PHOTO COURTESY OF UC DAVIS

at that time to send John home to recover in a larger space than the stalls in the hospital's intensive care unit.

Parker took John home, but the first day he couldn't stand on his own, so Parker used a lift attached to his tractor to get John up. John stayed up all day, but the next morning Parker found him down again. However, when John heard Parker start the tractor, he got up on his own, the release says.

"I think he thought, 'Well if you're going to hoist me up with the tractor again, I'll just stand up,'" Parker says.

It took about three months, until February 2017, for John to gain his weight and strength back. Parker took him to a roping competition in Arizona, but John wasn't quite ready to compete. Realizing the horse needed more rest, Parker took off John's shoes and let him out to pasture for four months, according to the release.

In June, Parker thought he'd try competing with John again. He took the horse to a competition and John was back to his old self, winning the event. Since then, Parker and John have qualified for the World Series of Team Roping, and Parker is very excited.

"It was a big deal for me to have UC Davis save him," Parker says in the release. "I was ecstatic when he came back as good as he did. They did a good job on him at Davis."

Two studies focus on gastric ulcer treatments in horses

One investigation warns against compounded omeprazole; the other shows a positive effect for a polysaccharide blend.

Two recently released studies shine a spotlight on horses' guts—specifically, treatments for gastric ulcers, a common equine condition. Here's a closer look.

Caution with compounding

Mark A. Wallace, DVM, MS, DACVIM (LA), of Carolina Equine Hospital in Browns Summit, North Carolina, presented a poster at the 2017 ACVIM Forum titled "Radiographic evaluation of compounded and illegal over-the-counter omeprazole products."

For the study, Dr. Wallace took radiographs of compounded and non-FDA-approved omeprazole paste products and compared the results with an FDA-approved product: Gastrogard from Boehringer Ingelheim. (See photos from the poster at right.)

"All compounded and over-the-counter products that were studied had clearly visible incomplete fill and air pockets," the poster's conclusion section reads. "Several of the products also showed variability in homogeneity. Gastrogard Paste syringes had complete fill, no air pockets and were homogenous."

Without an FDA-review process to ensure product quality, veterinarians and horse owners are likely to encounter problems with compounded and illegal OTC omeprazole paste products for horses, the author concludes.

A conflict of interest disclosure on the poster indicates that the research was funded by Merial (now Boehringer Ingelheim) but that "the sponsors of this project have played no role in analysis of results and have had no editorial influence over the written text provided here."

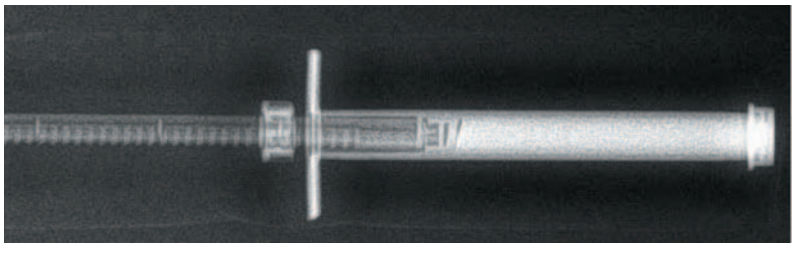
Promising polysaccharides

Hagyard Equine Medical Institute, a private equine veterinary facility in Lexington, Kentucky, recently found in a study that a polysaccharide blend reduced gastric ulceration in active horses. The study was published in the March 2017 issue of the *Journal of Equine Veterinary Science*.

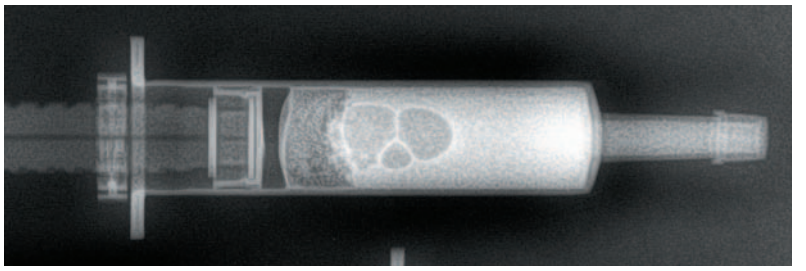
In the investigation, 10 horses underwent gastroscopy for diagnosis and scoring of existing ulcers, according to a release from Hagyard. Each participant was administered 1 to 2 oz of a polysaccharide blend for the duration of the study. Results showed that a polysaccharide blend of high-molecular-weight hyaluronan and schizophyllan, a beta-glucan, administered daily for 30 days demonstrated ulcerative healing.

Of the horses treated with the blended therapy, 90% showed complete resolution or improvement in ulcerative areas, increased appetite, weight gain and positive behavioral changes.

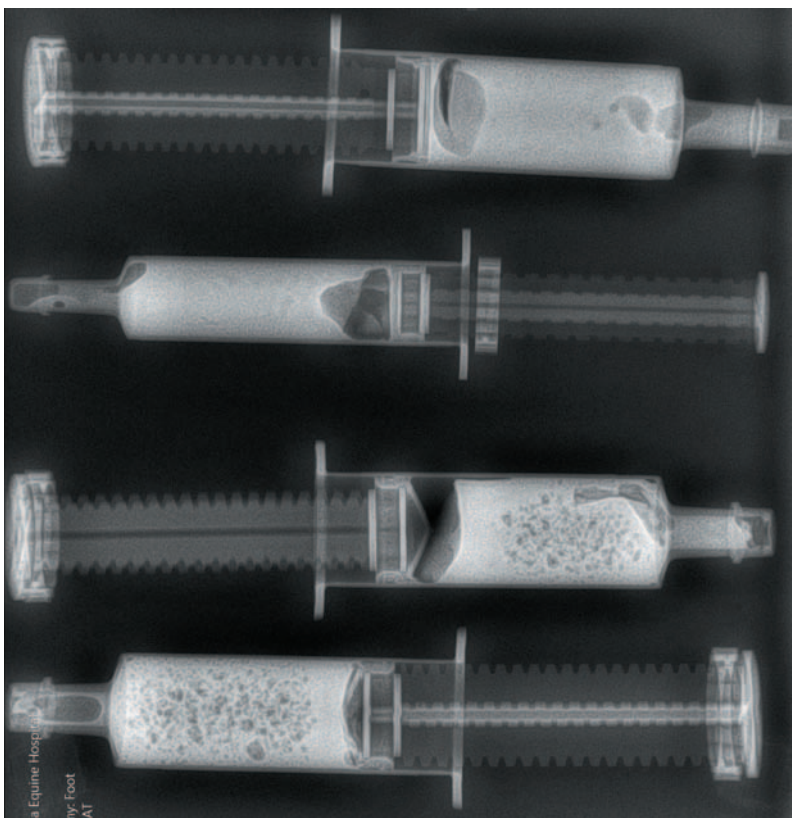
"Ulcers can be found in as many as 80-100% of horses," says Nathan Slovis, DVM, DACVIM, CHT, director of the McGee Medical Center, a division of Hagyard Equine Medical Institute. "Our objective in this research was to determine whether a natural treatment would help in the healing process. From the data gathered, we were able to determine that horses can be successfully treated with a naturally safe and effective polysaccharide blend of hyaluronan and schizophyllan."



Radiographic appearance of Gastrogard paste.



Radiographic appearance of compounded omeprazole paste products.



Radiographic appearance of over-the-counter omeprazole paste products.

Understanding the mind of the horse

What makes horses do what they do? Dr. Robert Miller breaks this topic into 10 main points. And, interestingly, all are related to the first—the equine flight instinct. *By Jennifer Gaumnitz, Senior Content Specialist*

How can a human being ever entirely comprehend how a horse thinks? How it perceives its environment? In one of his popular Fetch dvm360 sessions in Kansas City, the renowned Robert M. Miller, DVM, brought all of his years of veterinary and horsemanship experience to bear to present a concise, pithy summary of how your equine patients think.

Dr. Miller explains that when working with any animal species, including horses, you have to understand the behavioral characteristics that are in the species' DNA, established through natural selection. Domestication might affect the characteristics, through artificial selection, but veterinarians should still attempt to understand the innate characteristics to better read their patients and anticipate their movements.

If you remember all 10 points from Dr. Miller's lecture, you're ahead of the game. But what you really need to remember is that all equine behaviors are related to the first—the flight instinct.

1 "Flight is life."

Dr. Miller points out that each species' primary survival behavior is related to its anatomy. For horses, the primary survival behavior is flight. As a grazing prey species, the horse has no visible weapons, such as horns. It escapes predators by running away. Humans, on the other hand, are a predator species, not a flight species. Therefore, we humans have to train ourselves to understand how a horse views and thinks about things it encounters in its environment. According to Dr. Miller, we have a tendency to attribute a horse's "flightiness" to stupidity.

Dr. Miller says that when he was young, although he loved horses, he thought they were not very bright. He says, "I now realize that the horse in its natural environment, the grassy plains, is a highly intelligent animal. As we go through this list, you will see that the horse rates extremely high on some scales, and in several places, it rates higher than any other domestic animal. I am still learning to respect the intelligence of the horse."

2 "My senses tell me when to run."

The horse is the most perceptive of all domestic animals. Why is that? Dr. Miller explains, "If you're going to stay alive in the wild, you better know when to run!" The horse's visual, olfactory, auditory and tactile senses are exceptionally sensitive, which is necessary in a flight creature.

In fact, truly great horsemanship takes advantage of the horse's tactile perceptivity. The horse can feel the rider's slightest changes in position or shift in weight, even a slight turning of the head, all the way through a saddle and saddle blanket. The horse also has monocular vision, with its eyes set to the side. Because of that, the horse can turn its nose about an inch and it has

HORSEMEN/SHUTTERSTOCK.COM

360-degree vision.

"It can see all around itself, see what's creeping up on it," Dr. Miller says. However, this also means the horse's depth perception is not like species with binocular vision. This explains why a horse might be afraid of stepping up into a trailer or crossing a stream, until it gains confidence and learns it can trust the rider.

3 "Quick responses let me live another day."

The horse has the fastest response time of any domestic animal, which of course is necessary for effective flight. Dr. Miller says, "The significance of that for those of us who work with horses is, I don't care how young or athletic you are, if the horse wants to kick you and you're in an exposed position, you're going to get hurt. We just can't move that fast." For a more in-depth discussion on safely working with horses, see another article featuring Dr. Miller's expertise: "Get defensive when working with equine veterinary patients" at **dvm360.com/getdefensive**.

4 "I learn quickly what isn't a threat."

Horses are the most easily desensitized of all domestic animals. They can be habituated to frightening but harmless nonpainful stimuli with exceptional speed, if the stimulus is correctly presented. Dr. Miller says, "Horses can be habituated to the loudest noise, the wildest visual stimulus, the most aggressive tactile stimulus, providing it causes no physical pain and the proper technique is used."

Why are horses so easily desensitized? Dr. Miller explains, "Because if you're a flight animal and an unfamiliar stimulus—a thing you've never seen before or sound you've never heard before—precipitates flight, if that stimulus was harmless and you didn't quickly desensitize to it, you'd never stop running."

5 "I learn quickly."

According to Dr. Miller, the horse is the fastest learner of all domestic animals. He says horses learn more quickly than dogs, cattle, swine and sheep. The slow learners among ancient equids simply didn't survive to reproduce. Dr. Miller says, "We have to respect how fast horses learn. They learn the wrong thing just as quickly as the right thing."

6 "I remember the good and the bad."

Horses have the best recall of all domestic animals, Dr. Miller says: "They have an infallible memory, whether it's a positive experience or a negative experience. Horses never forget. You may overcome the reaction to that memory, but you don't erase it." Why is that? Again, during the 5 to 6 million years horses spent in the wild, those with poor memory simply did not survive.

7 "Are you my leader?"

All animals that live in groups have a dominance hierarchy, meaning there are leaders, followers and everything in between. Dr. Miller says horses are the most easily dominated of all domestic animals. That is, they accept leadership of other horses or even humans if appropriate methods are used. A horse's place in the hierarchy is somewhat determined by the innate personality of the horse.

One side note: Since horses are herd animals, a horse that is pastured alone is a sad situation, Dr. Miller says. The companion doesn't have to be another horse; it can be a goat. Horses will readily adopt a substitute for another horse.

8 "Do you read me?"

As with other species, the horse has a unique body language. Sometimes veterinarians and horsemen understand it and sometimes they don't. Dr. Miller says, "I spent a third of my life and didn't understand the basic body language, because nobody ever told me and I didn't recognize it. It takes teaching to learn the body language of the horse."

The horse is most vulnerable when its head is down when it is grazing or drinking. Therefore, when a horse smacks its lips, it is simulating eating and drinking to signify submission and trust. The lower the head and the stronger the mouth movements, the more submissive the horse is being. Dr. Miller says he has learned that "with horses, head up means, 'I want to run away. I'm thinking flight. I want out of here.'"

During Dr. Miller's years working with horses, he learned to avoid predatory body language when around them. That is, he learned to take a relaxed posture with his weight on one leg (because weight on two legs is predatory), and he does not stare at a horse (because eyes forward is predatory). When he first approaches a patient, he stands and scratches the horse at the withers, casually talking to the owner, and waits for "the letdown," when the horse lowers its head and exhales.

9 "Control my feet, control my mind."

Because the horse is a flight creature, its survival depends on its legs and its ability to flee. Therefore, leadership of the horse is established by controlling its movement. That concept can be used in practice. If you control the feet, you control the mind and the behavior of the horse. "When you are on a call and they bring the horse out, while talking to the owner, first move the horse around in a quiet little circle," Dr. Miller says. "The horse will be thinking, 'This person is controlling where my feet are positioned.' And submission is the response to that."

Dr. Miller has occasionally taken this control of the legs to a higher level, using one-leg hobbling on extremely needle-shy horses to gain their submission in order to be able to administer vaccinations. Dr. Miller says that the psychology underlying this action—controlling the legs to create submissiveness—is the important thing to understand, not so much the method.

10 "I was born this way!"

The horse is a precoccial species; soon after birth, the foal is on its feet and can keep up with its mother and run with the herd. This is in contrast to altricial species, such as dogs and cats, where newborns are blind, deaf, helpless and completely dependent on the care of the mother. The newborn foal has fully functional senses. Dr. Miller says that during the immediate postpartum period, in those first minutes, hours and days, the foal's learning and imprinting capacity is the greatest it will be in its lifetime.

In summary, we may never be able to fully understand the mind of a horse—after all, Dr. Miller admits that he's still learning! But if you recall nothing else, remember that a horse's primary survival behavior is flight and all other equine behaviors are related to that flight instinct. Knowing this and remembering how it affects the way a horse interacts and moves through its life will help keep you and your veterinary team safe while working with these 1,000-lb, hard-hoofed patients.

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Taking the reins on equine obesity

How veterinary technicians can lead overweight horses down a healthier path using physical rehabilitation.

By Mary Ellen Goldberg, BS, LVT, CVT, SRA, CCRA, CVPP, VTS-physical rehabilitation (OC)

Obesity, and the risks that come with it, pose a serious threat to overweight horses. Weight management should be a cornerstone wellness program in every equine veterinary clinic, and the rehabilitation veterinary technician should be the champion of the program and advocate for the patient.

Obesity predisposes horses to serious conditions such as laminitis and equine metabolic syndrome. Environmental issues such as overfeeding and lack of exercise contribute to obesity in horses, and these problems are only increasing with modern management practices. And for insulin-resistant horses, diet alone is not an effective approach.

This means the treatment plan for each horse must be individualized, and an exercise program based on physical rehabilitation modalities is a great element to incorporate. Equine physical rehabilitation includes manual therapies, electrotherapy, functional retraining and therapeutic exercise-based treatments, along with owner education and ongoing procedures for the owner to manage.

Rehabilitation strategies such as hot walking and use of an equine treadmill are useful in managing obesity in horses. What's more, the swimming pool, hydro spa, water treadmill and, more recently, water walker are all great hydrotherapy approaches, whether the goal is recovery from injury or weight loss. Cavaletti rails (both on the ground and slightly raised) can help with proprioception. Balance, weight shifting and endurance exercises are also beneficial.

Long reining from the ground—with the therapist walking behind the horse using two long reins to direct the horse right or left—is a great strategy for obesity management. The art of this type of exercise is to "read" the horse's muscles, then choose suitable exercises to influence different muscle groups. The deep muscles that stabilize a horse's frame are influenced through over-ground activities. Targeted exercises build power and strength in the muscle group doing the most work during the activity.

Pastures or fields are invaluable not only in exercise but also to alleviate boredom. Slopes can be incorporated for horses to walk across or up and down. Also, a horse can be made to back up, going up, down or across a slope for two or three strides. Each movement recruits different muscle interactions, as does being forced to balance on uneven ground.

Successful weight management begins by recognizing that obesity is a disease. It also begins by realizing the importance of weight control in the horses we so dearly care about. It's essential that the rehabilitation team, specifically the veterinary technician, communicate the serious effects that even a few excess pounds can have on the health and longevity of a horse's life.

Fat ponies are so common that they've come to be seen as normal. We can do better for the health of these horses, says author and rehab technician specialist Mary Ellen Goldberg.

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Mary Ellen Goldberg is an instructor of anesthesia and pain management at VetMedTeam. She's a staff member at the Canine Rehabilitation Institute as a certified canine rehabilitation assistant, executive secretary for the International Veterinary Academy of Pain Management, and exam chair for the Academy of Physical Rehabilitation Veterinary Technicians.

What to choose? **Brace or surgery?**

Clients want what's easiest or cheapest—but it's not that simple.

Your clients obviously want the best for their pets, but they're also interested in what they perceive as the most convenient—and often cheaper—solution. In cases of orthopedic distress, Fetch dvm360 conference speaker David Dycus, DVM, MS, DACVS-SA, points out that the simpler solution may not be the best, but it's sometimes necessary.


Dr. David Dycus

"The majority [of cases] probably benefit from surgical intervention, but we may have an older geriatric patient, or a patient with underlying heart failure, kidney failure, or liver failure that just wouldn't be the best anesthetic candidate," he says.

Other factors Dr. Dycus says are important are the patient's age and activity level, as well as the pet owner's expectations and ability to follow through on compliance. Also keep in mind that a canine brace must be custom-made because each dog's anatomy is different and the small, medium or large approach that's common in human medicine won't work for them.

With orthotics, Dr. Dycus says there are four key points to discuss:

Patient's tolerance of the brace: The only way to determine how a dog will take to a brace is to put it in a brace. The reactions range from acceptance to panic to trying to chew the brace off. Worst-case scenario? Dog hates brace, still has condition, owner is dissatisfied.

Wear and tear on the skin: Braces can rub on the skin and cause open wounds, which is again why a custom-made brace is important. As Dr. Dycus reports, more than 30 percent of patients will develop wounds that need additional medical attention.

Effect on potential arthritic progression: Surgical intervention and stabilization would be expected to minimize and slow the progression of arthritis, says Dr. Dycus, but the efficacy of braces has yet to be accurately determined. He tells clients to think of it as a spectrum: On one end is doing nothing, and arthritic changes will happen more quickly. On the other end is surgical intervention, which can slow the arthritic changes in a predictable manner. In the middle of the spectrum is the brace, but to what degree it works isn't known yet, because there isn't clinical evidence.

Potential meniscal injury: Dr. Dycus says that surgery can reduce a patient's meniscal tear rate to around 4 percent, but, as with arthritic progression, the long-term effectiveness of a stifle orthotic is not yet known.

Until the profession learns more about the precise effectiveness of orthotics, Dr. Dycus believes assessments should be made on an individual basis.

"Instead of trying to say, 'Surgery or a knee brace?' we need to look at them as two separate entities," he says.

New study: Zika virus may cure cancer

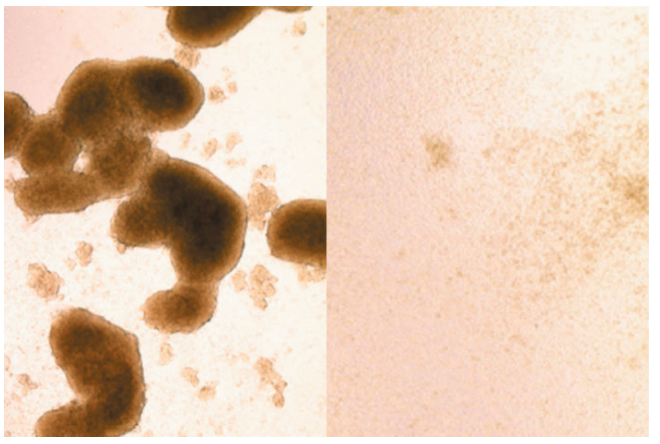
Research shows that Zika kills the kind of brain cancer cells that are hardest to treat. *By Jennifer Gaumnitz, Senior Content Specialist*

A recent release from Washington University School of Medicine in St. Louis states, "While Zika virus causes devastating damage to the brains of developing fetuses, it one day may be an effective treatment for glioblastoma, a deadly form of brain cancer. New research … shows that the virus kills brain cancer stem cells, the kind of cells most resistant to standard treatments."

Each year, glioblastoma is diagnosed in about 12,000 people in the United States. After surgery, chemotherapy and radiation treatment, a small population of glioblastoma stem cells often survives and soon begins producing new tumor cells. Because of their neurological origins and ability to create new cells, glioblastoma stem cells reminded the researchers of neuroprogenitor cells. Zika virus is known to specifically target and kill neuroprogenitor cells.

The researchers tested whether the Zika virus could kill stem cells in glioblastomas removed from human patients. The virus spread through the tumors, infecting and killing the cancer stem cells while avoiding other tumor cells. This suggests that Zika infection and chemotherapy-radiation treatment could be used as complementary treatments, with one killing the bulk of the tumor cells and Zika attacking the stem cells.[1]

If Zika virus were used in people, it would need to be injected directly into the brain. If the virus were introduced elsewhere, the immune system would clear it before it could reach the brain, the release states. The idea of injecting a virus known to cause brain damage into the brain is disquieting, but its targets—neuroprogenitor cells—are rare in adult brains. Other studies using brain tissue from epilepsy patients have shown that the virus does not infect noncancerous brain cells. As another safety measure, the researchers introduced mutations that weakened Zika's ability to combat cell defenses against infection. The mutant strain still succeeded in killing the cancerous cells.


Brain cancer stem cells (left) are killed by Zika virus infection (image at right shows cells after Zika treatment).

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This directional sign to the Pauls' villa Banana Wind was not intended for Irma.

Looking right into Irma's eye

Dr. Mike Paul recounts the night when Hurricane Irma struck his home in Anguilla.

In the islands, it's common for people to name their villas—usually something romantic or descriptive or related to the location or the owner: Rum Punch, Tequila Sunrise, Bird of Paradise, Three Dolphins, Blue Waters or, in our case, Banana Wind for a favorite Jimmy Buffett album. A "banana wind" is a wind that, while not a hurricane, will blow the bananas off a tree. We may have pushed our luck with that name.

Our recent major hurricane, benignly named "Irma," like a Midwest grandmother, hit the night of Sept. 5, rendering all villa and business names irrelevant. Most signs were blown into the bush or splintered on the gate. In fact, most landmarks disappeared, and finding your way around now is difficult. Almost every tree was denuded like a sprig of rosemary. Cars and houses once hidden from view stand out plainly. People speak of a loss of privacy. But soon the vegetation will return and, like Machu Picchu, the landscape will reclaim structures and houses.

First, a bit about categorization

Late in August this year, people noticed a "thing" forming in the Atlantic. On Aug. 30 it was a tropical depression and by Aug. 31 it was a Category 1 hurricane. This was the birth of Irma. It had been 22 years since a major hurricane hit the Caribbean and old-timers were concerned. We were due. People were on edge but not expecting the storm that developed.

You see, a Category 1 storm is really not that exciting. Winds are in the area of 74 to 95 mph. That's damaging but not destructive. In preparation, you pick up loose things, move plant pots and generally put things out of harm's way. You expect to lose a few trees and poles, but there's no "mashup," as they say in the islands. It becomes a perfect reason to hold a hurricane party—playing cards by lamplight, rum at the ready on the table. People gather in bars and pretend, "T'ain't no big."

A Category 2 hurricane raises the stakes a little since winds increase to a sustained 96 to 110 mph. Time to secure anything outdoors because otherwise your patio furniture will likely wind up next door or out to sea.

When you get to a Category 3, things get interesting. It's sort of like the Credence Clearwater Revival song "Bad Moon Rising." You know something is going to happen, with 111- to 129-mph winds doing their best to blow you into your closet.

Category 4 winds are between 130 and 156 mph. Destruction will be widespread and major with a risk of injuries and death.

A Category 5 storm means major devastation and potential loss of life with sustained winds in excess of 157 mph. You expect downed trees and power poles and crumbled buildings. Metal buildings and galvanized roofs will unwrap like a can of sardines. People look for a reasonably safe place to hide. After a Category 5, nothing will be the way it was for some time. Paradise gone.

How do you say "no" to Mother Nature?

When hearing of Irma's approach, people on Anguilla said things like, "Maybe she'll weaken. Maybe she'll change course." But it was not to be. Just before noon on Sept. 5, Irma strengthened to Category 5 and, worst of all, changed course and hit us with the northeast of her eye wall, which is the worst part of the storm.

We had already secured our windows with aluminum and galvanized shutters and bolted our doors days before in hopes that we could scare Irma away. But the storm winds began about 6 p.m. and built from there. Hell hath no more imaginable fury. Through the night winds reached a sustained 185 mph, and gusts in our area probably

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exceeded 240 mph. We'll never know for sure, since every measuring device was destroyed. Irma was the most powerful storm in history in the Atlantic hurricane breeding grounds, and there we were in the worst part.

Ocean swells and waves reached more than 20 feet and hammered the shore. Sprays exceeded 50 feet, and low coastal houses were washed through and through. Concrete buildings were virtually crushed by the force of winds and impact of waves.

The noise and the scurry

People say a tornado sounds like a freight train. I can't even describe the noise of Irma. I now understand fully the word "cacophony." Our shutters rattled. Flying debris slammed against the concrete of our house. A train wreck of screams, whistles and roars assaulted our ears until we wanted to scream, "Stop!" But it wouldn't.

Not surprisingly, we were awake the whole night. Even in full lockdown, shutters bowed and windows blew open as we ran from room to room pushing them closed. We could feel the dramatic drop in air pressure in our ears and chests. At times the entire house felt like it was vibrating. But … Banana Wind stood strong and we did not lose integrity.

Since that night, people have asked us if we were afraid. Oh heck, no. What we felt was beyond fear—it was abject, nausea-producing terror. We knew we were at death's door. A friend later told us he could look into a person's eyes and tell that they had been on the island through the storm. We all had a look that said we knew we had escaped death.

The aftermath

The winds didn't really let up until late the second day. Little by little we started to assess the damage—getting out on the veranda, peeking around the corner, crawling through debris beside the house. The still-turbulent sea was white. Everything else was brown, stripped bare of every leaf. Trees were toppled. Bushes were flat on the ground. Debris was everywhere—roof tiles, wooden beams, panels of glass.

We had no idea who was alive or dead. After things quieted down, we picked our way through downed trees to our garage and drove over nearly blocked roads to check on a couple friends. Thankfully, they were fine. Then we picked our way home and started what, to this day, is an ongoing job of cleanup. Buckets and mops to clean the house. Chainsaws and pruners to open a path out the gate. Over the next few days we gathered up a 30-ft container of metal, wood and tile that had blown into our yard and onto our house. One piece cracked our skylight but did not break it. (If anyone wants the name of the best skylight made, email me.) We built a mountain of tree debris and branches. Still, we came through better than most—I dislocated a shoulder during cleanup but that was the worst of it.

The beasts

Naturally we were concerned for animal life. Our own indoor cats had been pretty shaken up, but what about other animals that were barely sheltered during the storm? Most livestock seemed to have been put up, though. I heard of one horse dying as well as some sheep and goats that were killed when their shelter collapsed or blew away. The local veterinary hospital that doubles as a rescue and adoption facility was damaged, but thanks to volunteers all animals survived and adoptable pets were evacuated by air.

The first morning we ventured out we saw local tortoises grazing. We heard a peeping sound and sure enough there was a big hen and six newly hatched chicks on a morning walk. A pelican and a frigate bird seemed to be relishing a breezy soar. A large iguana sat on a rock in front of the house. How any of them survived Irma remains a mystery, but it reassured us that the worst was over for now.

"What did you eat?"

When disaster preparedness officials tell you to be sure you have three days of canned or nonperishable food and water, double down. No, double double down. We are without power, going on 11 weeks and counting as of late November. A couple of days after the storm, we had to clear out a chest freezer full of steaks, ribs, veal and shrimp. We gave away a ton of fine meats, stored some with friends, and cooked up the rest hoping it would keep longer that way. As someone said to me, "You eat it today and worry about follow-up events tomorrow." Turned out to be safe. We also ate Chef Boyardee, Bush's baked beans and canned fruit. A jar of pickled beets was a welcome change.

"What about the people?"

Most islanders have lived through many storms. (Irma was actually my fourth.) They know what to do and how to get by.

People without much to lose were grateful for what they still had. When we asked folks how they had come through the storm, we invariably heard something like, "Not too bad. We lost three windows, two doors, part of the roof and a windshield. Oh, and got some water, of course." (Which translates to "We had an indoor pool.") Not too bad? People were glad they had survived; that was enough. Remember a couple months back when I mentioned the phrase "God spare life"? Well, I meant what it said.

Banana Wind's patio before and after Hurricane Irma.

Soldier on

So now we are in a recovery phase—a very slow recovery phase. Some areas in the islands will be without power for six to eight months. Barbuda and Puerto Rico are totally destroyed, and it will be years returning if at all. French St. Martin and St. Barts are looking at an unbelievable challenge. We are fortunate Anguilla did as well as it did. Not a building escaped damage, but only one person was killed when a wall fell on him. Some islands experienced a spate of looting and crime, but Anguilla can take pride in the fact that people were honorable and helped one another. To those who have sent aid or donations to the island, thank you on behalf of a wonderful island and a great people. Anguilla will be back. We are already open for business on a limited scale. If you want to see what has been going on, check out Anguilla-beaches.com.

Life goes on. Our patients need care. We recently completed a heartworm treatment protocol. Some surgeries are necessary, such as a dystocia that required a caesarian section a couple of weeks after the storm—without electricity, we had no lights other than the sun and no air-conditioner or even a fan.

Of course, there will be more storms and hurricanes. In fact, a few days after Irma we were brushed by another category 5 storm, Hurricane Maria, on her way to Puerto Rico. I learned what PTSD was like. I was awakened by the sound of waves and a noisy but modest wind. I realized that this was what veterans must experience when they hear a car backfire. My eyes flew open and panic set in as I jumped up to check windows and doors.

It will be a while before things return to normal, but for now this is the new normal. Serenity wrapped in blue.

Dr. Michael Paul is a nationally known speaker and columnist and the principal of Magpie Veterinary Consulting. He lives in Anguilla in the British West Indies.

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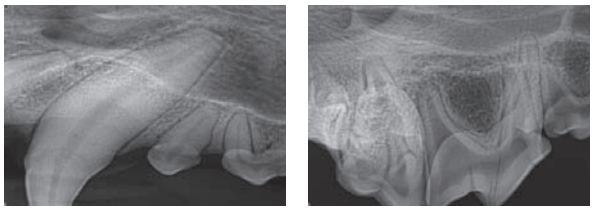

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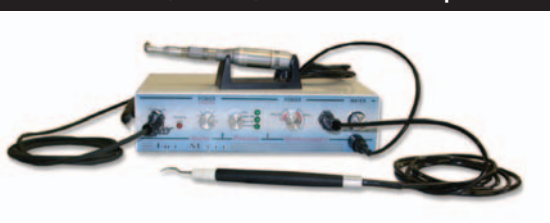
The Sonus II ultrasonic scaler is a reliable, powerful and rugged unit that has a proven track record. As with all our table top dental units it is supplied with our super 6 year warranty, lifetime loaner service and proudly made in the USA.



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Dynax Stretcher & Gurney
The Dynax Gurney is a tubular frame construction with unique connectors creating a means of supporting the Dynax stretcher and the larger canine patient, up to 200 pounds.

EZ-Stretcher.com (frameless stretcher)
The frameless feature allows for easy folding and storage (storage bag included).
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- Dimensions L82" X w29"
- Radiolucent
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- Rip resistant
- 10 rubber handles for multi person use
- Storage bag included

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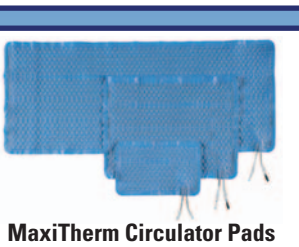
The CAT-GRABBER is the safest means of controlling the fractious cat, humanely.



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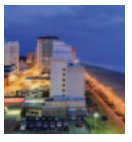

May 17-20, 2018
Fetch dvm360 in Virginia Beach
(800) 255-6864, ext. 6
fetchdvm360.com/vb

August 17-20, 2018
Fetch dvm360 in Kansas City
(800) 255-6864, ext. 6
fetchdvm360.com/kc

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Here are the CE opportunities coming in the next few months

January 12-14
Tibial Plateau Leveling Osteotomy
Las Vegas, NV
(702) 675-7805
wvc.org/course/tibial-plateau-leveling-osteotomy-8

January 15-17
Practical Techniques in Soft Tissue & Orthopedic Surgery
Las Vegas, NV
(702) 675-7805
wvc.org/course/practical-techniques-in-soft-tissue-orthopedic-surgery-7

January 20-21
A Hard Time Getting Around?
Tuscon, AZ
(352) 468-2139
www.litecureinfo.com/oacourse

January 21
2018 American Academy of Veterinary Acupuncture Small Animal Regional Meeting
Stone Mountain, GA
(931) 438-0238
aava.org

January 24-26
Vet Vacation CE
Miami, FL
(888) 488-3882
vetvacationce.com

January 27-28
Ultrasound of the Mid-Distal Limb & Stifle for Equine Practitioners
Versailles, KY
(844) 870-6097
vetpd.com

February 2-3
Beyond Basics: Advanced Diagnostic & Therapeutic Techniques in Equine Dentistry
Bend, OR
(844) 870-6097
vetpd.com

February 15-November 17
Veterinary Management Institute (VMI)
Fort Collins, CO
(800) 252-2242
aaha.org

February 16-17
New Developments in Diagnostic & Therapeutic Techniques of Neck Conditions
Lake Mary, FL
(844) 870-6097
vetpd.com

February 23-25
2018 Music City Veterinary Conference
Murfreesboro, TN
(931) 438-0070
tvmanet.org

February 23-25
Vet Vacation CE
San Juan, Puerto Rico
(888) 488-3882
vetvacationce.com

March 17-18
Ultrasound of the Equine Upper Limb, Neck, Back & Pelvis
Littleton, CO
(844) 870-6097
vetpd.com

March 23-24
Ultrasound-Guided Orthopedic Injection Techniques & Therapies
Ashland, VA
(844) 870-6097
vetpd.com

March 23-25
Veterinary Dentistry AVDC Mock Examination 2018
Orlando, FL
(941) 276-9141
veterinarydentistry.net/veterinary-dentistry-mock-examination-2018

March 26-27
Hindlimb Lameness Diagnostics & Therapies
Dover, NH
(844) 870-6097
vetpd.com

March 26-28
Vet Vacation CE
Whistler, Canada
(888) 488-3882
vetvacationce.com

April 6-7
Evidence-Based Farriery for Equine Practitioners
Irving, TX
(844) 870-6097
vetpd.com

April 6-7
Abdominal, Thoracic & Soft Tissue Ultrasound
Stillwater, MN
(844) 870-6097
vetpd.com

April 6-8
American Laser Study Club's Inaugural Symposium
Orlando, FL
americanlaserstudyclub.org/symposium

April 13-15
American Academy of Veterinary Acupuncture Annual Meeting
Santa Fe, New Mexico
(931) 438-0238
aava.org

April 14-15
Feline Dentistry CE Course and Dental Extraction Wet Lab
Orlando, Florida
(941) 276-9141
veterinarydentistry.net

April 21-22
Canine Dentistry CE Course and Dental Extraction Wet Lab
Orlando, Florida
(941) 276-9141
veterinarydentistry.net

April 28-29
San Diego County Veterinary Medical Association Conference
San Diego, CA
(629) 640-9583
sdcvma.org

May 5-6
Veterinary Dentistry for Technicians Weekend Extravaganza
Atlanta, GA
(941) 276-9141
veterinarydentistry.net

May 13-17
Chicagoland Veterinary Conference
Chicago, IL
(877) 978-7084
chicagolandvc.com/default.aspx

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A daughter's predicament

Housesitting gone awry finds Dr. Brock in an awkward situation.

The dog was a 20-pound brown-and-black mutt with fuzzy hair and one blue eye. It was about a year old with a great personality and an endless amount of mischievous energy. Today all of its energy was focused on something around its fanny.

The client, who was accompanied by her 17-year-old daughter, gave a good history of the dog while we stood in the exam room and watched the dog chew its rear-end and drag its fanny across the floor. She explained that she and her husband had gone out of town over the weekend and left the teenaged daughter in charge of the house and the dog. Upon their return, the dog had become more persistent about chewing on its heinie and would get aggressive if anyone tried to look at it or touch it.

The daughter reported that the critter had eaten its normal food well all weekend and did not start acting weird until a few hours before her parents arrived home Sunday. She said the dog had gone to the bathroom normally when she let it out and there was nothing abnormal in the environment.

I put the dog on the exam table and attempted to lift the tail and get a look at what might be causing such distress. I noticed that the pooch seemed a little bloated as I lifted it and was a bit painful around the abdomen. There was gonna be no looking under the tail with that rascal awake. It showed fangs and growled at even a minor attempt to reach that direction.

After a little sedative and a few minutes of waiting we now had a perfect view. Nothing seemed too abnormal at first glance, but a closer observation revealed something green hanging out of the fanny. This didn't strike me as too unusual, since puppies have a way of chewing on things they shouldn't, and I figured this was a case of impaction due to eating a foreign object.

I gloved up and put a little lube all over everything back there. I began pulling on the green thing and found it to be stretchy. I pulled and it got longer. I pulled a little harder and it got a little longer. After a great deal of tugging and manipulating, the object began coming out. It had become enveloped in an oversized turd, and the exact identification of this strange green stretchy thing was still obscure as I finally got the massive ball of poop out and lying smelly on the table.

The daughter was quick to say, "There it is; now throw it away! It stinks bad!"

The mother quickly followed with, "Don't throw it away until we find out what the heck it is so he won't eat any more of it!"

I began dissecting the poop off of the object until it became apparent to me that this was about to become an uncomfortable situation. A predicament was literally unfolding right before my eyes and I wasn't sure whether to stop now or keep going until the identity of this object was known to all. I stopped for a second and said the item was wrapped up tight in the turd and there was no telling what it might be.

The daughter smiled at this, but the mother insisted I keep going.

A few plucks later I was holding a green condom with one hand, realizing that dog poop doesn't gross me out, but a green unrolled condom does.

There was an extremely uncomfortable moment of silence. It stretched into what seemed like an eternity. The daughter looked at me with a touch of defiance in her eyes, and the mother looked at me with a mix of embarrassment and anger.

I'm not sure what they saw on my face, but I can tell you what I was feeling. I was wishing I had sent another veterinarian in to look at this case. I was wishing I would've just thrown the whole turd ensemble into the trash the second I figured out what it was.

The silence was killing me. Someone had to break it and I decided it should be me.

"Well, that was an interesting find."

What a dumb thing to say, I thought as the last word dripped out of my mouth.

"I'll give you a mild laxative for this critter just in case there's something else working its way through."

Oh man, it just keeps getting better.

With that, I decided to be quiet and hoped they would simply leave.

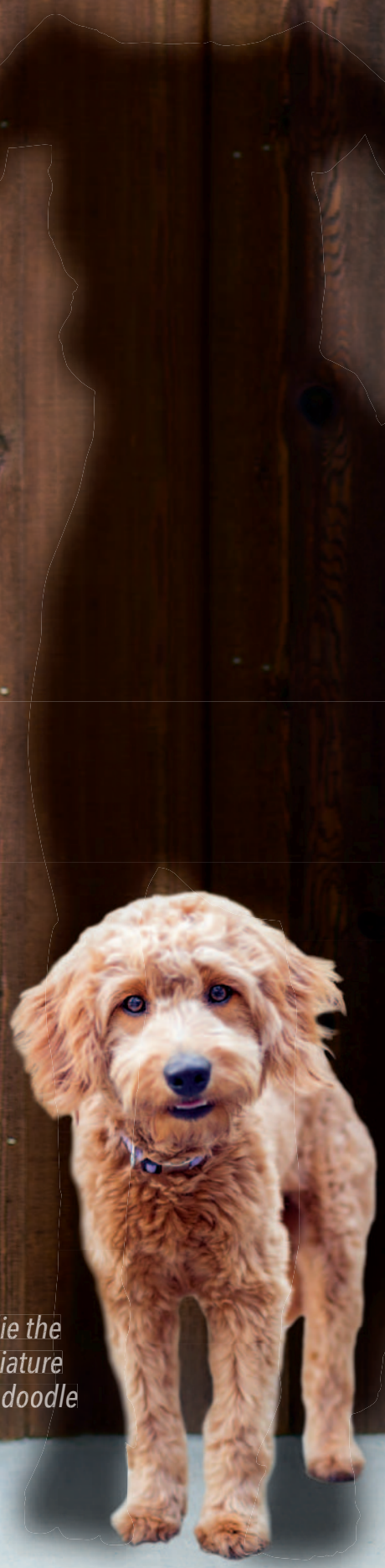
The mother picked up her purse and asked how much she owed me. I mumbled that we would send her a bill.

I don't know what wound up happening, but judging by the look on the mother's face, I don't think the daughter was going to be doing anymore housesitting for her parents for a good long while.

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.

ILLUSTRATION BY MATT COLLINS

A healthy liver can make Millie feel like a whole new dog!



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TIME IT'S MORE THAN
JUST WHINING."

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US Orthopedic Workshops

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- **Canine Cruciate Repair** - MMP for TTA
- **Patella Luxation** - RidgeStop™
- **Fracture Repair** - SOP™ Locking Plates

Supporting your journey in orthopedics

2018

“

The surgery course was great and I really enjoyed it. More than that I learnt a lot of new stuff as well as going over some old ground in a way that I could take something new and more refined back for my surgical practice at home. The tutors were great.

”

David Prince, Drove Veterinary Hospital

About Orthomed

For over 15 years, Orthomed has been supplying the global veterinary industry with high quality, innovative orthopedic products.

We have a reputation for developing and manufacturing some of the industrys leading orthopedic products, such as:

- **SOP™** Locking plate system for fracture repair
- **MMP** TTA system for cruciate repair
- **RidgeStop™** for patella luxation

From our North American headquarters in Florida, we work alongside some of the most world renowned and experienced veterinary surgeons, biomedical engineers and material scientists to develop and manufacture industry leading products.

Offering the highest standards in technical support, customer service and product training, makes Orthomed one of the leading independent global suppliers of orthopedic tools and instruments.

About our workshops

Orthomed is not just about selling products. We are highly committed to helping develop the industry and the people that work and excel in it.

For this reason, we are delighted to announce our 2018 RACE approved practical workshops being held around the US and Canada.

You will see that we cover some of the most common and talked about surgical procedures within the industry and cover a variety of topics including many of the controversies surrounding these subjects. Each course also has a practical element, allowing you to perform the procedure first-hand.

Whether you're a general practitioner wanting to move into orthopedics, or an experienced orthopedic surgeon already, these courses offer something for everyone.

Every course is instructed by either an ACVS or ECVS Board Certified Surgeon. You will leave these courses with complete confidence for your orthopedic surgical future.

Course Outline

Canine Cruciate Repair

MMP - An evolution of the TTA procedure for treatment of lameness due to cranial cruciate failure - (½ Day Course)

Course Content

The Modified Maquet Procedure (MMP) is an evolution of the TTA procedure for treatment of lameness due to cranial cruciate failure.
The course is in two parts: a lecture based introduction followed by a practical session using synthetic bone models of the stifle, animations and video support material will also be used. The development of the technique, implants and associated instrumentation will be described and a detailed review of surgical technique and clinical outcomes will cover all aspects of MMP.

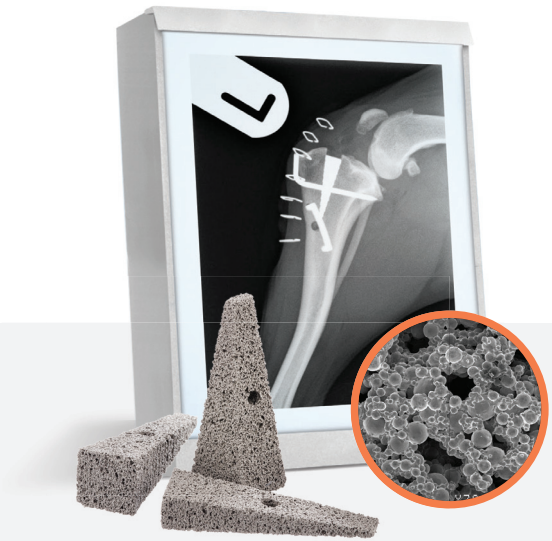
Course Agenda

- Biomechanics and theoretical foundations of TTA's
- An introduction to MMP and OrthoFoam™
- Advancement of the 90° patella tendon angle – the controversies
- How to perform an MMP procedure with confidence
- Clinical experience and publications
- Dry bone practical session

Key Learning Objectives

By the end of this course delegates should have an understanding of:

- Why we've developed another cruciate surgery technique
- Biomechanics and theoretical foundations of MMP
- Case selection for MMP
- Ability to perform the MMP procedure



Orthomed is a great company with amazing products. Their product support system is top notch and they answer any questions you have quickly. I would definitely recommend Orthomed to anyone that has an interest in orthopedics.
Carl Myers, Theodore Veterinary Hospital

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Benefits of MMP

- Titanium, porous wedge replaces existing TTA systems
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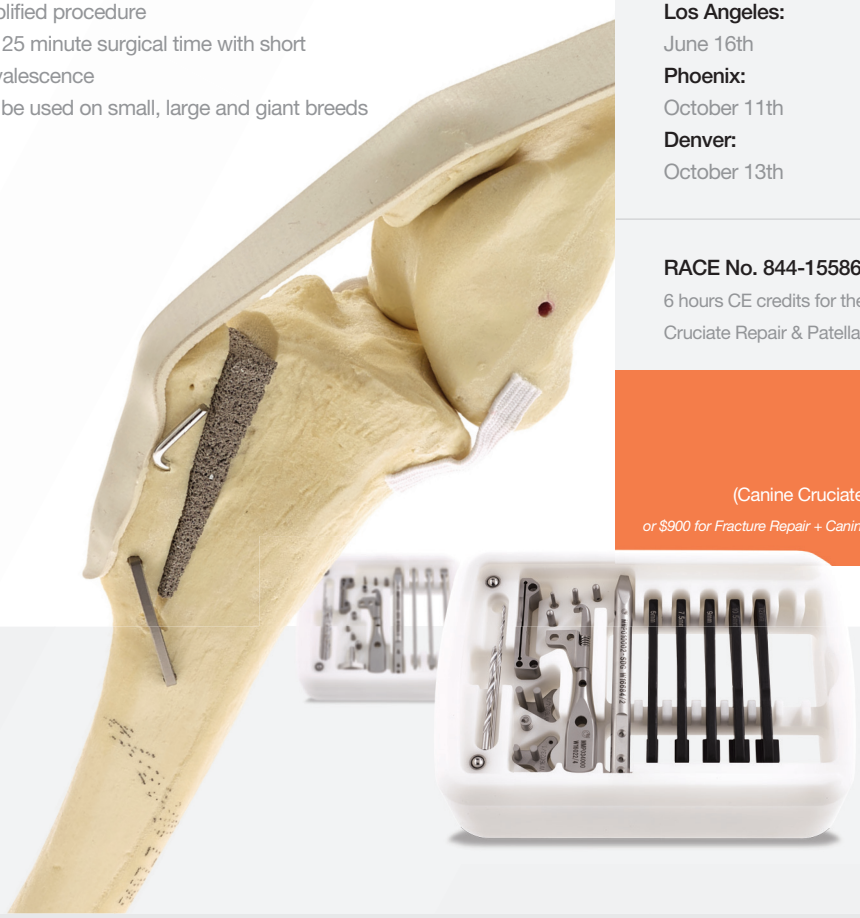
- Can be used on small, large and giant breeds



Course Locations & Dates

Atlanta:
January 25th
New Orleans:
January 27th
Chicago:
April 12th
San Antonio:
April 14th
Oquendo Center, Las Vegas:
May 25th, September 1st
Seattle:
June 14th
Los Angeles:
June 16th
Phoenix:
October 11th
Denver:
October 13th

RACE No. 844-15586
6 hours CE credits for the full day course (Canine Cruciate Repair & Patella Luxation)

$600.00*
(Canine Cruciate Disease + Patella Luxation)
or $900 for Fracture Repair + Canine Cruciate Repair + Patella Luxation

** Different pricing for Oquendo Center course*

Course Outline

Patella Luxation

RidgeStop™ - a novel surgical technique for treatment of patella luxation - (½ Day Course)

Course Content

This simple, affordable alternative to sulcoplasty surgery that can be used alone, as the sole treatment for patella luxation, or as an adjunct to re-alignment operations.
The course is in two parts: a lecture based overview of the pathogenesis and treatment selection in patella luxation and a review of current surgical treatment options. This will be followed by an introduction to RidgeStop™, its application and case presentations, before a practical session where delegates will learn to use the RidgeStop™ instrumentation and implants on a synthetic bone model.

Course Agenda

- Overview of patella luxation pathophysiology
- Diagnosis and current surgical treatments for patella luxation
- Classifying the degree of luxation and associated deformities
- The development and rationale of RidgeStop™
- The RidgeStop™ procedure
- Dry bone practical session

Key Learning Objectives

By the end of this course delegates should have an understanding of:

- The aims of sulcoplasty
- Treatment selection in patella luxation
- The concept of RidgeStop™
- Complete confidence to carry out RidgeStop™ procedure

Having attended the Orthomed course I gained lots of confidence in the technique and was able to put it into practice immediately. It has been great for the practice to keep these procedures in-house. Clients are delighted.
Ben Orton, Clinical Director, Black Notley Vets

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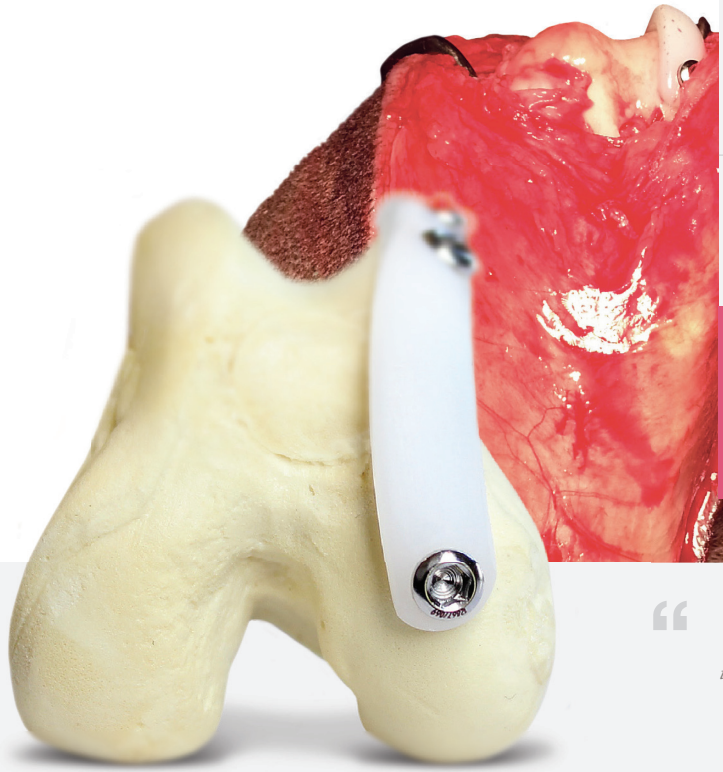
Benefits of RidgeStop™

- Quick and simple procedure
- Minimally traumatic
- Consistent ridge height achieved
- Effective barrier enables patella tracking
- Reversible procedure



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Phoenix:
October 11th
Denver:
October 13th

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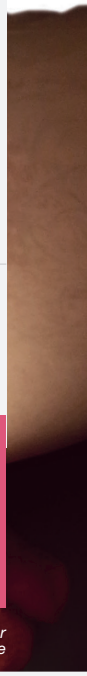
(Canine Cruciate Repair & Patella Luxation)

$600.00*
(Canine Cruciate Repair + Patella Luxation)
or $900 for Fracture Repair + Canine Cruciate Repair + Patella Luxation

** Different pricing for Oquendo Center course*



> *Without doubt I will be a better surgeon for having been there and I just wanted to thank you all for taking the time to impart your hard earned knowledge and technical skill.*
> Tom Pailing, Surgeon

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- Diplomat Speaker
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- Post surgical radiographs and evaluation
- Premier learning facility for veterinary education
- Confidence to perform surgery
- Learn the techniques and the approach

Oquendo Center

Las Vegas

May 25th 2018
Canine Cruciate Repair - MMP
Patella Luxation - RidgeStop™

May 26th 2018
Fracture Repair - SOP™

September 1st 2018
Canine Cruciate Repair - MMP
Patella Luxation - RidgeStop™

September 2nd 2018
Fracture Repair - SOP™

Single Day $1000.00
Canine Cruciate Repair + Patella Luxation
or
Fracture Repair

Both Days $1500.00
Canine Cruciate Repair + Patella Luxation + Fracture Repair

Course Outline

Fracture Repair

SOP™ - Locking Plate System for greater flexibility & more successful surgical outcomes - (Full Day Course)

Course Content

The SOP™ is a locking plate system for use in veterinary orthopedics. Locking plates are powerful and versatile implants but the mechanics and methods of application are significantly different from conventional plate systems. The course will cover locking plate mechanics, case selection, methods of application as well as modes of failure and a review of the extensive published literature on the SOP™ system.

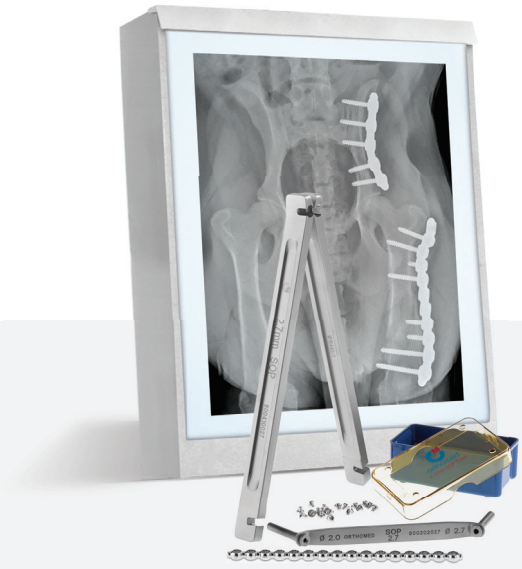
Course Agenda

- Fracture repair systems - the flaws and failings
- Locking plate technology
- Features and biomechanics of SOP™
- Where and how to use it
- Half day practical session using a variety of anatomical bones
- Publication reviews

Key Learning Objectives

Delegates will gain an understanding of:

- Features of locking plates.
- Case selection and clinical application of SOP™ system
- Technical ability to use SOP™ in a range of orthopedic applications



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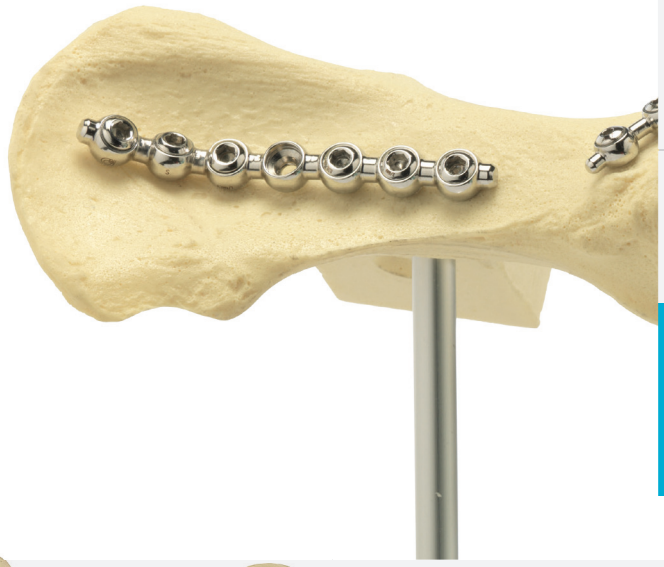
Benefits of SOP™

- Available in 3 sizes: (2.0mm, 2.7mm, 3.5mm)
- Locks using standard cortical screws
- Can be contoured with 6 degrees of freedom
- No weak points



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Seattle:
June 15th
Los Angeles:
June 17th
Phoenix:
October 12th
Denver:
October 14th

RACE No. 844-15588
6 hours CE credits for the full day course (Fracture Repair)

$400.00*
for the full day course (Fracture Repair)
or $900 for Fracture Repair + Canine Cruciate Repair + Patella Luxation

** Different pricing for Oquendo Center course*

> *I have been using Orthomeds SOP™ plates for 8 years. They are an excellent adjunct to dynamic plate system and allow for locking applications with standard cortical screws.*
> Dr. Dan Degner, Animal Surgical Center

Our Team of Instructors

We work alongside some of the most experienced and knowledgeable surgeons in the world.

Malcolm Ness

BVetMed, CertSAO, DipECVS, FRCVS and European Specialist in Surgery

Malcolm Ness is recognised globally as a specialist in Small Animal Surgery by RCVS and ECVS. With hundreds of presentations made across the globe as an invited speaker, Dr Ness also has; over 20 first author papers in veterinary peer reviewed journals, commissioned editorials and numerous commissioned articles in open access veterinary and lay magazines and periodicals. His clinical interest include most aspects of orthopedic and spinal surgery, and Dr Ness is actively engaged in the research and development of novel implants and orthopedic surgical techniques.

Scott Rutherford

BVMS, CertSAS, DipECVS, MRCVS

RCVS Recognised and European Specialist in Small Animal Surgery

After graduating from Glasgow University in 2001, Scott spent six years in general practice before moving to Croft Veterinary Hospital in Northumberland in 2007 where he completed an ECVS residency in Small Animal Surgery in 2012. Scott became a European Veterinary Specialist in Small Animal Surgery in 2013 and an RCVS Recognised Specialist in 2014. He spent two years at both North Downs Specialist Referrals and then Willows Referral Services. He is a co-founder and director of Frank. Pet Surgeons. Scott is actively involved in clinical research and teaching and he recently became an Associate Tutor at Chester University.

Dr Karl Kraus

DVM, MS, Diplomate ACVS

Dr Kraus is Chief of Small Animal Surgery at Lloyd Veterinary Medical Center at Iowa State University and diplomat of the American College of Veterinary Surgeons. He graduated from Kansas State University in 1985, completed residency training at University of Missouri-Columbia in 1989 and was professor of surgery at Tufts University from 1989 to 2007. He also held a joint appointment at Harvard University where he helped develop neurosurgical procedures on humans at Brigham and Women's Hospital from 1989 to 1998. His major areas of interest include fracture repair, external fixation, ACL repair, spinal stabilisation, and neurosurgery.

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Peter Early

Clinical Professor, Neurology and Neurosurgery, DVM, ACVIM

Dr. Early is a graduate of the University of Florida, College of Veterinary Medicine. He spent two years at Cornell University, where he first completed a small animal rotating internship, followed by a second year as a staff veterinarian. He completed a Neurology/Neurosurgery residency at North Carolina State University and is a Diplomate of the American College of Veterinary Internal Medicine. He presently serves as a Clinical Associate Professor in Neurology and Neurosurgery at NCSU and provides regular locum work at multiple university and specialty hospitals throughout the country. Dr. Early's special interests include neurosurgery, specifically decompression and stabilization techniques.

Robert L. Bergman

DVM, MS, Diplomate ACVIM (Neurology)

Dr. Bergman received his DVM from the University of Georgia. Following internship, he pursued a residency in neurology and neurosurgery at the Virginia-Maryland Regional College of Veterinary Medicine. Concurrently, he completed a Master's Degree at Virginia Tech with a focus on neuroscience and cerebrospinal fluid analysis. He became a diplomate of ACVIM specialty of neurology in 2001. Dr. Bergman recently served 5 years and was chair of the ACVIM Neurology Certification Exam Committee. While busy in private practice, he enjoys teaching neurosurgery to residents and those interested in the advancement of veterinary neurosurgery. He has a particular interest in spinal fusion, spinal trauma and neuro-oncology.

Sean Kennedy

DVM, DACVS

Dr. Kennedy obtained his Bachelor of Arts degree in animal science from the University of New Hampshire and graduated from Tufts University School of Veterinary Medicine. While at Tufts he was inducted into the Phi Zeta National Honour Society. He is a Diplomat of the American College of Veterinary Surgeons (ACVS). His areas of special interest include oncologic, reconstructive surgery, cruciate ligament repair, and trauma surgery. He is a member of the American College of Veterinary Surgeons (ACVS), the Veterinary Orthopedic Society (VOS), the American Veterinary Medical Association (AVMA) and the Maryland Veterinary Medical Association (MVMA).

Locations & dates

Course Locations

United States

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4 Las Vegas
5 Los Angeles
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January	February	March
Atlanta **25th** - Canine Cruciate Repair - Patella Luxation **26th** - Fracture Repair		
New Orleans **27th** - Canine Cruciate Repair - Patella Luxation **28th** - Fracture Repair		

April	May	June
Chicago **12th** - Canine Cruciate Repair - Patella Luxation **13th** - Fracture Repair	**Oquendo Center, Las Vegas** **25th** - Canine Cruciate Repair - Patella Luxation **26th** - Fracture Repair	**Seattle** **14th** - Canine Cruciate Repair - Patella Luxation **15th** - Fracture Repair
San Antonio **14th** - Canine Cruciate Repair - Patella Luxation **15th** - Fracture Repair		**Los Angeles** **16th** - Canine Cruciate Repair - Patella Luxation **17th** - Fracture Repair

July	August	September
		Oquendo Center, Las Vegas **1st** - Canine Cruciate Repair - Patella Luxation **2nd** - Fracture Repair

October	November	December
Phoenix **11th** - Canine Cruciate Repair - Patella Luxation **12th** - Fracture Repair		
Denver **13th** - Canine Cruciate Repair - Patella Luxation **14th** - Fracture Repair		

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