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Come together, right now, over debt

Fix the Debt summit calls on all stakeholders in the veterinary field to be a part of student debt solution.

By Jeff Rothstein, DVM, MBA

Veterinary professionals traveled from near and far to attend a summit titled "Fix the Debt: Our Future, Our Responsibility" held April 20-22 in Lansing, Michigan. The event, which was jointly hosted by Michigan State University College of Veterinary Medicine (MSU CVM), the American Veterinary Medical Association (AVMA) and the Association of American Veterinary Medical Colleges (AAVMC), attracted around 180 participants.

Dealing with debt

Soaring student debt is a familiar topic for those involved in the veterinary profession. In 2013 the average student debt for graduating veterinary students exceeded $162,000, and some students reported debt as high as $300,000.

The veterinary school cost burden has in-

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Speaking of suicide

Facebook group helps struggling veterinarians. *By Sarah J. Wooten, DVM*

Last summer, during a Skype brainstorming session with my colleague Karen Bradley, DVM, to prepare for an upcoming session we were presenting at CVC, she asked me if I was a member of Not One More Vet.

No, I said. I had never heard of it.

"Let me send you an invite," Karen offered.

A minute later, an invitation to join the secret Facebook group Not One More Vet, NOMV for short, was in my inbox. Intrigued, I clicked "join." I was in-

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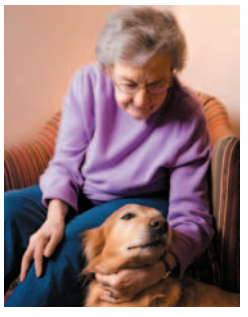

What's a doctor's role in Grandma's secret drug den?
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COVER PHOTO BY GETTY IMAGES

Reframing the discussion of 'convenience' euthanasia

CVC speaker urges veterinarians to think twice before judging clients who request it.

At CVC Virginia Beach I sat through an extremely thought-provoking session led by Dani McVety, DVM, on the ethics of euthanasia. McVety is co-owner of Lap of Love, a veterinary hospice and mobile euthanasia service network with 70-plus veterinarians located across the country. My takeaway from McVety's session was this: The judgmental attitude of many veterinarians and their team members when asked to perform euthanasias they don't agree with is driving pet owners away from veterinary practices and harming the profession as a whole.

The discussion led by McVety centered around the phrase "convenience euthanasia," which on its face is inherently objectionable to many veterinarians: ending the life of an animal with a treatable condition or that is adoptable by another pet owner. What McVety emphasized, though, is that the terms "treatable" and "adoptable" are highly subjective. A single mother of three may simply no longer be able to give her elderly diabetic cat injections every day. A family that just went through three years of nursing a beloved pet through cancer may not be prepared to make the same journey when their new, relatively young golden retriever is diagnosed with the same condition.

Dr. Dani McVety

Bottom line? You don't know what's going on in the life of that pet owner who is requesting what you are calling a "convenience" euthanasia, McVety says. What's very clear to her, however, is that that pet owner who feels judged and vilified will most certainly never visit your practice again, may never see another veterinarian again period, or may not ever adopt another pet.

A family that just went through three years of nursing a beloved pet through cancer may not be prepared to make the same journey when their new golden retriever is diagnosed with the same condition.

So McVety has developed a set of guidelines for veterinarians facing euthanasia of a pet in the context of "convenience":

1. Don't perform a euthanasia you're not comfortable with. Period. You have to be able to sleep at night.

2. Say no very carefully. If you won't do what the pet owner requests, give her options or make a referral without a whiff of condemnation. Don't get involved with a situation at all if you're not willing to offer at least some help.

3. If you do find that you are comfortable performing the euthanasia, when it comes time for that appointment, tell the client, "You're doing the right thing." After all, it's the right thing for that client and that pet in that situation. And there is no greater gift you can give the client than release from guilt, McVety says. **dvm360**

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Zoetis launches calming gel to treat noise aversion in dogs

Oromucosal form of dexmedetomidine is designed for pet owners to administer before or at the time of anxiety-eliciting noise stimulus.

For many dog owners, summertime isn't all about fun in the sun. Fireworks, storms, parties and even construction work—all of which can negatively affect dogs with noise phobia—means that warmer weather can make for a frequently scared, anxious pet. Noise phobia is a dog's sudden and profound, sometimes extreme response to noise, manifested as intense, active avoidance; escape; or anxiety behaviors.

In mid-May Zoetis announced the launch of Sileo (dexmedetomidine oromucosal gel), a medication approved by the U.S. Food and Drug Administration for treatment of noise aversion in dogs, according to a company release. Veterinarians can prescribe Sileo to be administered at home by pet owners to help calm dogs without causing sedation during noise events.

Sileo is administered via oral transmucosal absorption, which limits the amount of dexmedetomidine available in the body at any given time after administration, allowing dogs with noise aversion to remain calm yet fully functional. Sileo has a rapid speed of onset, typically taking effect within 30 to 60 minutes after application. It can be tailored to the timing and duration of the noise event, such as a storm, according to the Zoetis release.

"We know that noise aversion has been difficult to treat, is stressful for pet owners and can be traumatic for their dogs. Sileo works the way veterinarians and pet owners need it to work, calming dogs while allowing them to interact normally with the family," says Shelley L. Stanford, DVM, MS, MBA, a group director with Zoetis. "It has rapid speed of onset, is easy to administer at home and works 'in the moment.'"

Common clinical signs of noise aversion include trembling, panting, cowering and escape behavior. Additional signs of noise phobia include salivation, defecation, urination, vocalization and destruction of property. "Fear of noises may affect almost half of all dogs in their lifetimes, says Karen L. Overall, MA, VMD, PhD, DACVB, CAAB. "Behavioral pathology is progressive, so early recognition, diagnosis and treatment are essential."

Veterinarians prescribe Sileo in a 3-ml high-density polyethylene syringe equipped with a dosing ring. The dosage is 125 mcg/m^2. It is administered by placing the gel between the dog's cheek and gum and allowing for oral transmucosal absorption. Each dose lasts between two to three hours. Sileo can be re-dosed as needed every two hours, up to five times during each noise event. Adverse reaction rate to Sileo was low, and all reactions were mild, according to Zoetis. For more, visit zoetisus.com/products/dogs/sileo. **dvm360**

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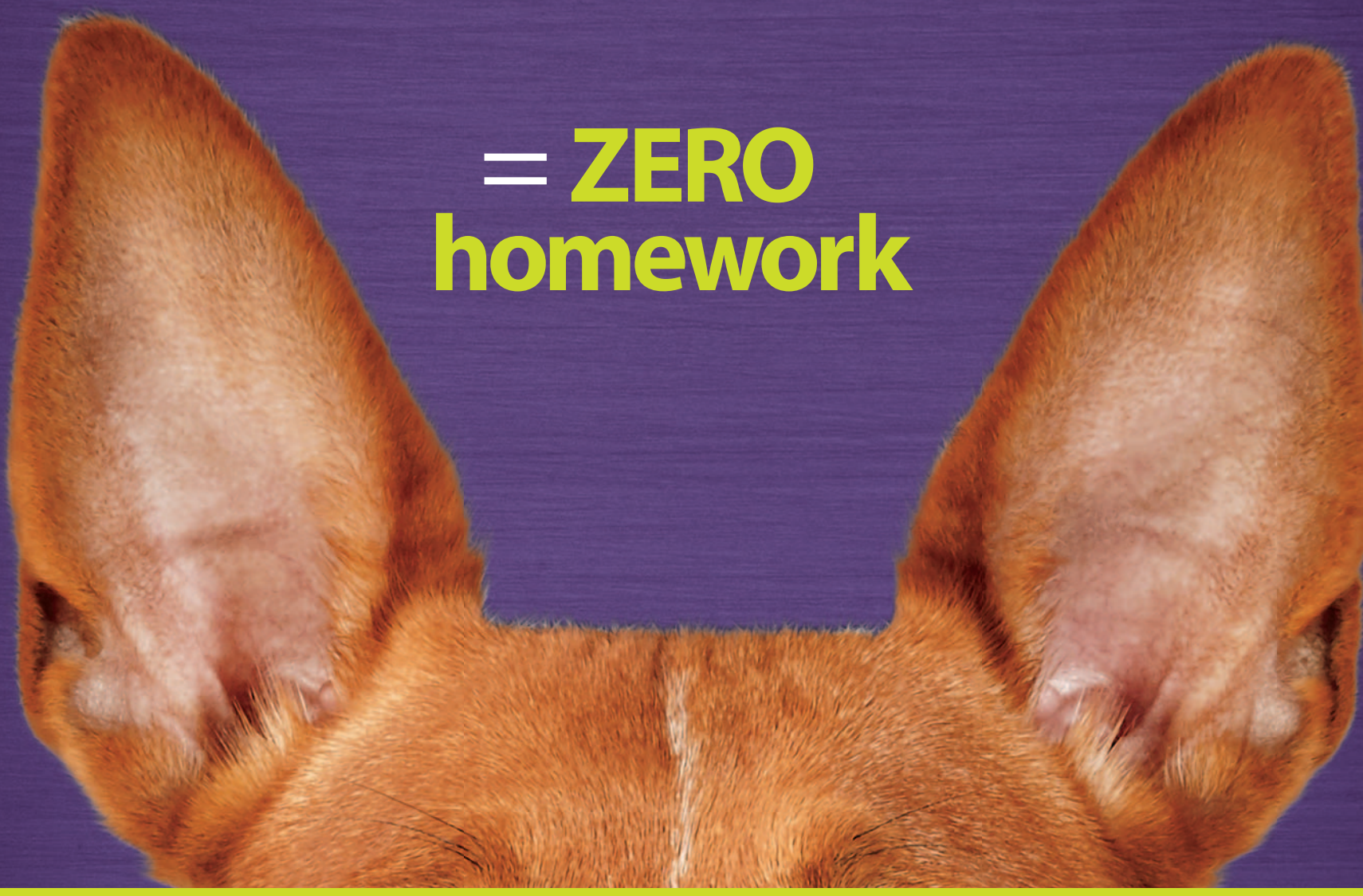

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See brief summary on page 08

AAFP announces new guidelines for feline hyperthyroidism cases

Association releases comprehensive guide to the diagnosis and treatment of this common veterinary endocrine disease.

The American Association of Feline Practitioners (AAFP) has released guidelines for managing feline hyperthyroidism. Affecting 1.5 to 11.4 percent of cats worldwide, it's the most common endocrine disease in cats more than 10 years old, according to a release from the AAFP. In fact, feline hyperthyroidism was cited as the no. 5 most common medical condition in cats reported for Nationwide insurance in 2015. So there's no doubt you're seeing it in your veterinary practice.

"Our hope is that by using these guidelines, veterinary professionals will be able to diagnose [feline hyperthyroidism] long before the cat becomes the classic scrawny, unkempt patient with a mass on its neck," says Cynthia Ward, VMD, PhD, DACVIM, co-chair of the AAFP advisory panel, in the association's release. "With newer clinical presentations, the guidelines explain how a cat can fall into one of six categories, and includes a diagnostic and management strategy for each."

These six categories include:

1. Classic clinical disease. The cat has one or more clinical signs of hyperthyroidism, an elevated serum total thyroxine concentration and no concurrent disease.

2. Possible feline hyperthyroidism with probable non-thyroidal disease. The cat has clinical signs of hyperthyroidism but a normal serum total thyroxine concentration.

3. Enlarged thyroid without clinical feline hyperthyroidism. The cat has no clinical signs of hyperthyroidism and a normal serum total thyroxine concentration but an enlarged thyroid gland.

4. Subclinical feline hyperthyroidism. The cat has no clinical signs of hyperthyroidism but an elevated serum total thyroxine concentration and some physical examination findings that suggest hyperthyroidism.

5. Clinical feline hyperthyroidism with confirmed non-thyroidal disease. The cat has clinical signs of hyperthyroidism and an elevated serum total thyroxine concentration with one or more concurrent diseases.

6. Clinically normal. The cat has no clinical signs of hyperthyroidism or enlarged thyroid glands but an elevated serum total thyroxine concentration.

The guidelines also discuss the advantages and disadvantages of the various forms of treatment, which include radioactive iodine, medical therapy consisting of oral or transdermal medication, surgical thyroidectomy and dietary therapy. They also break several myths about treatment.

To help with client education and communication, the AAFP has also put together a brochure and handout on feline hyperthyroidism. See catvets.com/hyperthyroidism for the guidelines and other resources. **dvm360**

PHOTO BY PORTIA STEWART

IN BRIEF | News

FDA releases guidance on therapeutic diets

The U.S. Food and Drug Administration (FDA) has released a guide that details the criteria the agency will use when determining whether to take action in regard to pet food intended to treat a disease, according to an agency release.

The guide, titled "Labeling and Marketing of Dog and Cat Food Diets Intended to Diagnose, Cure, Mitigate, Treat or Prevent Diseases," explains that diets labeled with therapeutic claims and formulated to address specific diseases, such as urinary tract disease in cats, are intented to be sold through, and used with the guidance of, licensed veterinarians. However, the FDA has seen an increase in the marketing of these diets directly to pet owners in pet stores and online, it says. This shift concerns the FDA because the diets may not be suitable for all pets, the agency says.

The FDA recommends that pet diets labeled with therapeutic claims be available only through licensed veterinarians or retailers and online vendors under the direction of a veterinarian. The compliance guide overviews the factors the agency will consider when determining if it will initiate enforcement action if the diet is sold or marketed inappropriately. **dvm360**

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After mediation fails, veterinarian in bow-killing case appears at hearing

Texas board seeking to remove Kristen Lindsey's license. *By Katie James*

Kristen Lindsey, DVM, the veterinarian infamous for shooting a cat with a bow and arrow last year, appeared at a hearing in late April to determine the fate of her license in the state of Texas, according to court documents.

In April 2015, Lindsey posted a photo to her Facebook page that showed her holding an orange and white cat that had been shot through the head with a bow and arrow. "My first bow kill … lol," the post read. "The only good feral tomcat is one with an arrow through it's [sic] head! Vet of the year award … gladly accepted."

Though there was much public outrage, an Austin County Grand Jury determined it didn't have enough evidence to pursue criminal animal cruelty charges against Lindsey. However, the Texas Board of Veterinary Medical Examiners (TBVME) found Lindsey in violation of the Veterinary Licensing Act and Board Rules and moved to revoke her license.

Lindsey's original hearing was to be held March 8-10, but through her lawyer Lindsey requested a mediation session first. The attempt to resolve the case in mediation was unsuccessful and the hearing was rescheduled for April 26-27.

Folger testified that he believed based on the body positioning of the cat in the picture that it was still alive when Lindsey took the photograph, and did not die instantaneously as she stated, KAGS News reported.

Testimony was heard over the course of two days with each side calling expert witnesses to the stand on their behalf, as well as testimony from Lindsey herself. Lindsey said at the hearing that she had been unable to work since her post went viral and she and her family had received death threats, according to KAGS News.

William Folger, DVM, MS, DABVP (feline), feline regent for the American Board of Veterinary Practitioners and a witness for the TBVME, discussed the markings of the cat in question and the pain and suffering felt by the cat. Folger testified that he believed based on the body positioning of the cat in the picture that it was still alive when Lindsey took the photograph, and did not die instantaneously as she stated, KAGS News reported.

Lawyers for the TBVME and Lindsey will submit closing arguments by June 10 and must respond to the other party's closing by July 1. The administrative law judges will then have 60 days to issue a decision. Both parties will have an opportunity to file written responses and ask the judges for any changes they feel are appropriate, says Michelle Griffin, staff attorney for the TBVME. When that process is complete, the board will consider the case at its next open meeting, as it does with all cases.

Griffin says she expects that the case will go before the full Texas veterinary board at its October 2016 meeting. **dvm360**

Eight dogs euthanized after confirmed case of rabies in Missouri

32 people receive post-exposure treatment as a precaution.

The Howell County Health Department in southern Missouri reported a positive case of rabies in a 6-week-old puppy that recently became ill and died in mid-May. According to KMOV News, officials believe the virus was passed to the puppy from its mother when she killed a rabid skunk and then licked her offspring.

The puppy's mother and the rest of her litter, including a puppy that had already been adopted by another family, had to be euthanized, along with a few other unvaccinated dogs—eight dogs in total.

Thirty-two people, including children, immediately began undergoing post-exposure rabies treatment as a precautionary strategy.

Eugene Ulmanis, DVM, owner and veterinarian at the Animal Clinic of West Plains in West Plains, Missouri, told local media that because the rabies virus can incubate for as long as two years, the unvaccinated dogs that had been exposed to the positive case posed far too great a risk to people and other animals to just wait and see what happened. **dvm360**

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Externship opportunity offers a taste of One Health, Mexico

CSU partnership brings experience, enhances community health.

Through its already existing Todos Santos Center in Todos Santos, Mexico, Colorado State University (CSU) has established a formal externship program for CSU veterinary students with Universidad Autonoma de Baja California Sur (UABCS), a Mexican university with a veterinary training program.

CSU veterinary students participating in the externship will have 10 days of training alongside Mexican veterinary students in livestock production and handling as well as the chance to practice their surgical skills by helping with free spay and neuter clinics for dogs and cats.

Part of the externship involves free spay and neuter clinics for the local community.

"Our students benefit tremendously when they learn about livestock production in a developing nation from experts at an established veterinary school," says Mark Stetter, DVM, DACZM, dean of CSU's College of Veterinary Medicine and Biomedical Sciences, in a release from CSU. "They also gain from surgical experiences that promote clinical skills while also serving communities by helping people and their pets."

>>> Ready to go home after a spay at the Todos Santos spay-neuter clinic.

The connection among human, animal and environmental health, known as One Health, is a goal of this program. Four externships occurred during the 2015-2016 academic year. During one of these, three CSU veterinary students helped spay and neuter 134 dogs and cats in Todos Santos. In 2016-2017, seven trips will occur involving 21 students total.

And, according to the release, spring 2017 may bring a rotational experience for UABCS students at the CSU Veterinary Teaching Hospital. The UABCS campus in is La Paz, which is about 50 miles from the CSU Todos Santos Center.

Will Pass, a CSU veterinary student, was one of the externship participants in 2015-1016. He had previously visited Nicaragua and found the externship a chance to continue his ties with Latin America and contemplate service learning.

"Relationships are built with time, and what CSU is doing down here is a long-term investment and a long-term relationship with Todos Santos," he said in the release. "This is just the beginning of what we can work with the community to create." dvm360

AVMA-COE extends Tuskegee probation

Veterinary school has one outstanding "major deficiency" to correct—its curriculum—before being awarded full accreditation.

The curriculum at Tuskegee University's veterinary school needs improvement, according to the the American Veterinary Medical Association's Council on Education (AVMA-COE).

The COE decided to extend the school's probationary accreditation status after a spring 2016 site visit, according to the council's Spring 2016 Notice of Accreditation Actions report. The report states that Tuskegee has a major deficiency in standard nine—curriculum. The probationary period will be extended for one more year.

Probationary accreditation is given to a college that has one or more major deficiencies that have more than minimal impact on student learning or safety. These deficiencies must be corrected in two years, and the colleges must submit reports to the council every six months.

The school was initially put on probationary accreditation after a fall 2013 site visit, for a period not to exceed two years. School officials addressed the probation in a statement on its website:

"After the site visit in October of 2013, the COE placed Tuskegee University School of Veterinary Medicine (TUSVM) on probationary status. The next focused site visit is scheduled for January 2016.

"The TUSVM is taking immediate steps to develop a plan to address the reported deficiencies and move toward full accreditation. It is important to understand that the current status of accreditation has no impact on the quality of the educational programs for our students."

This isn't the first time Tuskegee has been placed on downgraded accreditation. In 2008 the college of veterinary medicine was moved from full to limited accreditation, which meant it did not meet standards in at least two of 11 areas. Those deficiencies were addressed, and the college was granted full accreditation again in 2009. dvm360

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Million Cat Challenge reaches halfway milestone

UC Davis, University of Florida partner with shelters to save feline lives.

Saving the lives of 1 million cats in North American animal shelters over five years seemed like an audacious goal, but in just two years the Million Cat Challenge is halfway there, according to a release from the University of California, Davis.

Kate Hurley, DVM, of the UC Davis Koret Shelter Medicine Program and Julie Levy, DVM, PhD, of the Maddie's Shelter Medicine Program at the University of Florida, founded the program in 2014 with a goal to dramatically decrease euthanasia of cats by helping animal shelters implement key initiatives. To celebrate reaching the halfway milestone, the Million Cat Challenge held an Internet celebration on April 11. Nearly 400 shelters currently participate.

Shelters, which have made the challenge available to cat lovers in their communities, have taken the Million Cat Challenge to the half-million milestone more quickly than anyone predicted, the Davis release reports. Levy and Hurley, both shelter medicine pioneers, worked to help shelters design better facilities, optimize operations, and market adoptable pets and services more creatively. "Most importantly, we've found new ways to engage the community as our partner in lifesaving," Hurley says in the release.

Maddie's Fund, a leading animal welfare foundation, provided the financial support for the challenge.

"The lifesaving work of the Million Cat Challenge and the mind-shift they are creating is extraordinary," says Amy Zeifang, Maddie's Fund board chairwoman. "Through the efforts of their participants, more than 500,000 lives have been saved so far, with the goal of 1 million or more clearly in sight." dvm360

USDA announces $2.4 million in funding to relieve shortages

Newly approved program looks to expand support in underserved areas.

The U.S. Department of Agriculture's (USDA) National Institute of Food and Agriculture (NIFA) announced $2.4 million in available funding to relieve veterinarian shortages, according to a release from the USDA. The funding will help provide education, extension and training as well as support for veterinary practices in designated shortage areas. This funding was authorized by the Veterinary Services Grant Program (VSGP) in the 2014 Farm Bill.

"These funds support activities for veterinarians and veterinary technicians, helping them gain the specialized skills to address shortages in parts of the country," says NIFA Director Sonny Ramaswamy in the release. "Funds are also available for establishing or expanding veterinary practices in underserved rural areas."

The competitive VSGP grants support activities to develop, implement and sustain veterinary services through education, training, recruitment and retention of veterinarians, veterinary technicians and students of veterinary medicine and veterinary technology. Grants will also be made to establish or expand veterinary practices in rural areas.

The VSGP, authorized by Section 7104 of the 2014 Farm Bill, received a first-time appropriation of $2.5 million in the fiscal year 2016 federal budget. Grant applications are due June 17, 2016. See the request for applications at nifa.usda.gov for more information. dvm360

IN BRIEF | News

GETTY IMAGES

New York state law requires retailers to educate people who buy exotic pets

New York state now requires pet retailers to provide purchasers with written instructions on proper care for exotic pets, according to the *Journal of the American Veterinary Association*. This requirement, which took effect in March, applies to small mammals such as hamsters, chinchillas, guinea pigs, gerbils and rabbits and small amphibians and reptiles such as frogs, snakes and lizards. It does not apply to dogs, cats, birds, fish or feeder animals.

According to the new law, retailers need to "deliver or provide digital access to the purchaser of a small animal, written care recommendations for the class of small animal being purchased ... on housing, equipment, sanitation, environment, feeding and watering, handling, and veterinary care."

According to the AVMA, the law appears to be the first of its kind in the United States. dvm360

make new connections at the AVMA CONVENTION IN SAN ANTONIO

San Antonio Fun Fact

San Antonio has a population of approximately 1,436,697 making it the 7th largest city in the United States and the second most populated city in the state of Texas. The Spanish cultural influence is visible in the city's architecture, history, culinary specialties and people. Approximately 54% of the San Antonio metro area population is Hispanic/Latino.

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NOT ALL FLEA AND TICK CHEWS ARE CREATED EQUAL

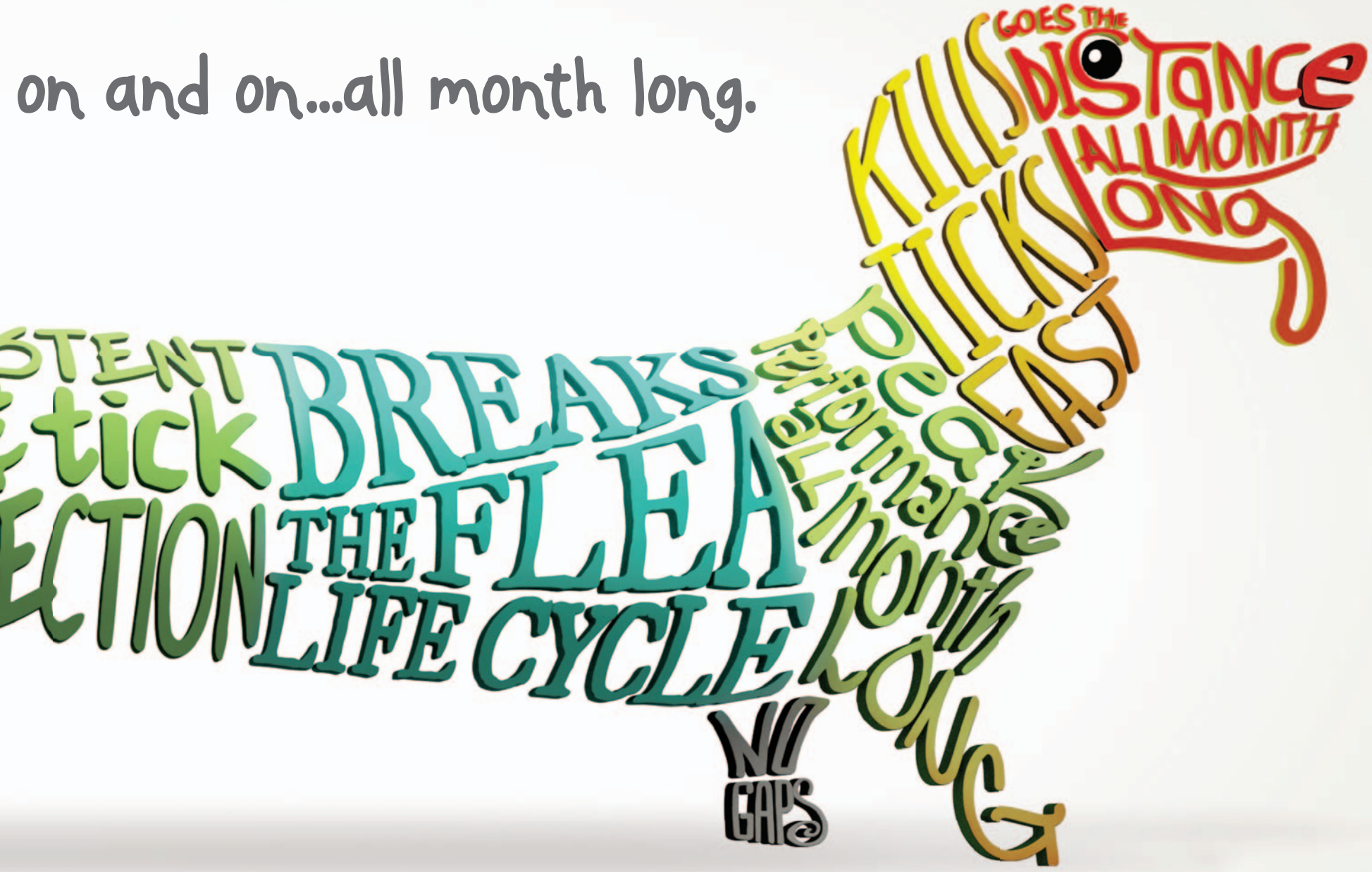
Flea and tick protection that goes on and

IMPORTANT SAFETY INFORMATION: Simparica is for use only in dogs, 6 months of age and older. Simparica may cause abnormal neurologic signs such as tremors, decreased conscious proprioception, ataxia, decreased or absent menace, and/or seizures. Simparica has not been evaluated in dogs that are pregnant, breeding or lactating. Simparica has been safely used in dogs treated with commonly prescribed vaccines, parasiticides and other medications. The most frequently reported adverse reactions were vomiting and diarrhea. See full Prescribing Information on the back of the next page and at **www.zoetisUS.com/SimparicaPI**.

*Studies show Simparica starts killing ticks in 8 hours and is ≥96.9% effective for 35 days against weekly reinfestations of *Amblyomma americanum*, *Amblyomma maculatum, Dermacentor variabilis*, and *Rhipicephalus sanguineus*.[1-6]

References: 1. SIMPARICA (sarolaner) [package insert]. Kalamazoo, MI: Zoetis, Inc; 2015. **2.** Zoetis. Dose Confirmation of Sarolaner Administered Orally Against Induced Infestations of *Amblyomma maculatum* on Dogs (A166C-US-12-128, 2014; A166C-US-12-129, 2014). **3.** Zoetis. Dose Confirmation of Sarolaner Administered Orally Against Induced Infestations of *Amblyomma americanum* on Dogs (A166C-US-12-130, 2014; A166C-US-12-131, 2014). **4.** Zoetis. Dose Confirmation of Sarolaner Administered Orally Against Induced Infestations of *Dermacentor variabilis* on Dogs (A166C-US-12-132, 2014; A166C-US-12-133, 2014). **5.** Zoetis. Dose Confirmation of Sarolaner Administered Orally Against Induced Infestations of *Rhipicephalus sanguineus* on Dogs (A166C-US-12-135, 2014; A166C-IE-13-160, 2014; A166C-US-13-303, 2014; A166C-AU-14-419, 2014). **6.** Zoetis. Knock-down and Speed of Kill of Sarolaner Administered Orally Against Induced Infestations of *Amblyomma maculatum* on Dogs (A166C-US-13-318, 2014).

on and on...all month long.



Introducing Simparica

Monthly chewables for dogs that offer persistent protection from fleas and ticks.[1]

Simparica *acts fast*—it starts killing fleas within 3 hours and ticks within 8 hours*—and keeps going strong for 35 days* **without losing effectiveness at the end of the month.**[1]

Simparica™
(sarolaner) Chewables

Dogged Protection

Fetch more information about Simparica from Zoetis Customer Service at 1-888-ZOETIS-1 or 1-888-963-8471.

zoetis

Simparica™
(sarolaner) Chewables

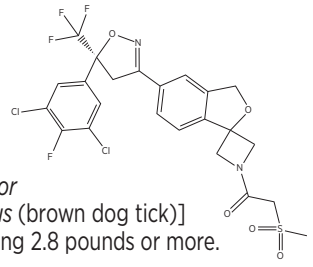
FOR ORAL USE IN DOGS ONLY

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

Description:
SIMPARICA is a flavored, chewable tablet for administration to dogs over 6 months of age according to their weight. Each tablet is formulated to provide a minimum sarolaner dosage of 0.91 mg/lb (2 mg/kg) body weight.

Sarolaner is a member of the isoxazoline class of parasiticides and the chemical name is 1-(5'-((5S)-5-(3,5-Dichloro-4-fluorophenyl)-5-(trifluoromethyl)-4,5-dihydroisoxazol-3-yl)-3'-H-spiro(azetidine-3,1'-(2)benzofuran)-1-yl)-2-(methylsulfonyl)ethanone. SIMPARICA contains the S-enantiomer of sarolaner.

The chemical structure of the S-enantiomer of sarolaner is:



Indications:
SIMPARICA kills adult fleas, and is indicated for the treatment and prevention of flea infestations (*Ctenocephalides felis*), and the treatment and control of tick infestations [*Amblyomma americanum* (Lone Star tick), *Amblyomma maculatum* (Gulf Coast tick), *Dermacentor variabilis* (American dog tick), and *Rhipicephalus sanguineus* (brown dog tick)] for one month in dogs 6 months of age or older and weighing 2.8 pounds or more.

Dosage and Administration:
SIMPARICA is given orally once a month at the recommended minimum dosage of 0.91 mg/lb (2 mg/kg).

Dosage Schedule:

Body Weight	SAROLANER per Tablet (mg)	Number of Tablets Administered
2.8 to 5.5 lbs	5	One
5.6 to 11.0 lbs	10	One
11.1 to 22.0 lbs	20	One
22.1 to 44.0 lbs	40	One
44.1 to 88.0 lbs	80	One
88.1 to 132.0 lbs	120	One
>132.1 lbs	Administer the appropriate combination of tablets	

SIMPARICA can be offered by hand, in the food, or administered like other tablet medications.

Care should be taken that the dog consumes the complete dose, and treated animals should be observed for a few minutes to ensure that part of the dose is not lost or refused. If a dose is missed, administer SIMPARICA and resume a monthly dosing schedule.

SIMPARICA should be administered at monthly intervals.

Flea Treatment and Prevention:
Treatment with SIMPARICA may begin at any time of the year. In areas where fleas are common year-round, monthly treatment with SIMPARICA can continue the entire year without interruption.

To minimize the likelihood of flea re-infestation, it is important to treat all dogs and cats within a household with an approved flea control product.

Tick Treatment and Control:
Treatment with SIMPARICA can begin at any time of the year (see **Effectiveness**).

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

Warnings:
Not for use in humans. Keep this and all drugs out of reach of children and pets. For use in dogs only. Do not use SIMPARICA in cats.

SIMPARICA should not be used in dogs less than 6 months of age (see **Animal Safety**).

Precautions:
SIMPARICA may cause abnormal neurologic signs such as tremors, decreased conscious proprioception, ataxia, decreased or absent menace, and/or seizures (see **Animal Safety**).

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

Adverse Reactions:
SIMPARICA was administered in a well-controlled US field study, which included a total of 479 dogs (315 dogs treated with SIMPARICA and 164 dogs treated with active control once monthly for three treatments).

Over the 90-day study period, all observations of potential adverse reactions were recorded.

Table 1. Dogs with adverse reactions

Adverse reaction	sarolaner	sarolaner	active control	active control
	N	% (n = 315)	N	% (n =164)
Vomiting	3	0.95%	9	5.50%
Diarrhea	2	0.63%	2	1.20%
Lethargy	1	0.32%	2	1.20%
Inappetence	0	0%	3	1.80%

Additionally, one female dog aged 8.6 years exhibited lethargy, ataxia while posturing to eliminate, elevated third eyelids, and inappetence one day after receiving SIMPARICA concurrently with a heartworm preventative (ivermectin/pyrantel pamoate). The signs resolved one day later. After the day 14 visit, the owner elected to withdraw the dog from the study.

For a copy of the Safety Data Sheet (SDS) or to report adverse reactions call Zoetis Inc. at 1-888-963-8471. Additional information can be found at www.SIMPARICA.com. For additional information about adverse drug experience reporting for animal drugs, contact FDA at 1-888-FDA-VETS or http://www.fda.gov/AnimalVeterinary/SafetyHealth.

Clinical Pharmacology:
Sarolaner is rapidly and well absorbed following oral administration of SIMPARICA. In a study of 12 Beagle dogs the mean maximum plasma concentration (C_{max}) was 1100 ng/mL and the mean time to maximum concentration (T_{max}) occurred at 3 hours following a single oral dose of 2 mg/kg to fasted animals. The mean oral bioavailability was 86% and 107% in fasted and fed dogs, respectively. The mean oral $T_{1/2}$ values for fasted and fed animals was 10 and 12 days respectively.

Sarolaner is distributed widely; the mean volume of distribution (Vdss) was 2.81 L/kg bodyweight following a 2 mg/kg intravenous dose of sarolaner. Sarolaner is highly bound (≥99.9%) to plasma proteins. The metabolism of sarolaner appears to be minimal in the dog. The primary route of sarolaner elimination from dogs is biliary excretion with elimination via the feces.

Following repeat administration of SIMPARICA once every 28 days for 10 doses to Beagle dogs at 1X, 3X, and 5X the maximum intended clinical dose of 4 mg/kg, steady-state plasma concentrations were reached after the 6th dose. Following treatment at 1X, 3X, and 5X the maximum intended clinical dose of 4 mg/kg, sarolaner systemic exposure was dose proportional over the range 1X to 5X.

Mode of Action:
The active substance of SIMPARICA, sarolaner, is an acaricide and insecticide belonging to the isoxazoline group. Sarolaner inhibits the function of the neurotransmitter gamma aminobutyric acid (GABA) receptor and glutamate receptor, and works at the neuromuscular junction in insects. This results in uncontrolled neuromuscular activity leading to death in insects or acarines.

Effectiveness:
In a well-controlled laboratory study, SIMPARICA began to kill fleas 3 hours after initial administration and reduced the number of live fleas by ≥96.2% within 8 hours after flea infestation through Day 35.

In a separate well-controlled laboratory study, SIMPARICA demonstrated 100% effectiveness against adult fleas within 24 hours following treatment and maintained 100% effectiveness against weekly re-infestations for 35 days.

In a study to explore flea egg production and viability, SIMPARICA killed fleas before they could lay eggs for 35 days. In a study to simulate a flea-infested home environment, with flea infestations established prior to the start of treatment and re-infestations on Days 7, 37 and 67, SIMPARICA administered monthly for three months demonstrated >95.6% reduction in adult fleas within 14 days after treatment and reached 100% on Day 60.

In well-controlled laboratory studies, SIMPARICA demonstrated ≥99% effectiveness against an initial infestation of *Amblyomma americanum, Amblyomma maculatum, Dermacentor variabilis, and Rhipicephalus sanguineus* 48 hours post-administration and maintained >96% effectiveness 48 hours post re-infestation for 30 days.

In a well-controlled 90-day US field study conducted in households with existing flea infestations of varying severity, the effectiveness of SIMPARICA against fleas on Day 30, 60 and 90 visits compared to baseline was 99.4%, 99.8%, and 100%, respectively. Dogs with signs of flea allergy dermatitis showed improvement in erythema, papules, scaling, alopecia, dermatitis/pyodermatitis and pruritus as a direct result of eliminating fleas.

Animal Safety:
In a margin of safety study, SIMPARICA was administered orally to 8-week-old Beagle puppies at doses of 0, 1X, 3X, and 5X the maximum recommended dose (4 mg/kg) at 28-day intervals for 10 doses (8 dogs per group). The control group received placebo tablets. No neurologic signs were observed in the 1X group. In the 3X group, one male dog exhibited tremors and ataxia post-dose on Day 0; one female dog exhibited tremors on Days 1, 2, 3, and 5; and one female dog exhibited tremors on Day 1. In the 5X group, one female dog had a seizure on Day 61 (5 days after third dose); one female dog had tremors post-dose on Day 0 and abnormal head coordination after dosing on Day 140; and one female dog exhibited seizures associated with the second and fourth doses and tremors associated with the second and third doses. All dogs recovered without treatment. Except for the observation of abnormal head coordination in one dog in the 5X group two hours after dosing on Day 140 (dose 6). There were no treatment-related neurological signs observed once the dogs reached the age of 6 months.

In a separate exploratory pharmacokinetic study, one female dog dosed at 12 mg/kg (3X the maximum recommended dose) exhibited lethargy, anorexia, and multiple neurological signs including ataxia, tremors, disorientation, hypersalivation, diminished proprioception, and absent menace, approximately 2 days after a third monthly dose. The dog was not treated, and was ultimately euthanized. The first two doses resulted in plasma concentrations that were consistent with those of the other dogs in the treatment group. Starting at 7 hours after the third dose, there was a rapid 2.5 fold increase in plasma concentrations within 41 hours, resulting in a C_{max} more than 7-fold higher than the mean C_{max} at the maximum recommended use dose. No cause for the sudden increase in sarolaner plasma concentrations was identified.

Storage Information:
Store at or below 30°C (86°F) with excursions permitted up to 40°C (104°F).

How Supplied:
SIMPARICA (sarolaner) Chewables are available in six flavored tablet sizes: 5, 10, 20, 40, 80, and 120 mg. Each tablet size is available in color-coded packages of one, three, or six tablets.

NADA #141-452, Approved by FDA

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Sen. Al Franken introduces bill to boost One Health

Bill would establish coordinated plan to fight disease outbreaks from animal sources such as Zika, Ebola.

Sen. Al Franken (D-Minnesota) has introduced legislation that would establish a coordinated national plan to fight diseases that come from animal sources such as Zika and Ebola, according to a press release. The One Health Act of 2016 would task the nation's regulatory agencies, including the Centers for Disease Control, Department of Homeland Security and the U.S. Department of Agriculture, to work together to understand, prevent and respond to animal disease outbreaks.


Sen. Al Franken

Franken is a member of the Senate Health Committee and has worked to prevent the growing threat of these diseases, the release states. When Ebola threatened the U.S. in 2014, Franken worked with Minnesota health agencies and national groups to create a statewide response to the disease. More recently, he introduced bipartisan legislation to speed up the process for developing safe and effective treatment and vaccines for the Zika virus.

If passed, the One Health Act of 2016 would also create competitive grant programs to carry out the programs outlined in the framework and spur collaboration between health programs at the state and local level, according to the release. The bill also urges international health organizations to increase investments in One Health approaches to global health security. dvm360

IN BRIEF | News

Enrollment open for feline cardiology trial

Have a veterinary feline patient that has survived an arterial thromboembolism (ATE)? The University of Georgia (UGA) Veterinary Teaching Hospital is seeking such cats for a multicenter randomized clinical trial in hopes of preventing future ATEs with the use of a novel anticoagulant, according to a release from the University of Georgia.

This study is known as SUPER-CAT, or the study of the utility of rivaroxaban or clopidogrel for prevention of recurrent arterial thromboembolism in cats. It builds on a previous study known as FAT-CAT that found that the antiplatelet drug clopidogrel delayed ATE recurrence up to eight months longer than aspirin did. SUPER-CAT will compare clopidrogel with rivaroxaban, an anticoagulant that directly inhibits coagulation factor Xa.

Eligibility. Veterinarians can refer cats with cardiomyopathy that have experienced one ATE episode and recovered and have no other marked health conditions.

Duration. Three years

Once enrolled. Participants will receive either clopidogrel or rivaroxaban for free as well as funds to defray the costs of four visits with board-certified veterinary cardiologists.

Owner investment. Owners will fill out a 10-minute questionnaire every other month that assesses the participant's health and activity level.

Morris Animal Foundation is funding the study. For more details, visit t.uga.edu/24x or cvccr.com.

FDA approves canine appetite stimulus

Aratana Therapeutics Inc. has received approval from the U.S. Food and Drug Administration of Entyce—a first-of-its-kind ghrelin receptor agonist that stimulates appetite in dogs—according to a company release. Entyce, a new chemical entity, works by mimicking the hunger hormone ghrelin to stimulate appetite. The prescription medication is a flavored liquid that is administered orally.

"Nearly 10 million dogs are diagnosed with inappetence each year and we believe Entyce will fulfill a significant unmet need," says Steven St. Peter, Aratana CEO, in the release. Aratana is planning a February 2017 commercial launch. dvm360

The Future of Veterinary Medicine: Drones in veterinary practice

What's that hovering at your shoulder? Oh yeah, the diagnostic test you ordered a few minutes ago. *By Rolan Tripp, DVM*

You may have seen a neighbor playing with a drone in the backyard or someone flying one around town. The toy remote-controlled helicopter of yesteryear is growing up and into a device that may revolutionize some components of veterinary practice.

What is a drone?

A drone may also be called an unmanned aerial vehicle (UAV) or remotely piloted aircraft (RPA), but the U.S. government has adopted the term unmanned aircraft system (UAS). Drones are traditionally powered by gas, jet fuel or rechargeable batteries, but the U.S. Navy is experimenting with fuel cell power to keep smaller drones flying longer. The Navy recently introduced a drone bigger than a 737 airliner with a 130-foot wingspan and flying time of 28 hours covering 3,290 miles. Compare that size with the hobby Wallet Drone, a tiny quadcopter that fits into its own controller—and that controller fits into a pants pocket.

Future commercial uses for drones include virtual reality video tours of foreign countries, viewing vacation real estate, virtual attendance at outdoor sporting events and, most important for you, several veterinary applications.

Where we are now

Today, the closest thing to functioning veterinary drones are those used by the local government in Houston, Texas, to track stray dogs. What's delaying more commercial drone use is Federal Aviation Administration (FAA) regulations. Until Dec. 11, 2015, government and noncommercial ("hobby") drones were allowed to fly at a height of below 400 feet, three miles from an airport and away from populated areas. However, all hobby drones weighing over 0.5 pounds now require FAA registration. All commercial (e.g. veterinary) drones require special authorization, and, according to the FAA website as of Feb. 26, 2016, only two commercial drones have been certified, both of which are limited to the Arctic.[1]

There are good reasons the FAA is cautious. A drone equipped with Wi-Fi could seek out unsecured wireless systems for financial and identify theft. These regulations prevent drones from snooping and tangling with power lines, helicopters and airplanes; plus, consider the terrorist attack in Japan April 2014. A drone containing radioactive matter was found on the roof of the office building of the Japanese Prime Minister in Tokyo. Delivering C4 or anthrax might be next. Japan now has a police drone with a catching net to capture rogue drones. In the United States a new service called DroneShield protects airports, prisons, infrastructure, government buildings, commercial venues and even executives. The DroneDefender is a space-age ray gun that disables GPS and flight controls to incapacitate an illegal drone.

The FAA must also consider wildlife. In one case a hawk attacked a drone that was probably viewed as a territorial threat. The drone's camera caught the hawk with claws extended in full attack mode. The hawk "killed" the drone and flew off.

A future for any type of veterinary practice

Food animal. The low-hanging fruit for veterinary drone use is food animal practice, especially where grazing herds are involved. In addition to remote monitoring of herd health, drones can hover with high-definition video, so it is possible to assess the quality of grass biomass, identify poisonous plants and monitor (or harass) any wildlife that

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*Aids in the treatment and control of sarcoptic mange on dogs.

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doesn't belong there. Some drones may be able to gather dirt, grass or water samples.

Drones with thermal imaging can locate lost or stray animals, and if an animal is wearing a battery collar with an active transmitter, the drone could even capture the RFID chip data to go with GPS coordinates. Drone thermal imaging could also identify animals running a fever and those coming into estrus.[2] Video imaging could recognize other clinical signs in animals. Worried about cold weather? When it's below zero outside, a drone can be operated inside a warm truck.

Deon van der Merwe, PhD, BVSc, an associate professor at Kansas State University who has an avid interest in the use of UASs for veterinary applications, says, "Suppose there was a major hoof and mouth disease outbreak. Because grazing cattle often dismiss drones as birds, a specially equipped drone could remotely identify sick animals or deliver a vaccine to healthy cattle or even wildlife." A drone equipped with an audible horn could move individuals or even a herd from one area to another. Watch out herding dogs, these things can operate from miles away!

Mobile mixed practice. Now that GPS and cell phones make it possible to find the farm, a persisting problem is what to bring on the truck. As veterinary medicine continues to evolve, it will become a competitive disadvantage to make do with what instruments or medicine you have in the field. Today, you'd ask the client to bring the animal into the clinic or reschedule when you can return with the drug or instrument needed. Tomorrow you'll send a text to your office with your GPS and what you need, and an assistant will load the instrument or drug into the drone and send it to you while you wait. Lab samples could then be loaded into the same drone, which would be programmed and sent back to your office or directly to your preferred lab.[3]

Equine practice. Equine mobile practitioners would reap all the benefits already mentioned, plus the ability to perform preliminary examination of horses in the far pasture before trekking all the way up there. A sedative, a vaccine, antibiotic or anthelmintic could be delivered to a wild horse. Lameness examinations could be enhanced with a 3D slow-motion video-recording drone trailing behind as the horse moved out in each gait over an extended distance. This will use the drone equivalent of automobile adaptive cruise control, which allows the user to identify a moving object and stay a fixed distance behind.

Forensic veterinarians. Drone use would be valuable in evaluating an animal-related crime scene before it is contaminated. A forensic veterinarian can get a high-definition video recording up close, from high above and from every angle. For this use, the drone can be equipped with audio recording and a wide angle video lens and may even be able to collect crime scene samples. A laser attachment can give very accurate measurements. The data can then be retained as evidence for any subsequent trial.

Veterinary regulatory agencies. Some veterinary regulatory agencies may begin to use drones for monitoring wildlife during oil spills, quarantine, biohazard carcass disposal or licensing evaluation of remote locations. One government veterinarian could travel to a given locale and then send out multiple preprogrammed drones and collect them at the end of the day for data analysis. Eventually, drones will be allowed indoors, where they will silently hover a few inches from the ceiling, collecting video, audio, radiographs, radioactivity and even gas samples to measure anesthetic residue.

Small animal practice. Once every veterinary clinic is set up for drone submission of laboratory samples, there will be little need for the labor cost and carbon footprint of a driver going to each veterinary hospital to pick up samples or deliver laboratory supplies. There will also be no need for the future veterinary practice to own some expensive veterinary instruments since you can have them delivered then returned by drone on a moment's notice. Google is working on a drone service that will deliver select urban products within minutes.

Veterinary drones might become the preferred way to receive or deliver compounded, poisonous or radioactive medications. A pharmaceutical representative may want to send samples out by drone since it will be less expensive than any other method of delivery, as evidenced by Amazon's interest.

How far in the future?

So how soon will we be seeing veterinary drones? At the current rate the FAA is approving commercial use it might be decades. However, hobby drones are here now and will continue to proliferate. For that reason, instead of training your dog to get your slippers, you might have your drone do it. dvm360

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1. Busting myths about the FAA and unmanned aircraft. Federal Aviation Administration, 2016. Available at: http://www.faa.gov/news/updates/?newsId=76240.

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Dr. Rolan Tripp is the founder of VeterinaryFutureSociety.org and published his first veterinary futurist article in 1984, "Veterinary Telecommunications." In 2011 he gave the keynote address, "The Future of Veterinary Medicine," at the international CanWest VMA meeting in Canada. He can be reached at DrRolanTripp@gmail.com.

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Reference: 1. CEESA Q4 2015: CIRD Market Q4 YTD. Boehringer Ingelheim Vetmedica, Inc. March 2016.

Not One More Vet

> Continued from the cover

>>> The Not One More Vet cover photo is instantly recognizable to members of the Facebook group.

stantly immersed in the secret world of veterinarians, where colleagues were jaw-droppingly open with each other, sharing their joys, their struggles, insider jokes and, all-too-often, desperate cries for help.

Initially it was overwhelming. I had a hard time reading the posts from more than 4,000 veterinarians around the world, too many of whom were struggling mentally, emotionally and financially with what is without a doubt a difficult profession. I know that. You know that.

But there were also moments of brilliance, when the group banded together to help one another in tangible ways—like sending a task force to check on an ailing colleague who had gone MIA or leaving phone numbers so that no one had to struggle alone. I have witnessed veterinarians grappling with suicidal tendencies reach out for a lifeline and find it in this group—which is why I reached out to the group's founder to learn more.

NOMV was founded in 2014 by Nicole McArthur, DVM, a fellow alum of the University of California, Davis, School of Veterinary Medicine and a practicing veterinarian in Northern California. I had the opportunity to speak with McArthur to get some additional insight into what inspired NOMV and how it's impacting our profession. Here are the highlights from our conversation.

Q: What inspired you to form this group?

A: I started Not One More Vet days after the suicide of Dr. Sophia Yin. A nonveterinarian friend of mine had heard about her death and was surprised to learn that veterinary medicine is the profession with the highest rate of suicide. She started a group text with me and two mutual friends: one a veterinary neurologist and the other a veterinary dermatologist.

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At the time, I had essentially left the profession due to burnout and had no intentions of returning. I couldn't understand why I was included in a conversation with two veterinarians I considered to be so much smarter and accomplished than me (I didn't even consider myself a veterinarian at that point in time), but we had an amazing dialogue that evening.

During this group text, we talked openly about our fears and our struggles within the profession. This conversation made me realize that I was not alone in these fears, and I wanted to share that with my friends. So I started a secret Facebook page and invited classmates who I thought would "get it." They added their friends and the group began to grow.

Q: What are the rules of the group? I assume they aren't the same rules as Fight Club ...

A: We have two rules: (1) You MUST be a veterinarian, and (2) you must NOT be an asshole.

Q: How can a veterinarian join?

A: You must be on Facebook, since it's a Facebook group. If you know someone who is a member, you can ask that they add you to the page. Otherwise you can send a message to me, Nicole Blackmer McArthur, or my co-admins Carrie Jurney and Jason Sweitzer, and ask to be added. We verify that each member is a veterinarian before officially adding them to the group.

Q: What kind of growth did the group experience?

A: When I started the page, I figured it would be me and some classmates and a few friends I have made in practice. The page grew slowly at first, and then suddenly a member announced that we had 1,000 members and I was stunned. We currently stand at over 4,500 members worldwide with some 250 waiting for approval.

Q: What has surprised you most?

A: The most surprising thing to me is anytime a veterinarian says, "This page helps me." For example, one member was struggling and reached out on the NOMV page. I checked in with this member and here is the response I received:

> *Hi Nicole. I'm OK today, thank you. I'm blown away by this group. So many extraordinary people from all over the world and they all care about each other—people they've never met. It is the most comforting feeling knowing that when I need them, everyone is there, any time of the day or night. And they make me feel important, they make me smile, and I feel like I'm not so alone anymore. Thank you for bringing us all together. And thank you for checking in. I hope you have a wonderful day. Thank you, xoxo.*

"When I need them, everyone is there, any time of the day or night. And they make me feel important, they make me smile, and I feel like I'm not so alone anymore."

—Member, Not One More Vet

Q: What is a story that stands out to you?

A: In a post written by a member recovering from major surgery, he confided that he had been suicidal and was very open in sharing with us his emotional and physical recovery. I was stuck by not only his raw honesty but the incredible response he received from the members of our group. And I realized that veterinarians, who are so good at caring for our animal patients, are equally good at caring for our human colleagues.

Q: What's the purpose of the group?

A: The purpose of this group is twofold. First, this group is a safe place for veterinarians to openly discuss our concerns within the profession. Whether we struggle with difficult clients, a poor outcome in a case, debt, or balancing life and family, chances are that there is someone out there who has been in a similar situation. It can be incredibly comforting to know you are not alone in your struggles.

The second and ultimate goal of this group is to raise awareness about the fact that suicide is a very real problem within the veterinary profession. We all hear the statistic, but nobody ever talks about it. We don't discuss why veterinarians are killing themselves more than any other group of professionals. There are multiple factors involved and there is no easy solution. My hope is that by just talking openly, our community will begin to learn and grow and eventually develop a solution to the problem of suicide in our industry.

Q: Do you think the group is accomplishing what it set out to do—to reduce the rate of suicide in our profession? Or is it too soon to tell?

A: I honestly don't know. There have been several suicides within the veterinary community since this page was started, so it certainly doesn't feel like we have done much to reduce the rate. But we are talking openly about it, about the many different factors that contribute to an individual making the decision to end his or her life. I am seeing industry magazines with headlines about suicide in our profession. Veterinary schools are employing full-time counselors to help their students. While I don't believe that this is directly related to our page, I am thankful that we are beginning to view suicide as an actual problem and not some dark secret we're not allowed to discuss.

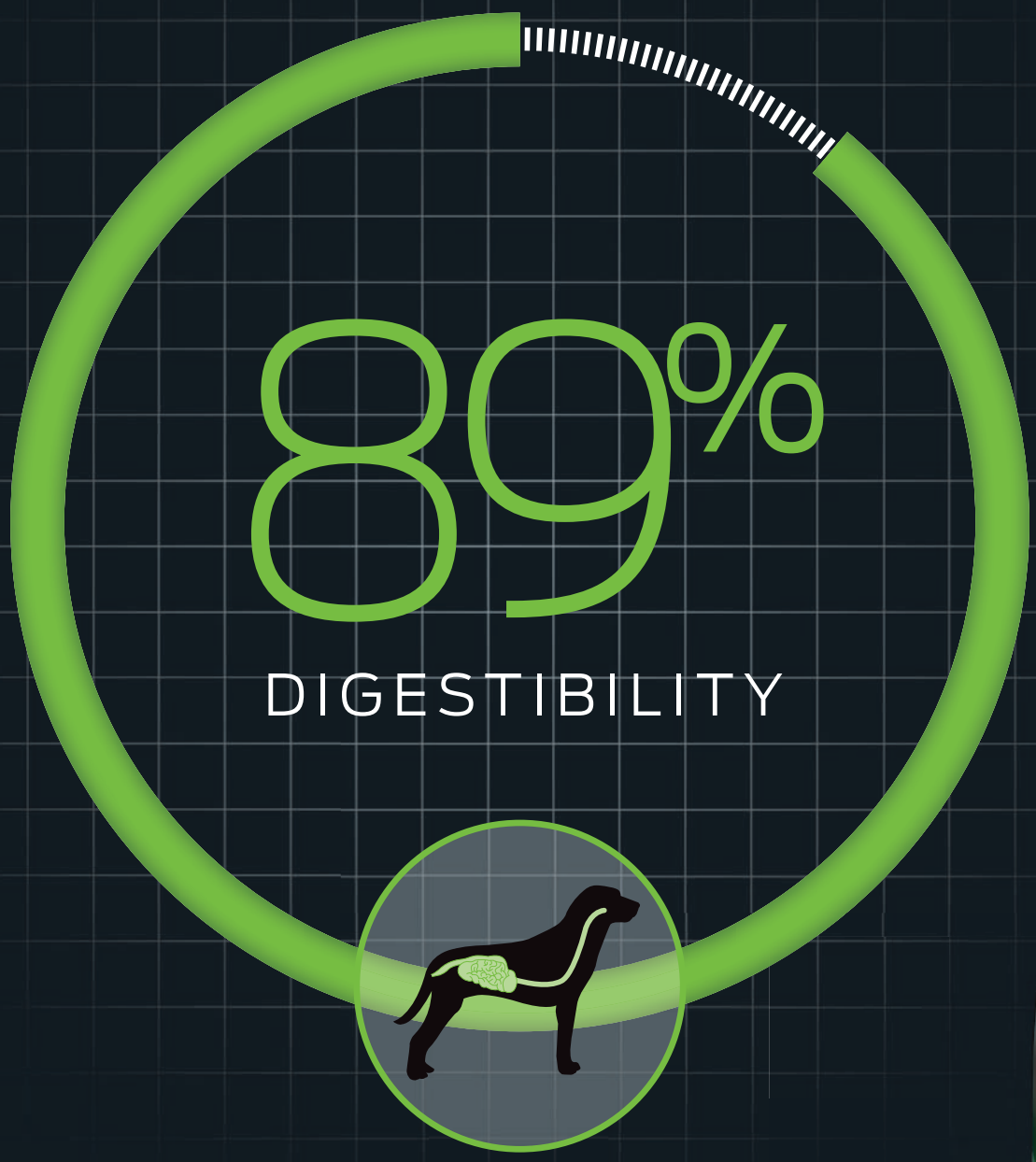
Q: Why do you think veterinarians feel safe to share in the group? I mean—the group is huge and we say things there that we would never say anywhere else.

A: We veterinarians speak our own language and it is completely foreign to anyone outside our profession. When we are speaking amongst ourselves, nothing is lost in the translation of our weird and wonderful dialect.

Q: The loss of a NOMV group member in March hit everyone in the group hard.

A: The first I learned of his death was through a post from a member who did not name him out of respect for him and his family. As more and more members revealed his name, I felt it was important to say something to the group. Suicide carries such a huge stigma. Our culture has created a negative and even shameful image of a suicidal person. Yet here is a man who was well-liked by his classmates and was valedictorian of his class—the last person our society would consider to be "suicidal." I want our colleagues to know that there should be no stigma. I feel that regardless of the circumstances that led to his death, we should honor his life.

A Number Like This Is No Accident.



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Q: I've noticed the group taking proactive measures to connect with one another outside of NOMV: regional phone lists, a "healthy DVMs" page and more. Have you seen any success with those spinoffs?

A: The members on this page have come up with some incredibly innovative ideas on how to improve things in the profession. The phone list started with one member saying, "Hi. You OK? No? Call me." And she listed her phone number. And another added a number, and another, and before I knew it, a Google doc named "NOMV Bad Day Phone List" was created. It stipulates at the very top that none of us are trained mental care professionals, but we all care about one another. There are currently 60 names and numbers on this list, which is pretty incredible.

I am aware of two other veterinary groups on Facebook: Under the Microscope and Vet-to-Vet. These groups aren't spinoffs, but they are groups that were created with the idea that veterinarians are great at helping veterinarians. Each group has its own personality and focus, but we all share one unifying goal, and that is to support one another. Personally, I love that there are so many options for veterinarians to go and find support from colleagues.

Q: Where do you see the group headed from here?

A: Members have suggested that we make the page bigger and have departments, much like VIN. But I'm a minimalist and I want to stay true to the original intent: to provide a safe place for veterinarians to discuss our concerns openly. I love all of the spinoffs that have been created and I look forward to wherever our members take us.

Q: What else would you like to say to our veterinary community?

A: I am the daughter of a veterinarian and have seen the profession evolve over the past four decades. There have always been struggles for which our innovative colleagues have worked to find solutions. One of our current struggles, the increased rate of suicide amongst veterinarians, is a complex issue. There are many confounding factors involved and there is no quick fix. Some issues are relatively new to our profession, such as cyberbullying: we know that online attacks played a role in Dr. Shirley Koshi's suicide. Others are not new, like student debt. My dad graduated from Cornell University College of Veterinary Medicine in 1970 owing about $3,000, which at the time was the price of a new car. Today, we have some veterinary students owing upwards of $300,000, which in some areas is a mortgage on a nice home. This is a large burden to shoulder when considering that the average starting salary of a new grad is $60,000 a year.

Veterinarians are an intelligent, resourceful and compassionate breed. And we are resilient. We will always have struggles in our profession, but with so many support groups available to us, we no longer have to struggle alone. dvm360

Dr. Sarah Wooten, a member of the American Society of Veterinary Journalists, divides her professional time between private practice at Sheep Draw Veterinary Hospital in Greeley, Colorado, writing articles and filming video content for dvm360 and other media outlets.

Debt summit

> Continued from the cover

creased in recent years, thanks in part to dramatic funding cuts at land-grant universities, many of which contain veterinary colleges. Greater costs are thus being passed on to students, but recent graduate salaries have not increased proportionately. As a result, concerns are arising that the ratio of student debt to starting salaries is unsustainable. The level of debt at which many graduates start their careers will have a major impact on the quality of their lives. Simply owning a home, supporting a family or even taking a vacation may be out of reach for some.

The cost of school has become so exorbitant that the rate of applicants to available positions is currently 2.1:1. With the opening of a number of new schools, it may soon reach 1:1—a far cry from just 20 years ago when the acceptance rate at many schools was 6:1.

Steps to the summit

This problem is not new. In fact, the North American Veterinary Medical Consortium (NAVMEC) addressed the issue in 2008. The mission at that meeting was to identify ways to make the veterinary education system more cost-effective for both colleges of veterinary medicine and veterinary students without compromising the quality of the education and training.

A number of key recommendations came out of 2008's consortium and were recently revisited at AAVMC's annual conference in March 2015. The debt summit in Michigan was organized as a follow-up to last year's conference and carried a goal of bringing all stakeholders within the profession together to discuss the problem, including educators, students, recent graduates, employers and veterinary associations.

Summit sessions

The summit was facilitated by Kenneth Andrews, PhD, who challenged attendees to produce tangible, actionable solutions. He emphasized the need to come out of the meeting with a plan of action and not just a list of observations and complaints.

Following Andrews' charge, a few key speakers shared their perspectives on the debt situation, including recent graduates, who were perhaps best positioned to provide poignant illustrations of how stifling and debilitating student debt has become. These speeches were followed by breakout sessions in which attendees were divided into four different groups: educators/colleges, employers of veterinarians, associations/organizations and students/recent graduates.

The closed-door sessions were

built around "solution concepts" that had been identified at prior meetings in preparation for the larger summit. The four main groups were broken into smaller focus teams with a goal of building on the concepts and determining how they could be quickly implemented for maximum impact at multiple locations. After the sessions, everyone gathered back together so each group could deliver a summary of its conclusions and recommendations.

Impactful and actionable

The following day, Andrews once again addressed the four groups and tasked them with winnowing their lists to select the most impactful and actionable ideas. According to a release from the AVMA, some of the possible solutions, listed by group, are as follows:

Educators/colleges

> Implement a five- or six-year DVM program.
> Encourage the creation of national partnerships and campaigns to raise scholarship funds.

Employers of veterinarians

> Improve new employee onboarding.
> Promote a culture of preventative care.
> Encourage practice ownership.

Associations/organizations

> Develop a career guidebook for pre-veterinary students.
> Increase advocacy efforts addressing student debt.

Students/recent graduates

> Engage with deans, peers and future students regarding student debt and financial literacy.
> Educate pre-veterinary students about the student debt issue and what's being done.

The (DIR)ty truth

Michael Dicks, PhD, director of the AVMA Economics Division, closed the summit with a presentation on veterinarians' debt-to-income ratio (DIR), which is seen as one of the key means of gauging the financial health of recent graduates. The DIR, which is currently 2:1, has risen from 1.2:1 in just 15 years, he said.

Dicks explained that this ratio is not sustainable but believes that a DIR under 1.4:1 would be viable. He demonstrated that if a number of steps were taken, such as eliminating interest on student loans while students are in veterinary school and decreasing the cost of school expenditures by 10 percent, the DIR could get close to 1.38:1.

Dicks believes the veterinary field has the ability to make such changes but stressed that everyone in the profession needs to take ownership in the problem and contribute to the strategies put forth at the summit. He also emphasized the fact that it's not just one change that will make the difference. A sustainable solution will require a collection of small and not-so-small tweaks to the system.

The cost of school has become so exorbitant that the rate of applicants to available positions is currently 2.1:1. With the opening of a number of new schools, it may soon reach 1:1—a far cry from just 20 years ago when the acceptance rate at many schools was 6:1. Such a ratio is not healthy for a profession needing to attract the best and brightest talent.

Less school, less debt

The summit made it clear that there is no single quick fix, but the implementation of a number of strategies could help. Yet the question remains: Will they (or can they) help enough?

On a personal note, I graduated from Colorado State University with a joint DVM-MBA degree in 1994. My thesis dealt with the critical issue of low salaries within the profession; sadly, we have made little progress on this front over the past 20 years, and excessive student debt is only adding insult to injury.

One positive, however, is that for perhaps the first time ever, the profession is joining together to tackle this problem. Many good ideas were put forth at the summit, but in my opinion, the most important and potentially powerful idea is to create a five-year veterinary program. The curriculum would require two years of pre-veterinary coursework followed by three years of veterinary school.

Think about it this way: If the veterinary curriculum were a business that had to produce profitable students, this change would take place immediately to avoid going out of business. A five-year veterinary program obviously saves students money when it comes to tuition and school fees and carries the added benefit of getting them in workforce sooner.

The move to make change has started, and it will require every veterinary stakeholder to do his or her part. While it's good to be proud of our heritage as veterinarians, it's detrimental to resist necessary change for the sake of tradition. It's time to take pride in how we respond to the crisis. **dvm360**

Dr. Jeff Rothstein, MBA, is president of the Progressive Pet Animal Hospitals and Management Group in Michigan and a frequent contributor to dvm360.com.

Elsewhere in dvm360

Dr. Michael Dicks, director of the AVMA's Economics Division, discusses what could happen to the veterinary DIR in a recession. **See page 36.**

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>>> *Ctenocephalides felis*, the cat flea, has proved a deadly foe over the centuries.

The frustrating and sordid history of the **Great Flea War**

Although the level of invasion is down drastically compared with the past, we've yet to conquer this tiny foe. Once more unto the breach, troops! *By Dwight Bowman, MS, PhD*

Those of you not in veterinary practice before 1989 may not remember what it used to be like to deal with fleas. Well, here's a brief overview.

A long time ago, fleas were a part of everyday life for most people. You'd pick your fleas off your body before you went to sleep at night. It was so common, it was even depicted in works of art. Fleas were responsible for the death of millions of people.

As time went on, we made a little progress in treating or preventing fleas and the diseases they carried. Chemical dips here, chemical bombs there—and hardly ever 100 percent success. I know a veterinarian who built an entire outbuilding at his practice to hold his flea products back in the day!

Then, in 1989, the big breakthrough in battle occurred! Parasitologists figured out that fleas don't actually live in the couch and bedding and leaf litter—they live on animals. They feed immediately and continuously on the animal. This gave us enemy intelligence and opened up a whole new way of thinking: Eureka! Treat the animal!

Things moved rapidly from there: In 1993 the first International Symposium on Ectoparasites in Pets was held, in 1994 lufenuron was introduced, and in 1996 imidacloprid and fipronil joined the fight. For the first time we could give something to a pet that really worked against fleas and their infestations.

The human cost of flea infestation

They say that war is hell, and fleas

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Boehringer Ingelheim

How *Yersinia pestis* invaded U.S. shores—and keeps on spreading

It is thought that *Y. pestis* pretty much just showed up from Asia and unpacked its steamer trunks in the San Francisco area in 1905. It spread among rats there but was relatively contained for a time. Then the 1906 San Francisco earthquake occurred. Did the quake send the rats running? No; in fact, for two days after the quake, everything was relatively calm. But lights were run by gas back then, and fire spread and consumed most of the city. This, of course, chased all the rats out of the city and into the surrounding area.

Plague has now spread across the United States. It took a long time to get across the California mountain ranges, and then it took longer to get across the Rockies. It is now spreading across Texas. The only things at this point that appear to be stopping it are the Missouri and Mississippi rivers. Once it crosses the Mississippi River, it is free to spread to the east coast. Reverse "manifest destiny," anyone? The current hot spot for The Black Death is the Four Corners region in the West.

carry some pretty horrible diseases for pets and people. Here in the United States, the big three that *Ctenocephalides felis* carries are cat scratch disease, murine typhus and plague. Let's look into each a bit to demonstrate how bad things can get if we halt forward progress or lose ground.

Cat scratch disease

Causative agent:
Bartonella henselae

This disease is traditionally associated with young cats and kittens. It is transmitted to people when a cat is bacteremic and bites someone or is carrying the bacteria in its nail beds and scratches a person. The result seven to 12 days later can be a solitary swollen lymph node, encephalitis, neuroretinitis, endocarditis and bacillary angiomatosis. Most cases of cat scratch disease occur September through January because it is transmitted when people think they no longer need flea protection and quit giving it too early.

Interesting fact: This affects you, too! Seven percent of veterinary professionals are seropositive![1] No big surprise there, right?

Murine typhus, feline typhus

Causative agent:
Rickettsia typhi

Found now in California and Texas, typhus in people can cause a high fever, a maculopapillary rash, headaches, chills, myalgia and malaise with concurrent respiratory, neurologic and gastrointestinal symptoms such as abdominal pain and hepatomegaly. The organism's life cycles suggest that the domestic cat plays a role, but the exact role cats play in transmission of the disease is unclear.

Plague, AKA the Black Death

Causative agent:
Yersinia pestis

This bacterium is maintained mainly in wild rodent reservoirs including rats, rock squirrels, ground squirrels, prairie dogs and chipmunks. It is transmitted by two rodent fleas as well as through direct exposure to the tissues, secretions and respiratory droplets of infected animals or people.

Plague can present in one of three forms—bubonic, pneumonic or septicemic. Most cases reported worldwide are of the bubonic form, but in 2006, of the 17 cases reported in the United States, 35 percent were classified as primary septicemic plague. Humans with cutaneous exposure usually develop the bubonic form, whereas humans exposed through inhalation develop the pneumonic form. If left untreated, the bubonic form can spread to the lungs and develop into the pneumonic form, allowing the infected individual to spread the disease to another person through respiratory secretions.

Bringing it back to the clinic

The above three diseases are huge human reasons we'd like to keep winning the Great Flea War. And, of course, there are a host of reasons we want to keep winning it for our patients. For example, tapeworm infections have been almost eradicated in some areas because of effective flea control. The incidence of flea allergic dermatitis almost by definition goes down with effective flea control. In general, as effective flea control product sales go up, flea-related disease and morbidity go down. It's good for the health of our patients.

I'll leave you with this: Don't feel guilty about making profits on flea control products. Last year, it cost me $600 for the anesthesiologist to come into my hospital room for a quick consult the night before my surgery. When you can charge that much for your service, then it might be OK for you to start feeling bad about paying for a new ultrasound machine (that will help all your patients) with profits made from products that work and keep your patients healthy. Until then, remember the bad ol' days and charge on with confidence to win the Great Flea War! dvm360

Fun facts about physical flea removal

Through extensive research, other parasitologists and I have discovered that it is possible to flea comb every single flea off an animal. (But who has got graduate students enough to do that?) Vacuums are effective as well, both on carpet and the pet itself—some pets like to be vacuumed! There are even some cats that will groom 200 fleas off their body overnight! (I know because I applied them to the cat.) Obviously those are not candidates for my flea studies.

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1. Noah DL, Kramer CM, Verbsky MP, et al. Survey of veterinary professionals and other veterinary conference attendees for antibodies to *Bartonella henselae* and *B. quintana*. *J Am Vet Med Assoc* 1997;210:342-344.

Dr. Dwight Bowman teaches veterinary parasitology in the College of Veterinary Medicine at Cornell University. Bowman has written and edited four textbooks on the parasites of domestic animals.

MEDICINE | Toxicology

Dangerous beauty: Oleander toxicosis in dogs, horses and more

A current case of intentional poisoning with this deadly plant sparks the question: Can you spot the signs and save the patient?

By Lynn Hovda, RPH, DVM, MS, DACVIM

Recent print news about the deliberate and malicious poisoning of a dog and two horses with oleander baits was confirmed in the April 2016 California Food Animal Health and Food Safety (CFAHS) bulletin.[1] An 18-year-old draft horse and a dog died after ingesting baits placed along a fence line and in a horse paddock. A second horse developed clinical signs but recovered. The baits appeared to be cookies and contained "oats, shredded apples, carrots, and molasses" as well as "very small green leaf fragments throughout."[1] Analysis of the baits showed large amounts of oleandrin, one of the toxins found in the shrub *Nerium oleander*.[1]

The culprit

Nerium oleander (common oleander) and *Thevetia peruviana* (yellow oleander) are the two most common species of oleander in the dogbane family Apocynaceae.[2,3] *Nerium oleander* is native to the Mediterranean region and *T. peruviana* to tropical America regions. Both species are currently grown as ornamental evergreen shrubs in many tropical and subtropical areas, but *N. oleander* is the prevalent species in the United States. Although a few hardy varieties exist elsewhere in the U.S., *N. oleander* is found primarily in the Southern states and California.[4] Little *T. peruviana* is present in these areas. More frequently it is used as an ornamental shrub in many parts of Mexico and Central American countries. Let's concentrate on *N. oleander*.

Pretty poison

Nerium oleander is well-described as a shrub or small tree that may grow to heights of six to 12 feet.[2,3] The narrow leaves, often described as lancet-shaped, are dark green with rather distinct yellowish veins and grow in pairs or whorls of three.

Clusters of two- to three-inch-diameter, five-lobed, fringed, white-, pink-, salmon- or red-colored flowers are found at the branch ends. Fruits are present as a long, slender pod or capsule with downy seeds, and the sap is clear and sticky.

All parts of the *N. oleander* plant are toxic.[2,3,5] Cardiac glycosides, the known toxins, are found in the roots, stems, leaves, flowers, seeds and fruit as well as sap, plant nectar and even water in which oleander leaves have been floating.[2,6] Roots and stems contain the highest amount of toxin, with the amount in leaves and flowers following closely behind.[2,3] Interestingly, the total cardiac glycoside content is reported to be highest in plants with red flowers.[2,5] A number of different cardenolide glycosides have been identified in *N. oleander*, with some references suggesting there may be as many as 30 separate glycosides.[3,7] Oleandrin, however, with a mechanism of action similar to digoxin or digitoxin, remains the most widely recognized cardiac glycoside in most scientific papers.[2,3]

A little goes a long way

The toxic dose of *N. oleander* varies depending on the plant part and concentration of toxin. It is difficult to find a single toxic dose that includes all animal species. Most suggested toxic doses are related to leaves, although it

>>> Pretty but deadly pink oleander (*Nerium oleander*) flowers.

PHOTOS COURTESY OF DR. LYNN HOVDA

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>>> All parts of the *N. oleander* plant are toxic. Pictured here are the *N. Oleander* leaves.

Lynn Hovda is director of veterinary services for the Pet Poison Helpline and SafetyCall International in Bloomington, Minnesota.

Pet Poison Helpline, an animal poison control center based out of Minneapolis, is available 24 hours, seven days a week for pet owners and veterinary professionals that require assistance treating a potentially poisoned pet. The staff provides treatment advice for poisoning cases of all species, including dogs, cats, birds, small mammals, large animals and exotic species. Additional information can be found online at www.petpoisonhelpline.com.

is often hard to know whether they are green or dry leaves. An ingested dose of 0.005% of an animal's weight in dry leaves is generally considered lethal to horses and ruminants.[4,5] This amount is equal to about 10 to 20 leaves for a mature horse. Other ruminant studies have suggested a minimal lethal dose of 50 mg leaves/kg.[8] This information is complicated by a suggested lethal dose in sheep of 110 mg dry leaves/kg6 and much larger amounts in goats.[8] Recently, a suggested dose of 0.25 mg green leaves/kg was associated with poisoning in dogs.[7]

Heart-stopping effects, among others

Cardiac glycosides act at the cellular level to inhibit the sodium-potassium-ATPase pump present on cardiac myocytes.[2-4] The overall change is an increased concentration of intracellular sodium and corresponding increase in extracellular potassium. In addition, an influx of extracellular calcium along with release of bound intracellular calcium from the sarcoplasmic reticulum results in an increased force of cardiac contraction (positive inotropic effect).[2-4] The accompanying increase in sympathetic outflow causes a decrease or alteration in normal electrical conduction causing atrioventricular (AV) blocks, ventricular arrhythmias and asystole.

The cardiovascular, gastrointestinal (GI) and neurologic systems are all affected. Clinical signs in all animal species generally occur with 30 minutes to a few hours of ingestion. GI signs include hypersalivation, vomiting, abdominal pain and diarrhea. Horses may show decreased GI motility, colic and evidence of renal failure.[4,9] Recently, clinical signs consistent with hypoglycemia were reported in a dog ingesting oleander leaves.[9] Sinus bradycardia, AV block, atrial fibrillation or ventricular fibrillation are commonly reported cardiovascular dysrhythmias.[2,4,7,9] Neurologic signs include lethargy, drowsiness, weakness, tremors, ataxia and mydriasis.

Animal caretakers are advised to learn to identify N. oleander, *recognize the environmental presence and keep animals far from it.*

Fingering the guilty party

The diagnosis is based on a history of plant ingestion, description of plant and parts ingested and time of ingestion. The history of plant ingestion, presence of hyperkalemia, and electrocardiographic abnormalities support oleander toxicosis but are not a definitive diagnosis. Several toxicologic methods of diagnosis are currently available but take some time to obtain and may not be effective in guiding clinical care. Currently several different immunoassays can confirm the presence of *N. Oleander* cardiac glycosides in blood.[2,4,9] Of these, the specific digoxin immunoassay (Digoxin III—Abbott Laboratories) is a rapid and sensitive test for the determining presence of oleandrin and therefore *N. Oleander* in blood.[2] The definitive diagnosis for legal cases, however, is liquid chromatography mass spectrometry analysis of biological fluids.

Ameliorating the effects

If animals are physiologically capable of vomiting and are not already doing so, emesis should be induced if presented within the first hour or so after ingestion. This should be followed with a single dose of activated charcoal with a cathartic and two additional doses of activated charcoal administered every six to eight hours. In animals such as horses that are unable to vomit, mineral oil via a nasogastric tube followed one to two hours later with activated charcoal is recommended. Hospitalization is required for all animals with known ingestions, as is close electrocardiographic monitoring for 24 hours if clinical signs are present. Baseline blood glucose and electrolyte (including serum potassium) concentrations and serum chemistry profile results (including BUN and creatinine concentrations) are useful for guiding therapy.[4,7,9] Digoxin specific FAB frag-

ments (Digibind—GlaxoSmithKline) have successfully reversed the cardiac effects of *N. oleander* exposure, but their high cost may preclude use.[2,4,9]

Further therapy is supportive and based on clinical signs. Early but cautious use of intravenous fluids is needed to maintain blood pressure yet not overload the cardiovascular system. Atropine or glycopyrrolate are options for treating bradycardia, although in some severe situations a temporary pacemaker may be needed. Lidocaine or procainamide may be needed if the animal is persistently tachycardic and nonresponsive to intravenous fluids, has severe ventricular dysrhythmias or has evidence of poor perfusion (hypotension, pulse deficits, tachycardia, pale mucous membranes, prolonged capillary refill time). Antiemetics and gastric protectants are indicated in most cases. Fructose-diphosphate[1,6] has been used successfully in experimentally poisoned dogs to lessen the severity of cardiac effects, but clinical use has not been examined.[7] Calcium channel blockers and beta-blockers are contraindicated as they can have additive effects on AV conduction and may result in complete heart block.

Is there hope?

It is difficult to provide a prognosis, as each case is unique. Many animals, in particular large animals such as horses and cows, are often found dead in the pasture. Survival is increased in those animals provided with timely intervention and appropriate care. The occurrence of severe cardiac arrhythmias complicates recovery but is not insurmountable.

Animal caretakers, in particular those with small animals, are advised to learn to identify *N. oleander*, recognize the environmental presence and keep animals far from it. *Nerium oleander* grows wild in many parts of Texas, Arizona, Nevada and California, and off-leash pets should be watched closely for any signs of exposure. Those individuals with large animals should be cognizant of what is growing in their pasture and along the fence lines. Shrub clippings, a common source of equine poisonings, should not be disposed of in the pasture or left along the fence line but discarded in areas away from any susceptible animals. It is only through continued vigilance that animals can be kept safe from this beautiful yet deadly shrub. Sadly, even under the best of circumstances, poisonings continue to occur. **dvm360**

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The insulin stopped working? Inconceivable!

Want to learn about insulin resistance in diabetic cats and dogs? As you wish!

By Sarah J. Wooten, DVM, CVJ

Insulin resistance, according to endocrinologist extraordinaire David Bruyette, DVM, DACVIM, occurs when a normal amount of insulin produces a suboptimal biological response—in other words, it fails to control hyperglycemia. Sometimes the cause can be simple to determine and correct, as in cases of gingivitis or urinary tract infection; other times it can be near impossible (glucagonoma, anyone?).

The key is to figure out what concurrent conditions are affecting insulin and its receptors in your patient and to treat accordingly so that insulin can be effective. Here are Bruyette's top tips for ferreting out difficult feline and canine insulin resistance cases—with a little help from a classic movie.

Insulin resistance: You keep using that word …

There's no single insulin dose veterinarians can look to that clearly defines insulin resistance, Bruyette says. But for most uncomplicated cases of diabetes in dogs and cats, glycemia should be controlled using 1.0 U/kg or less of NPH, Lente insulin, or glargine (in cats) twice daily.

Suspect insulin resistance if hyperglycemia is present despite insulin dosages exceeding 1.5 U/kg, when insulin dosages greater than 1.5 U/kg are necessary to maintain blood glucose concentrations below 300 mg/dl, or when constant changes in insulin are required to control hyperglycemia. Serum fructosamine concentrations are often greater than 500 µmol/L in animals with insulin resistance and can exceed 700 µmol/L if resistance is severe. Don't forget about stress-induced hyperglycemia in cats,

Somogyi response or other problems with insulin therapy. Which leads us to the next tip.

You fell victim to one of the classic blunders!

Often what you're facing is actually a problem with the insulin or its administration, Bruyette says. So first, ensure the following aren't factors: inactive or diluted insulin, an improper syringe, improper administration technique, inadequate dose, Somogyi response, inadequate frequency of administration, impaired absorption (due to, for example, the presence of subcutaneous edema, scar tissue or local inflammation) and anti-insulin antibodies in dogs receiving beef source insulin.

We need to find the man in black

So you've ruled out any problems with insulin therapy and it seems like you do have a true case of insulin resistance. Now what? It's time to search for concurrent disorders.

If you're treating a dog, factors to consider include severe obesity, use of diabetogenic drugs (glucocorticoids), hyperadrenocorticism, diestrus (in intact females), chronic pancreatitis, renal insufficiency, oral and urinary tract infections, neoplasia, hyperlipidemia and, rarely, anti-insulin antibodies. In cats, common suspects include severe obesity, diabetogenic drugs, hyperthyroidism, chronic pancreatitis, renal insufficiency, and oral and urinary tract infections. Although rare, don't rule out hyperadrenocorticism and hypersomatotropism (acromegaly). Approximately 80 percent of cats with hyperadrenocorticism and nearly all cats with hypersomatotropism will develop diabetes mellitus.

Vizzini said to go back to the beginning …

Yeah, yeah—you've already seen these patients a *lot* and the client's patience is wearing thin. But it's imperative to start over from the beginning when your insulin therapy isn't working, Bruyette says. Get a thorough history; watch the client give insulin; ask where they store it and what they feed the pet. Do a complete physical exam: are there any signs of infection or hormonal disorders?

Design your diagnostic plan … as … you … wish …

If the history and physical exam are unremarkable, obtain a CBC, serum biochemical profile and urinalysis with bacterial culture to further screen for concurrent illness, Bruyette says. Additional tests will depend on results of your initial screening panel.

In dogs, these tests include cPLI (pancreatitis), ACTH stimulation (adrenal function), assessment of thyroid function with TT4 concentration, fT4 concentration if TT4 concentration is less than 1.5 ug/dl, fasting triglycerides and cholesterol concentrations, and serum progesterone concentration in intact females.

In cats, additional tests include assessment of thyroid function with TT4 concentration, and fT4 concentration if TT4 concentration is between 2.5 and 4.0 ug/dl, assessment of adrenal function with a dexamethasone suppression test (0.1 mg/kg dexamethasone given intravenously with pre-, four- and eight-hour post-administration cortisol concentrations obtained; this should be carried out only after insulin therapy has been instituted for six to eight weeks to mitigate the effects of poor glycemic control on the hypothalamic-pituitary-adrenal axis), fasting triglycerides and cholesterol concentrations, and serum insulin-like growth factor-1 concentrations in cats with suspected feline hypersomatotropism.

Still no answer? Inconceivable!

Bruyette continues that additional diagnostics to consider include imaging with abdominal ultrasonography (pancreatitis, neoplasia, adrenal masses or enlargement), thoracic radiography (cardiopulmonary disease, neoplasia), and MRI if you have previously documented pituitary-dependent hyperadrenocorticism or hypersomatotropism.

Once you have an idea of the enemy you are facing in addition to diabetes mellitus, you can set about designing your treatment plan appropriately so your patient can live happily ever after—or at least as comfortably as possible. dvm360

Dr. Sarah Wooten is an associate at Sheep Draw Veterinary Hospital in Greeley, Colorado, and frequent dvm360 contributor.

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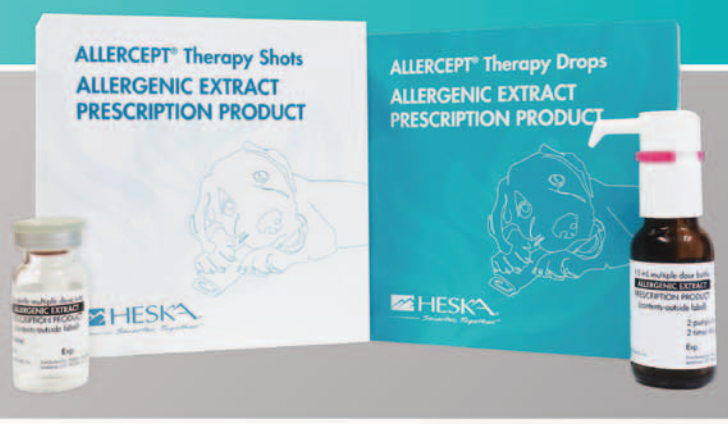

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>>> Save the day with these new treatments.

New dermatology drugs to the rescue

Save the day! Your odds against atopy, demodicosis and bacterial skin infections just got better. *By Paul Bloom, DVM, DACVD, DABVP*

Dermatologic problems in pets. Frustrating, to say the least. At the CVC in San Diego, Paul Bloom, DVM, DACVD, DABVP, discussed three important new drugs in veterinary dermatology that help resolve a few of your frustrations.

Oh, that oclacitinib!

Interest in oclacitinib (Apoquel—Zoetis) for dogs with atopic dermatitis skyrocketed when first introduced in January 2014. "This Janus kinase inhibitor has been quite effective on our pruritic dogs with minimal to no side effects," says Bloom. But an initial supply problem meant very few dogs were able to actually receive the drug. The supply issues are improving, and Zoetis has assured the market that the product will be freely available by the end of this year.

The isoxazolines knock our socks off!

This newer class of pesticides is popular for pet owners because the three products available—afoxolaner (NexGard—Merial), fluralaner (Bravecto—Merck) and now sarolaner (Simparica—Zoetis)—are chewable formulations that are effective for flea and tick control in dogs. "Since I have many of my dogs bathed frequently, I now have oral medication that will be effective for fleas and ticks," Bloom says. "And since fluralaner is effective for three months, it is ideal to use when performing an elimination diet trial on a dog."

Bloom is excited for additional reasons, dermatologically speaking. "In addition, we now recognize that afoxolaner and fluralaner have some effectiveness for the treatment of generalized demodicosis in dogs, sometimes with administration of just one dose," says Bloom. "Plus, some anecdotal reports suggest that afoxolaner and fluralaner may be effective in the treatment of scabies in dogs. Although I have not used sarolaner, there is a soon to be published study reporting its effectiveness against demodicosis after two doses. All three of these drugs will need further studies to confirm these observations concerning their effectiveness against these mites."

Holy cats, that's convenient!

Cefovecin sodium (Convenia—Zoetis) is a one-time injectable treatment for bacterial skin infections and abscesses. Bloom thinks that used in very limited situations, such as for cat owners who cannot medicate their cats or for dogs that can't tolerate *any* oral antibiotics, it can be of value. "Used appropriately, it's been a benefit to a limited population of cat owners who have an inability to administer oral medications to their cats," he says. **dvm360**

Another new option: Sublingual immunotherapy *By Douglas J. DeBoer, DVM, DACVD*

In my clinical experience, about 60 percent of dogs with atopic dermatitis that have not been treated with allergen-specific immunotherapy previously will have substantial improvement of their clinical signs after being treated with sublingual immunotherapy (SLIT).

One big advantage of sublingual immunotherapy is the ease of administration. Although many owners don't mind giving injections to their pets, they are happy to be presented with an alternative. Most dogs accept administration easily, even viewing it as a treat, which increases compliance. However, successful therapy requires faithful daily administration, and owners with busy schedules may find it more convenient to give a less frequent injection.

Data indicate that adverse reactions to allergy drops may occur in about 4 percent of dogs. Nearly all of these reactions are mild and temporary and almost never require cessation of treatment. Most occur soon after starting treatment but disappear within a few days or a week of continued treatment.

In people, anaphylactic reactions to sublingual immunotherapy are rare to nonexistent, and it can be used in people with a history of reaction to allergy injections. At the University of Wisconsin's School of Veterinary Medicine, we've found the same to be true in dogs—we've safely treated numerous patients with sublingual immunotherapy that have had anaphylactic reactions to allergy injections.

Read more from Dr. DeBoer on the efficacy of SLIT at **dvm360.com/SLIT**.

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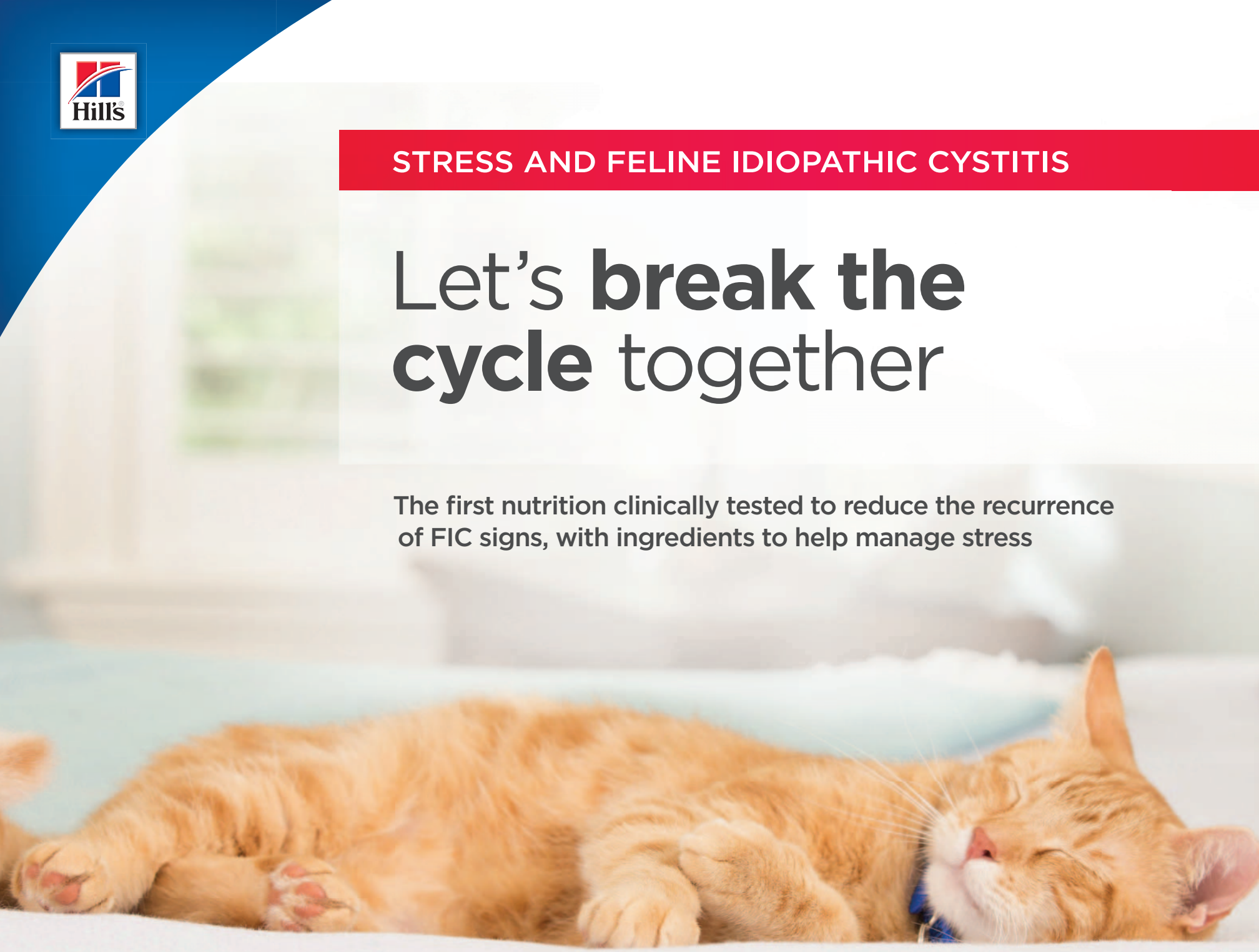

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Feline behavior Q&A: When peace *turns to war* in a multi-cat household

A client tells you her companionable cats have launched all-out warfare. How can you help? Here are one behaviorist's insights.

By Sarah Heath, BVSc, DECAWBM, CCAB, MRCVS

Q Why would two cats that have peacefully coexisted for years suddenly start having horrible fights?

While cats are social creatures, they are solitary survivors, and the relationships they form are far more fragile than the relationships of obligate social creatures such as dogs and humans. The first question a veterinarian should ask when faced with an owner reporting the onset of "horrible fights" between cats that had previously coexisted peacefully is whether that was indeed the case.

Feline social tension is often manifested through passive behaviors such as staring or even simply avoiding being in the same place at the same time. If no physical confrontation has arisen, the owners may have been oblivious to the level of social tension that was actually present in the home, and subsequent "fights" will appear to be sudden and unexpected.

If the cats have been truly compatible in the past—if they've been seen to rub and groom each other in affiliative social interactions—it's still possible for the relationship to break down. Natural feline social behavior leaves little capacity for reconciliation, and the fragility of feline social relationships can be distressing for owners. Relatively trivial disruptions (from a human point of view) can cause feline relationships that were stable for years to fall apart.

For example: If one cat is away from home due to veterinary hospitalization or because it was missing, when it returns it brings with it novel and potentially challenging scents that can disrupt the social relationship. As a result, the cats no longer regard each other as part of the same social group.

Q What are some safe measures cat owners can take to break up a cat fight in the house?

Before anyone intervenes in a physical confrontation between two cats, it's important to realize that fighting is a last resort in feline circles and the cats involved will be in a high state of emotional arousal. This means that the risk of injury to the cats is high but also that the risk to any humans who get involved is also high.

It's preferable to avoid direct intervention. If there is an object nearby that can be placed gently between the cats to separate them, that's the best approach. The object should not be used to physically touch either of the cats or used in a rapid or forceful fashion, which could induce fear.

Of course, fighting incidents often take people by surprise so they aren't prepared with something suitable to use. In these cases a sudden and unexpected noise can be successful, but remember—the sound should be unconnected with the person and should not be used to frighten the cats but rather to startle them.

While feline physical confrontation is intense in nature, it is often short-lived. Provided the cats are not somewhere where they could become trapped, it's likely that they will separate quickly. When they do, the cats will both likely retreat to hideouts or elevated locations to lick their wounds—literally.

It's best to leave the cats alone for at least half an hour to allow their emotional arousal level to fall. But obviously if wounds or severe bleeding is present, that may not be possible. In any case it's important for the owner to calmly examine both cats after a suitable delay since veterinary treatment may be necessary.

Q How would you address this situation long-term?

First, it's necessary to establish how many social groups of cats exist within the household. Owners can do this by observing the cats over a one-week period and recording any incidence of allorubbing or allogrooming interactions.

Once the number of social groups is known, owners need to be educated about the need for separate core territories and distribution of resources for all groups. Cats have a fundamental need to be in control and to have free and immediate access to life's essential resources at all times. The result of this is that food bowls, litter boxes, water sources and resting places need to be distributed throughout the house in a way that enables all of the cats to access the appropriate resource without running the gauntlet of another cat if they should need to eat, rest, drink or use the litter box at the same time.

Bottom line? Addressing feline environmental needs is the key to preventing feline social tension. Excellent information is available in the ISFM/AAFP Feline environmental needs guidelines. **dvm360**

Dr. Sarah Heath qualified from Bristol University and runs a behavioral medicine referral practice. Heath will be a speaker at the American Association of Feline Practitioners' (AAFP) 2016 annual conference in Washington, D.C., which will address feline behavior and respiratory diseases. The AAFP improves the health and welfare of cats by supporting high standards of practice, continuing education and scientific investigation. For more information about AAFP and their annual conference, visit catvets.com/education.

EQUINE | Ophthalmology

Surgery STAT: How to perform a standing enucleation in horses

Under the right circumstances, you can skip general anesthesia and remove a neoplastic, traumatized or severely infected eye right in the field. *By Maia Ramírez Aitken, DVM, DACVS (large animal), American College of Veterinary Surgeons*

Enucleation, or removal of the globe and all glandular tissue (conjunctiva, nictitating membrane and lacrimal gland), is typically performed under general anesthesia in horses. Enucleation is most commonly performed in cases of neoplasia, severe trauma or infection that cannot be managed medically. The two techniques, either subconjunctival or transpalpebral, can be used to remove the ocular tissues.

The standing enucleation described here follows the transpalpebral approach and is easily performed with the help of a single assistant and standard equipment, making it suitable for use in both the field and referral settings. This procedure can avoid the potential expense and risk of general anesthesia. However, for a successful surgical outcome, proper patient selection, sedation and application of local anesthesia are essential.

Instrumentation needed

- Sedation for a 30- to 45-minute procedure
- Clippers
- Surgical scrub
- 2% mepivacaine hydrochloride
- Assorted needles and syringes
- A 20-ga 3.5-in spinal needle
- A No. 10 scalpel blade on a handle
- Mayo scissors, plus Metzenbaum scissors if desired
- Thumb forceps
- Needle holders
- Sterile gauze sponges
- Suture
- Bandage material (sterile sponges, brown gauze, elastic adhesive bandage)

>>> Figure 1. Performing the subcutaneous palpebral ring block. Precise administration of local blocks is critical for the patient's comfort as well as surgical success.

Patient preparation

Move the horse to stocks or place it in a clean stall. Sedate the horse so that the duration of sedation is approximately 30 to 45 minutes. Clip the hair around the affected eye and prep the area with a dilute solution of povidone-iodine and sterile saline solution. Administer a preoperative dose of a nonsteroidal anti-inflammatory drug and broad-spectrum antimicrobial.

Local anesthesia

Anesthesia is performed using 2% mepivacaine hydrochloride. Precise administration of local blocks is critical for the patient's comfort as well as surgical success and should be performed in the following order:

- Auriculopalpebral block: 2 ml of anesthetic over the palpable nerve dorsal to the zygomatic arch
- Frontal block: 2 to 4 ml of anesthetic at the supraorbital foramen
- Subcutaneous palpebral ring block: 10 ml anesthetic in a subcutaneous line block circumferentially around the eyelids (Figure 1)
- Four-point retrobulbar block: 10 to 15 ml of anesthetic for each of the four blocks. Use a 20-ga, 3.5-in spinal needle (pre-bent into a curve at the 12, 3, 6, and 9 o'clock positions), advancing it along the bony orbit, outside the orbital sac to reach the caudal portion of the orbit (Figure 2, following page). Deposit 5 to 10 ml of anesthetic at the depth of the needle and the remaining 5 ml as the needle is withdrawn.

Note: The retrobulbar block should give the horse a mild exophthalmos and may take 15 minutes to take full effect.

Surgical procedure

After the local anesthetics have taken effect, suture the eyelids closed using

FEATURE E3
Are the equine redheads really the tempests of the horse world?

FEATURE E4
Use of photodynamic therapy to treat equine periocular squamous cell carcinoma

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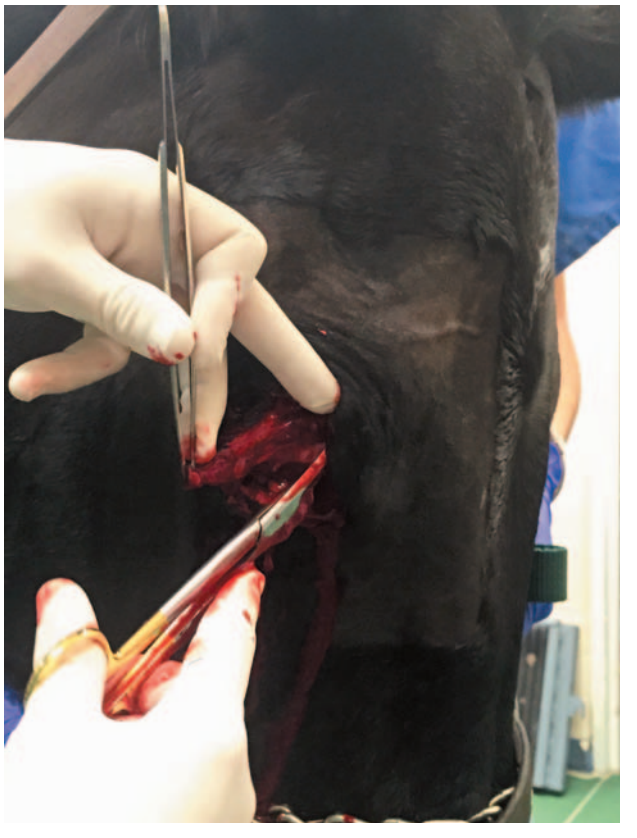
>>> Figure 2. A spinal needle pre-bent to perform the four-point retrobulbar block.



>>> Figure 3. Combination sharp and blunt dissection around the conjunctival sac using Mayo scissors. Note the use of thumb forceps on the palpebral margin to provide traction and facilitate dissection. Aitken prefers a pair of sharp Mayo scissors to cut the heavier canthal ligaments and extraocular muscles.

2-0 suture in a simple continuous pattern. If desired, a final surgical prep can be performed at this point.

Make an elliptical incision using a No. 10 scalpel blade through the skin about 1 cm from the lid margin. Perform subcutaneous dissection using Mayo scissors to bluntly and sharply dissect around the conjunctival sac (Figure 3). Transect the medial and lateral canthal ligaments with the scissors. Continue sharp dissection caudally, taking care to stay outside of the conjunctival sac to transect the extraocular muscles from the globe. All of this soft tissue dissection can also be performed using Metzenbaum scissors, but I prefer a pair of sharp Mayo scissors to cut the heavier canthal ligaments and extraocular muscles..Once the muscles are transected, the globe will be freely moveable and connected only by the optic nerve. Avoid traction on the optic nerve. Transect the nerve and remove the globe. Hemorrhage will occur and can be managed by applying temporary pressure with gauze sponges. Performing complete closure after removal of any sponges will provide final hemostasis.

Suture the thick periorbital fascia using 2-0 polyglactin 910 (or similar suture) in a simple continuous pattern across the bony orbit. Close the subcutaneous tissue in a similar fashion using 2-0 polyglactin 910 in a simple continuous pattern. Perform skin apposition with a monofilament suture (poliglecaprone 25 or nylon) using either a simple continuous or simple interrupted pattern. Place sterile gauze sponges over the surgical site and a head bandage over this to provide compression to the site. I prefer using a roll of brown gauze followed by a roll of elastic adhesive bandage placed loosely around the head (Figure 4).

After the procedure, the horse is generally treated with postoperative antimicrobials and non-steroidal anti-inflammatories. The duration of this treatment depends on the reason for enucleation. **dvm360**

>>> Figure 4. Final appearance with head bandage using brown gauze and elastic adhesive bandage material. Aitken prefers to use a roll of brown gauze followed by a roll of elastic adhesive bandage placed loosely around the head.

Dr. Maia R. Aitken is an ACVS board-certified large animal veterinary surgeon with the Emergency and Critical Care Service of the University of Pennsylvania's New Bolton Center in Kennett Square, Pennsylvania. Outside of the operating room, Aitken enjoys exploring the outdoors, both on horseback and on foot. Surgery STAT is a collaborative column between the American College of Veterinary Surgeons (ACVS) and dvm360 magazine. To locate a diplomate, visit ACVS's online directory, which includes practice setting, species emphasis and research interests, at acvs.org.

Are the equine redheads really the tempests of the horse world?

Researchers take a closer look at the chestnut horse's fiery image. *By Avi Blake, DVM*

Since the horse's domestication, people have placed great importance on coat color, leading to breeds defined almost exclusively by color—and to many strong perceptions about links between color and temperament. Within the equestrian community, this association has long been made with regard to chestnut-colored horses, which have the reputation of being "crazy," or just a bit more difficult to handle and train.

Although not well-established, a relationship between mutations in the genes that influence melanocytes, resulting in various coat colors and physiologic or behavioral traits, has been suggested in other species. So the image of the unruly chestnut horse may not be just an old wives' tale. To explore this further, researchers recently conducted a study designed to get a better feel for whether or not the presuming thought that chestnut-colored horses are more difficult to train and more likely to display undesirable behaviors holds any merit.

>>> Do chestnut-colored horses deserve their "crazy" reputation?

Studied behavior

The study used an internationally accessible online questionnaire modeled after the Canine Behavioral Assessment and Research Questionnaire (a validated dog behavior survey) to assess a wide range of equine behaviors. Horse owners who completed the questionnaire, consisting of 90 behavioral assessment questions, were not informed of the study's purpose, and the questions were specifically designed to be neutral in nature.

Questions focused on describing behaviors during handling and exercising as well as behaviors toward various stimuli in the horse's environment and when the horse is isolated from other horses. Of the over 900 horse owners who responded, 477 were included in the study. The participants were limited to those with chestnut or bay horses. Stallions and cryptorchid horses were also excluded, as they were underrepresented in the participating pool.

Results show an ill-deserved rep

Not surprisingly, a horse's age, breed and gender seemed to have the greatest influence on the behavioral assessment. There was no evidence to suggest that coat color played a role in the ease or difficulty of training or handling. In fact, a significant difference between chestnut- and bay-colored horses was only noted in four of the questions. These questions all related to a horse's willingness to approach a variety of stimuli. Chestnut horses were more likely to approach objects or animals regardless of whether they were familiar with them or not.

But where there's smoke, there's fire

While the findings of this preliminary study appear to debunk the myth of the obstinate chestnut, there may in fact be some connection after all. Based on the results of this pilot study, the researchers propose that the chestnut phenotype may impart a certain level of "boldness." The interest and desire to approach both the familiar and the novel is one area where these equine redheads dominated. Whether this represents a true difference or not has yet to be shown, but if it is real, it could contribute to the perception that chestnut horses are more "crazy" than horses of a different color.

Further research is needed to shed more light on the origin of the chestnut horse's reputation for bad behavior. But for now, it seems just possible that it stems from a naturally high level of self-confidence. **dvm360**

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Use of photodynamic therapy to treat **equine periocular squamous cell carcinoma**

Emerging modality shows promise in this difficult-to-treat ophthalmic condition.

By Ed Kane, PhD

Squamous cell carcinoma (SCC) is the most common neoplasm of the equine eye and ocular adnexa and the second-most-common tumor in horses overall.[1-5] Horses older than 10 years of age seem to be most predisposed, with Belgians, Clydesdales and other draft horses experiencing the highest prevalence, followed by Appaloosas and paints. Arabians, thoroughbreds and quarter horses have the lowest prevalence of SCC. Horses with less skin-coat pigment—white, grey and palomino hair coats—also have a greater prevalence of periocular SCC (PSCC). Lower prevalence occurs in horses with bay, brown or black hair coats.

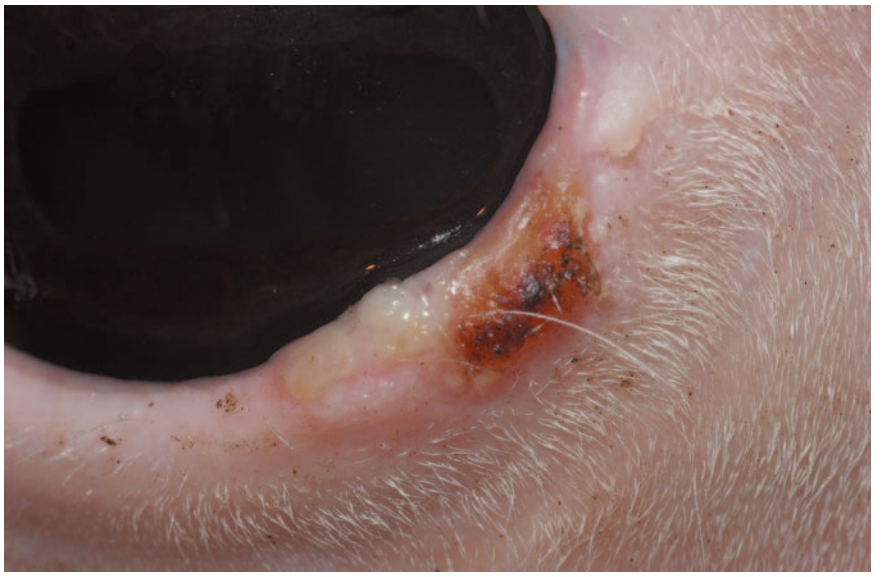
Clinical signs vary according to the location and type of SCC. Carcinoma of the conjunctiva or limbus may be asymptomatic, with the only visible sign of the tumor a small white to light pink mass.[1] Limbal and corneal SCCs have a "cauliflower" appearance. Most often the lesions are light pink and begin at the lateral limbus, extend into the cornea, and occasionally reach into the conjunctiva. Early lesions are flat and rough. Corneal lesions can sometimes mimic a scar, eosinophilic keratitis or granulation tissue. PSCC of the third eyelid can be proliferative or erosive, beginning at the eyelid margin. Eyelid masses tend to be more varied in appearance, are often ulcerative, and usually occur on lightly pigmented eyelids but also may occur on darker eyelids.

"Upper eyelid SCC is more problematic than lower eyelid SCC in many cases because the upper eyelid is more mobile and provides greater protection of the globe," says Caryn Plummer, DVM, DACVO, associate professor of comparative ophthalmology and service chief of ophthalmology at the University of Florida College of Veterinary Medicine. "Resections that result in limited mobility can significantly impact the function of the eyelid and result in exposure issues for the eye."

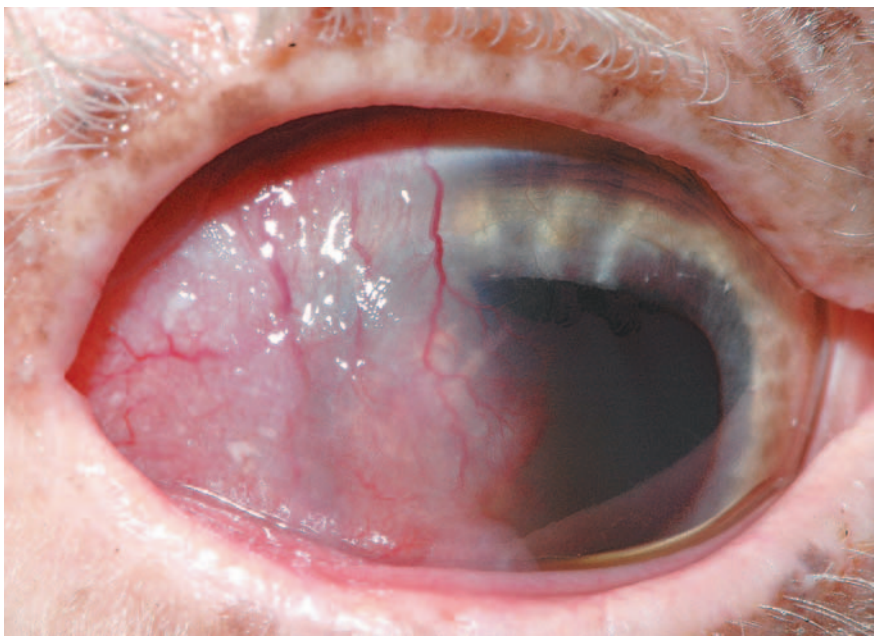
PSCC may be invasive and result in blindness. In 10 to 15 percent of horses it metastasizes to other organs, notably the local lymph nodes, nose, salivary glands and lungs. PSCC may require removal of the visual globe with significant obvious adverse effects on a horse's performance and function.

PSCC has been correlated with exposure to UV sun radiation, a low degree of periocular pigmentation and genetic factors that have not yet been determined. Light-colored horses exposed to high levels of sun—those at higher altitudes or other areas with more intense sunlight—are especially at risk for PSCC.

"PSCC is very frustrating because it is locally aggressive and destructive,"

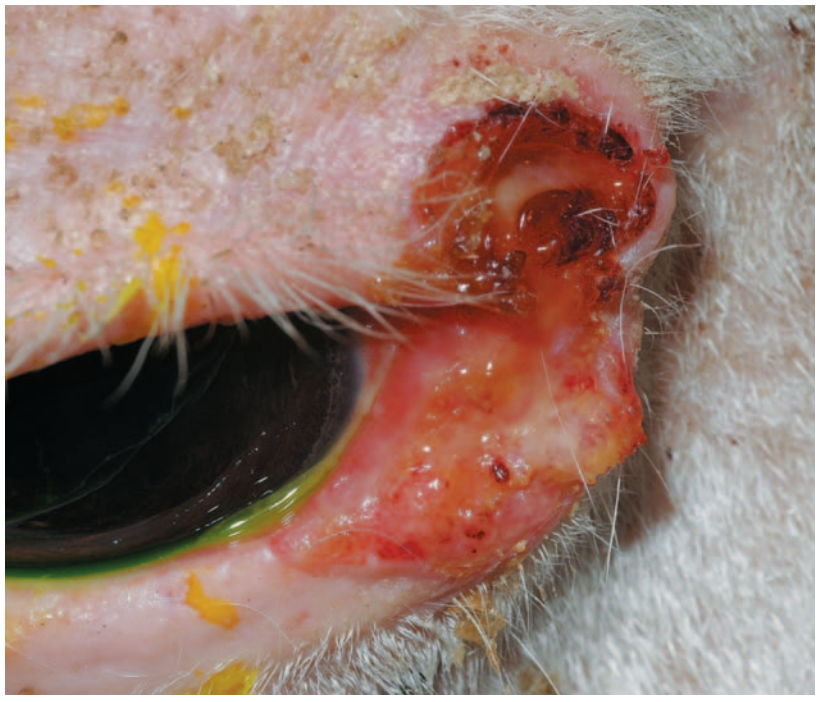


>>> Early squamous cell carcinoma of the lower eyelid.

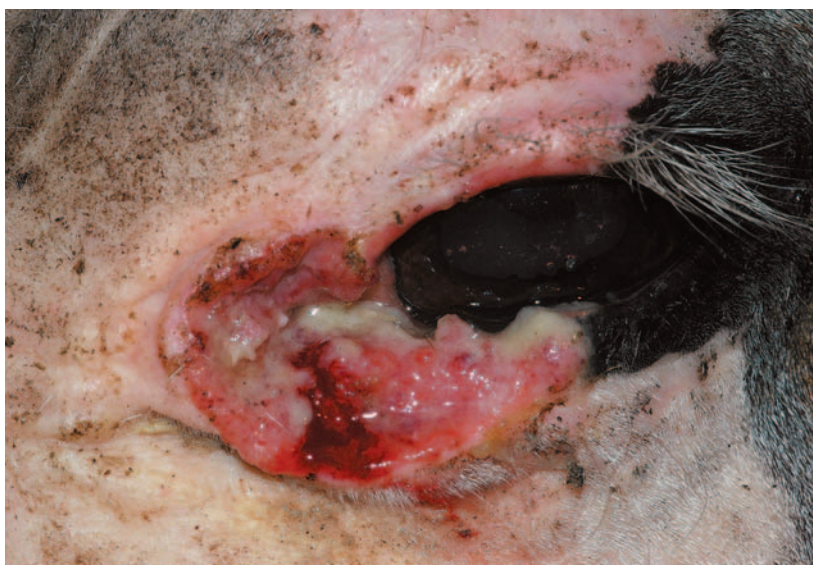


>>> Corneal squamous cell carcinoma.

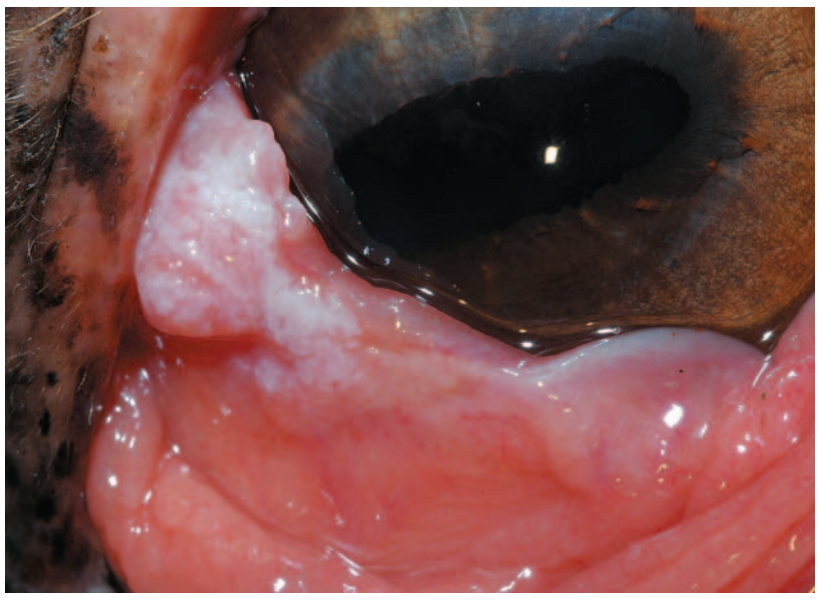
PHOTOS COURTESY OF DR. CARYN PLUMMER, UNIVERSITY OF FLORIDA



>>> Squamous cell carcinoma of the lateral canthus eyelid.



>>> Advanced squamous cell carcinoma of the medial canthus eyelid.



>>> Third eyelid squamous cell carcinoma.

Plummer says. "It does not metastasize very commonly, though it sometimes travels to the nasal passages, to the lungs and to the brain. PSSC can invade deep structures of the eye and orbit, leading to loss of

function and to significant impact on the animal's quality of life and lifespan."

Diane Hendrix, DVM, DACVO, professor of ophthalmology at the University of Tennessee College of Veterinary Medicine, says PSCC is usually diagnosed on the basis of biopsy results, although its appearance is quite characteristic. Some horses may have SCC elsewhere on the body at the time of ocular SCC diagnosis.

"When the lesions are ulcerated, mucopurulent or serous discharge is often present," Hendrix says. "It's not unusual to have more than one part of the eye affected with SCC. Local invasion can extend into the orbit, guttural pouch or nasal cavity, causing bony destruction. Third eyelid tumors and eyelid SCC tend to spread and metastasize more frequently than limbal SCC."

PSCC must be differentiated from other tumors such as papilloma and sarcoid, from parasitic disease and from inflammatory lesions such as abscesses, granulation tissue and foreign-body reactions.

Treatment

Diagnosing SCC early is important, when the tumor is relatively small or limited, so therapy can be effective. The main differential for SCC is granulation tissue. "If a veterinarian tries treatment with a topical steroid, no effect will be seen if the lesion is squamous cell carcinoma," Hendrix says.

Existing treatments for PSCC are somewhat limited in their effectiveness. Surgical resection is especially problematic, experts say. According to Giuliano and colleagues,[2-6] the periocular skin in horses adheres tightly to the underlying fascia and bone, which often precludes successful reconstructive eyelid surgery. If surgical reconstruction is unsuccessful, it's likely that the globe will be lost to the consequence of keratitis and tear film maintenance and distribution.

"Around the equine eye there's not a lot of extra skin that can be harvested for reconstruction, making surgical repair difficult," Plummer says. "So it's very important when doing an excision for SCC, especially with a large neoplastic lesion, that function of the remaining tissues be taken into consideration and that enough functional tissue is left to provide adequate protection for the globe. However, this can make achieving clean margins difficult or impossible."

In addition to surgical excision, several other therapies are used for more advanced SCC, including cryotherapy, topical and intratumoral chemotherapy and radiation therapy. Efficacy varies among patients.

Photodynamic therapy allows clinicians to affect tissue that they would not be able to otherwise. It does not require extensive resections to achieve clean margins, which allows for more tissue to be functional after treatment.

> Surgery. Surgery can be successful in some cases, especially when the lesion is on the third eyelid. "Removing all of the third eyelid will remove all the tumor," Hendrix says. "Or, if corneal or eyelid SCC is so extensive that blindness has occurred, enucleation may be curative. Additionally, carcinoma in situ in the conjunctiva may be surgically excised."

However, in other locations surgery can leave damaged or precancerous areas adjacent to the mass. "Leaving neoplastic cells behind that are not grossly obvious is one reason that surgical excision itself is not frequently warranted," Hendrix explains. "In dogs, one can use extensive blepharoplastic techniques using skin grafts to create a new eyelid, but horses do not have that redundant skin, so it is not an option."

> Cryotherapy. Cryotherapy is often available to general practitioners. For lesions that affect the eyelid, third eyelid or cornea, the mass is debulked and a double freeze-thaw cycle with liquid nitrogen (using a probe rather than spray) is performed. This treatment can be effective and create a cure.

> Radiation. Two forms of radiation therapy can be effective: strontium-90 and iridium beads. With strontium-90 therapy, the mass is debulked and a probe is placed directly onto the affected area. If the remaining tumor is very superficial, strontium-90 therapy can be highly effective. This modality is primarily used for corneal, corneolimbal and conjunctival SCC. It is a referral procedure and not typically available to the general practitioner.

Iridium beads can also be placed into eyelid tumors, which is very effective for treating eyelid SSC. However, their use is offered only at a few university facilities, Hendrix says. The horse has to be placed in isolation and personnel are exposed to the radiation, so the procedure is falling out of favor.

> Chemotherapy. Intralesional chemotherapy with carboplatin and cisplatin can be effective on eyelid SCC, Hendrix says. Five-fluorouracil can be injected every two to three weeks but will only palliate the tumor and not cure it. Piroxicam may be useful against corneal SCC based on increased COX-1 and COX-2 levels, but no research has been published evaluating its use.

Even with these available treatments, if PSCC is not treated early while the tumors are small, they become larger and much more difficult to treat, with a poorer prognosis.

New treatment: Photodynamic therapy

Photodynamic therapy is currently under study as a potential replacement for these therapies or as an adjunct to provide better resolution of PSCC in horses. Researchers hope that photodynamic therapy will enhance residual cell destruction and prevent tumor recurrence.[4]

"PSCC is one of those diseases where there are several therapeutic options available, but there is not one 'gold standard' effective therapy," Plummer says. "Photodynamic therapy is a big boost to our treatment options."

According to Giuliano and colleagues,[4-6] photodynamic therapy entails the use of light and light-sensitive compounds in an oxygen-rich environment to cause localized tissue necrosis. The technique involves injection of a photosensitizing agent, and when the

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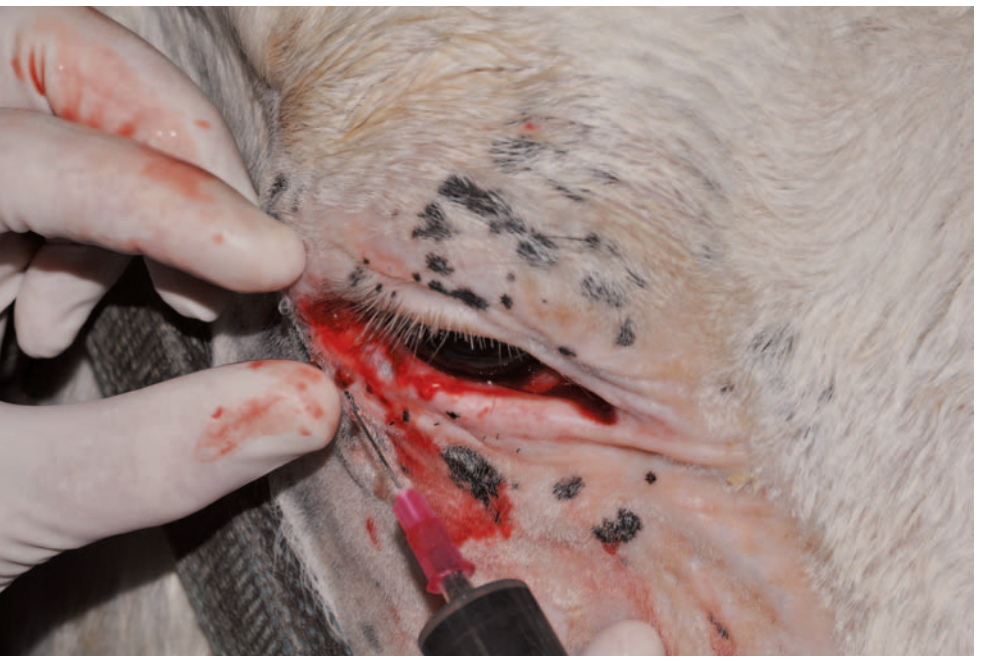
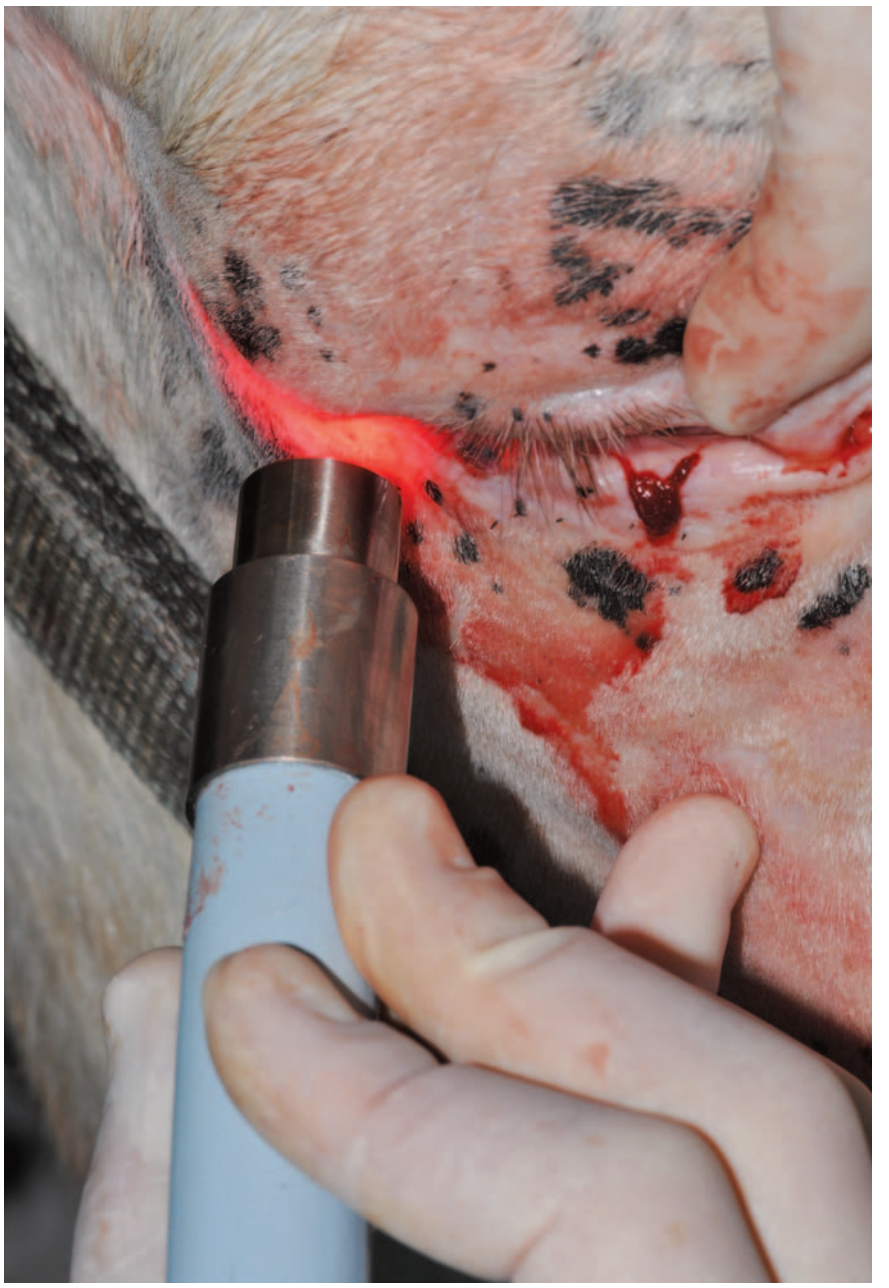


>>> Injecting the photosensitizing agent for photodynamic therapy (PDT).



>>> Applying the light source for photodynamic therapy (PDT).

agent is exposed to light of a certain wavelength, energy is transferred in the form of electrons to SCC cell components to induce their destruction.

"Prior to using photodynamic therapy, one excises as much of the tumor as one can," Plummer explains. "After surgery, you inject a 'dye' or photosensitizing agent that is taken up by the tumor cells. Once the agent is injected into the tumor bed, it is activated by a light source, a specific wavelength that activates that particular photodynamic therapy agent. In that it only 'attacks' the rapidly reproducing tumor cells, there is not a lot of collateral damage to adjacent normal cells, because they won't uptake this particular product—that's the advantage of the technique."

Photodynamic therapy allows clinicians to affect tissue that they would not be able to otherwise, Plummer continues. It does not require extensive resections to achieve clean margins, which allows for more tissue to be functional after treatment.

Photodynamic therapy is still in its early stages with companion animals, but it's being used in people with squamous cell carcinoma tumors with good success, Plummer says. "In small animals and humans the agent is given intravenously, with the light shined solely on the tumor bed," she notes. "With horses, since they are a much larger animal, the use of IV administration would be cost-prohibitive. That's why local injection into the wound bed is being studied."

The University of Florida has only begun offering photodynamic therapy recently, "but our cases have been going beautifully," Plummer continues. "Dr. Giuliano at the University of Missouri has been using photodynamic therapy for a couple of years and had some really nice successes. She hasn't had recurrence of periocular squamous cell carcinoma, as is commonly seen with other modalities. We're not pinning all our hopes on it, but we're cautiously optimistic."

At this point in time, photodynamic therapy is a referral procedure, currently applicable for eyelid SCC only, but its early success has been encouraging. It may soon become a widespread and valuable new tool available for equine practitioners to effectively treat periocular squamous cell carcinoma. **dvm360**

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Ed Kane, PhD, is a researcher and consultant in animal nutrition. He is an author and editor on nutrition, physiology and veterinary medicine with a background in horses, pets and livestock. Kane is based in Seattle.

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[1] Independant market research conducted by Fairfax Agricultural Research and Marketing, 2015
[2] Muir, W., et al., Cardiorespiratory and anesthetic effects of clinical and supraclinical doses of alfaxalone in dogs.Vet Anaesth Analg, 2008. 35(6): p. 451-462
[3] Heit, M.C., et al. Safety and efficacy of Alfaxan® CD RTU Administered once to cats subcutaneously at 10 mg/kg.in ACVIM. 2004
[4] Alfaxan USA FDA Approved Leaflet

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Veterinary debt-to-income ratios: What would happen in a recession?

Numerous factors could jeopardize efforts to restore sustainability.

By Bridgette Bain, PhD, and Michael Dicks, PhD

In the April Eye on Economics column, "Headed in the right DIR-ection," we looked at the current state of new veterinarians' debt-to-income ratio (DIR) as well as the direction it may be heading if action is not soon taken. We provided four main goals aimed at reducing the debt-to-income ratio—goals that shared responsibility among students, veterinary colleges, policymakers (via public policy changes) and practice owners. These four goals sought to eliminate the excessive debt of students, eliminate the interest on student loans while students are in school, reduce tuition costs by 10 percent and increase starting salaries by 10 percent to reduce the DIR from the current 2.1:1 to 1.38:1.

The overarching goal of reducing the DIR from 2:1 to 1.4:1 is ambitious under the best of conditions, but what happens if conditions are less than ideal? Without considering the potential impact of adverse events that negatively affect strategies to reduce the DIR, those involved in the effort may not be prepared for missing the 1.4:1 target after a sustained effort. Because the economy is likely nearing the end of an expansionary period, the relevant question to ask is: What will be the consequences of a new recession? Likewise, suppose schools continue to increase seats at the historical level of 2 percent per year, or new veterinary colleges are opened. What, then, are the consequences?

What is a recession?

In general, a recession is marked by a contraction in a country's gross domestic product (GDP) for two consecutive quarters. During a recession the economy takes a downturn, trade and production are reduced, and consumers curtail expenditures. Often this is quickly followed by joblessness and lowered interest rates as policymakers take action to stimulate the economy. So how does this affect the DIR?

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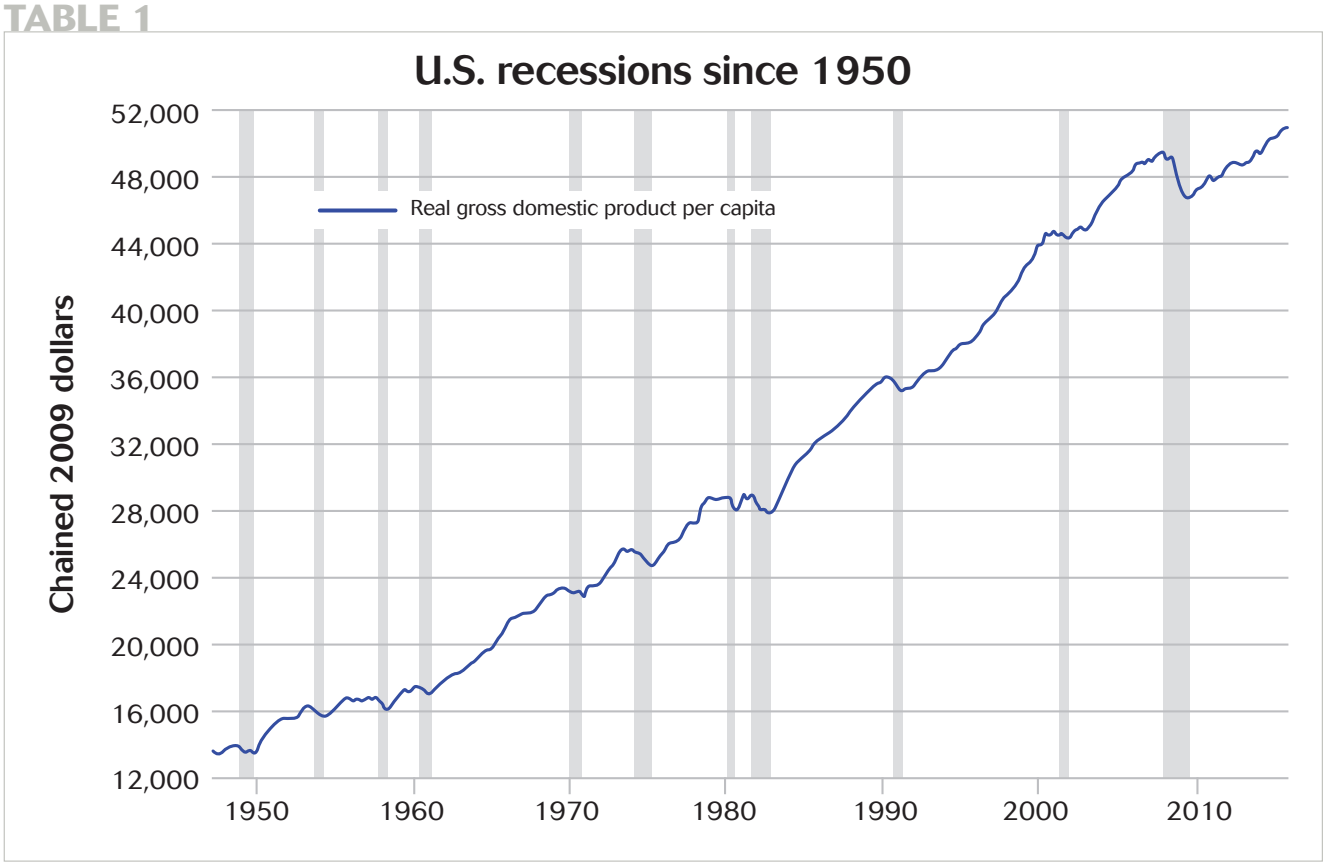
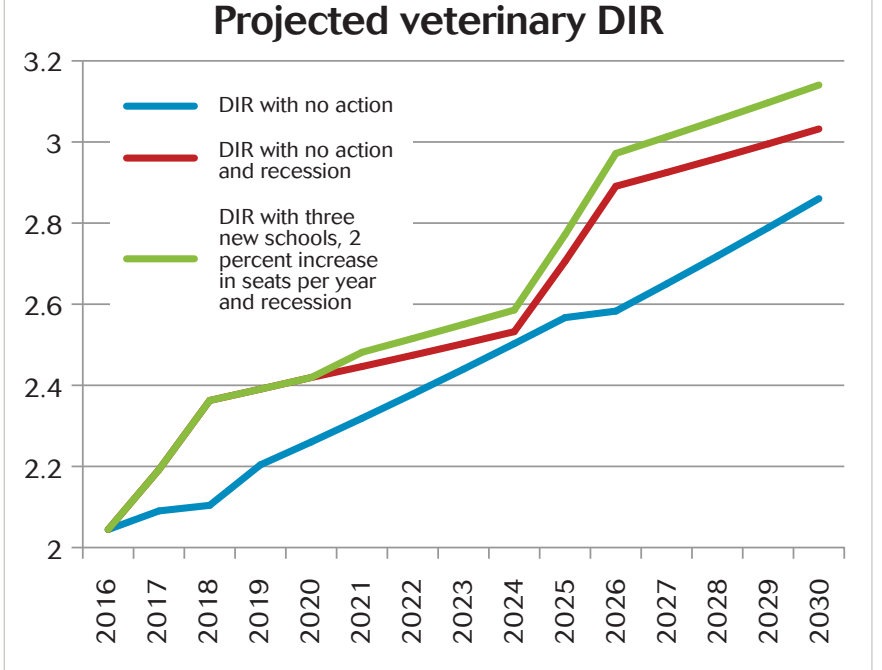
TABLE 1



Source: US. Bureau of Economic Analysis, research.stlouisfed.org

TABLE 2



Source: AVMA Economics Division

economy has experienced contractions approximately every 5.5 years. Table 1 shows real GDP per capita in the United States with the gray bars representing recessions.

As we have previously noted, since the last recession we have had more than 80 months of economic expansion and thus the probability of another recession increases with each passing month. Since the last recession occurred in 2009, it is not unlikely that the U.S. economy could experience another contraction on any given day.

Unfortunately, the veterinary services industry is not devoid of the impact and implications of a recession.

A recession would affect the DIR of new veterinarians in two ways. First, the recession will adversely affect state budgets and the funds states allocate to state universities. These funding shortfalls will be added to tuition and the colleges will be forced to cut their teaching budget, raise tuition or increase enrollment. Because colleges have been confronted with this declining funding scenario for more than two decades, the evidence is that enrollment and tuition will increase. The result will be an increase in the rate of growth in student debt.

Second, as the economy contracts, the reduction in consumer expenditures will cause the demand for veterinary services to decline. The reduced demand for veterinary services will lead to a reduction in the demand for new veterinarians and this, in turn, will lead to a decline in new veterinarians' starting salaries.

The increase in debt and decline in starting salaries associated with an economic downturn will cause a spike in the DIR. And once the state governments have cut funding, history suggests that when the economy returns to trend growth, schools will not return to previous funding levels. Thus the number of seats and the level of tuition will return to trend growth, but from a higher point. This effect is known as "ratcheting up" and causes the DIR, which is already trending upward, to make a noticeable jump during each recessionary period.

The ratcheting up of the DIR that will occur in a recession will reduce the effectiveness of the four goals in achieving the desired reduction in the DIR.

The projected impact

In Table 2, we estimate the DIR using three potential scenarios. In the first scenario we estimate the projected DIR if no action is taken to reduce the current rate of growth. In the second scenario we estimate the path of the DIR if no action is taken and a recession occurs in mid-2017. Finally, the third scenario considers the impact on the DIR of a near-term recession combined with the effect of adding three new veterinary colleges along with a return to the trend growth rate in the number of seats of 2 percent per annum.

If no immediate action is taken to stem the growth and reduce the DIR, these adverse economic events will further exacerbate the currently high 2:1 DIR to a level of over 3.1:1 by 2030. Keep in mind that the DIR is the mean debt-to-income ratio of a constant cohort and thus the range of individual DIRs could be as high as 6:1 for a large portion of the new veterinarians by 2030. Those individuals will have a negative return on their veterinary education and the supply chain for veterinary services may well be compromised.

The current level of growth in the DIR for veterinary graduates (and all other professionals) is unsustainable. As the DIR rises, the impact on the supply of applicants and veterinarians will become clearer. The profession can wait for this clearer indication or take immediate action. Our take? Short-term strategies must be employed immediately while the profession seeks longer-term solutions. Thankfully, the conversation has started and the profession has begun to identify strategies, recession or not, to stabilize its financial health. **dvm360**

Dr. Bridgette Bain is an analyst in the AVMA's Veterinary Economics Division. Dr. Michael Dicks is director of the division.

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Vetting the viability of **new equipment**

Can Dr. Greenskin convince her scrimping superior that investing in an ultrasound machine is prudent for both their patients and their pocketbooks?

Late one evening, Dr. Greenskin had just finished up an emergency abdominal exploratory procedure for a hemoabdomen and coordinated her patient's transfer to the emergency facility for overnight care when she gingerly stepped into Dr. Codger's office. As usual, Dr. Codger was poring over a lofty stack of bills and receipts that blocked most of his face from her view, but she could picture his disgruntled frown. With more than a little hesitation, Dr. Greenskin finally managed to utter the words she had been holding in for so long.

"I think our practice should invest in an ultrasound machine."

Dr. Greenskin immediately knew she had really done it this time. At the word "invest," she sensed the old man tightening every muscle fiber in his body. At the mention of "ultrasound," Dr. Codger's complexion changed to an odd melange of red and blue hues.

"You seriously think we should shell out 40 grand just so you can feel a little better about collecting urine?" he bellowed.

No vexation without explanation

Dr. Greenskin stared at the ceiling and gave the old vet a few minutes to collect himself. She had spent enough time with Dr. Codger to know that it wouldn't take him long to suppress his

ILLUSTRATION BY RYAN OSTRANDER

initial fight-or-flight response and have a listen. When the dust settled, Dr. Greenskin was able to deliver her points.

"Do you remember that pyometra we missed last week? It wasn't all that obvious on our hand-dipped radiograph, but an ultrasound could have led to a fast and easy diagnosis," she said. "I also wish I could have told my client tonight that there were multiple liver nodules in addition to the bleeding splenic mass before performing the abdominal explore. I think they might have made a different decision."

Dr. Codger pondered his young associate's points. Though still a little wet behind the ears, the new grad had progressed quickly and was becoming a more confident and competent practitioner every day. Dr. Codger knew she had a passion for providing her patients with the best possible care. But still: This was a lot of money they were talking about.

"I understand an ultrasound would be a fun toy to have in the clinic," Dr. Codger finally stated. "I just don't think it makes financial sense for our practice. I'm sure you got to see all of the latest equipment at your vet school teaching college. But those costly contraptions aren't for everyone. We have a business to run here!"

A plan even a penny-pincher could love

Dr. Greenskin had seen this coming, and now she had her superior right where she wanted him. She plucked a piece of paper from the notebook she'd been clutching close to her chest and placed it on the old man's crowded desk. As his weary eyes scanned the page, Dr. Codger was flabbergasted by what he saw.

Dr. Greenskin had typed up a concise but thorough cost analysis for acquiring and implementing ultrasonography in the practice. She outlined the cost of leasing vs. purchasing three different models as well as the cost of training either one or both doctors. Not neglecting Dr. Codger's main area of interest, the paper also included a monthly income projection. Dr. Greenskin had been keeping a log for the past two months, noting the number of cases in which she would have recommended ultrasound. She also provided her own estimate of the rate of compliance based on the clients' financial histories.

Dr. Greenskin had typed up a concise but thorough cost analysis for acquiring and implementing ultrasonography in the practice. She outlined the cost of leasing vs. purchasing three different models as well as the cost of training either one or both doctors.

Even more impressive, Dr. Greenskin listed the cost of an ultrasound at competing hospitals that offered the service, as well as the nearest referral hospitals (Dr. Greenskin's sister had done some undercover calling to get the information she needed). Finally, Dr. Greenskin proposed a competitive price that was well below the cost of a radiologist's ultrasound, as she felt that would be most fair to clients. The price was also within the competitive range for their area, and only two other hospitals within 60 miles even offered ultrasounds.

Dr. Codger lifted his jaw off the rickety, receipt-laden desk just in time to watch his associate stride out of the silent office. Before disappearing from view, she called over her shoulder: "And yes, I'll use it to poke bladders, too." **dvm360**

Dr. Jeremy Campfield works in emergency and critical care private practice in Southern California. This series originally appeared in Pulse*, the publication of the Southern California Veterinary Medical Association.*

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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

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

IMPORTANT SAFETY INFORMATION: 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.

References: 1. Bravecto [prescribing information]. Summit, NJ: Merck Animal Health; 2014. **2.** Rohdich N, Roepke RKA, Zschiesche E. A randomized, blinded, controlled, and multi-centered field study comparing the efficacy and safety of Bravecto™ (fluralaner) against Frontline™ (fipronil) in flea- and tick-infested dogs. *Parasit Vectors*. 2014;7:83. **3.** Freedom of Information Summary, NADA 141-426. Approved May 15, 2014.

Please see Brief Summary on page 42.

MERCK Animal Health

Ready to sign? Remove your **compensation** blinders

When it comes to production-salary agreements, veterinary associates need a 360-degree view before they sign on the dotted line.

Imagine you've been working at the same practice for five years. Since the beginning of your second year, you've been paid using a production-salary formula outlined in your contract. The first year under this production scheme, you received a bonus check of a few hundred dollars for exceeding your production goal. The following three years, you received only your base salary, and your boss said you'd failed to meet your contractual production goals. "You're accumulating a deficit," he explained. "In a way, you *owe* the practice money."

Doubting the veracity of this statement, you pull out your contract and pore over the compensation clause, but it's so convoluted you reach out to a legal consultant to translate how your boss calculates bonuses and deficits. When your consultant asks for copies of the personal production statistics you've received from the practice over the years, you say you've never received such a thing. When the consultant asks what your employer uses to calculate your pay, you again have nothing to offer. The production-salary formula is so complicated you've always just left the math to management.

At your consultant's request, you politely ask your employer for copies of the production figures used to calculate your pay for the past four years. He responds with incredulity, accuses you of betraying him and asks you to resign immediately.

Oh, that never happens!

Oh, but it does! And when it does, the associate departs the practice bearing the full weight of the employment contract's noncompetition terms. The unemployed associate now must try to find a job far from home without the aid of a positive reference—all because the former employer was almost certainly in breach of contract and very likely in violation of labor and tax laws.

What can you learn from these hap-

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less associates? Plenty. Use these steps to help you avoid a similar situation.

1 Never enter into a compensation formula you don't fully understand.

Most practices use fairly straightforward production-salary formulas, regardless of whether they include accumulating deficits—this is when failure to meet a production goal rolls over into subsequent contract years. Look for a clearly stated and easy to comprehend production formula—for example, your employer will use a set 22 percent of generated revenue to determine your annual pay if the amount is more than your set base salary. Ask that the contract include two example calculations—one in which you exceed the production target and one in which you do not, including the impact of that event on subsequent years' calculations. If a practice won't agree to simplify the compensation formula language or provide these examples, it may be wise to pass and move on.

2 Look closely at the description of the goods and services included in calculating your production.

Does your production (or gross revenue or generated revenue) include goods and services you recommend, such as prescription medications, flea and heartworm products and routine blood testing? While these items don't seem to amount to much individually, they can collectively add up to a whole lot of lost "associate production" if they're left out of the production calculation. If the you and the practice owner both agree to exclude important "production-credit" salary computations, take a close look at the percentage of generated revenue outlined in the employment contract.

3 Ask for production reports in your production-salary agreement.

Our office routinely hears from associates who must wait interminably for their "numbers," never receive them at all or get figures with no supporting information about which goods and services the calculations include.

To avoid these situations, ask your potential employer to include a provision in your contract that requires the hospital to provide detailed production information monthly or quarterly. Ideally, this information would include your production figures, and, upon request, the invoices of clients whose animals you treated so you can confirm that the total includes all the services and inventory items for which you earned production credit. Remember, a receptionist's crediting mistake or software glitches can be just as costly as questionable accounting behavior.

While some employers may balk, stand firm on a *written contractual commitment* to provide this personal production information. This doesn't just protect you from honest mistakes and intentionally inappropriate reductions in gross revenue—it enhances the effectiveness of the production-based pay concept. After all, how can you feel appropriately incentivized if you don't get to see your "numbers," or your numbers are only marginally accurate?

4 Don't back down.

If your pay is based on information available only to your employer, the clinic may be in breach of contract. While hourly employees have a state labor board that looks into time card improprieties and other payroll anomalies, contract employees are generally on their own to make sure they're receiving the money they're owed.

Legal remedies for illegally underpaid contract employees exist, but those workers often must gather information on their own. Make it easy on yourself with a contract that requires compensation transparency. Then monitor your veterinary practice's compliance with your agreed upon compensation formula.

5 Make assumptions about bosses who try to guilt you.

If your employer loses it when you ask for your production figures, there's likely a reason—either somebody's hiding something, or the accounting system is hopelessly screwed up.

If the employer promises to get your figures but fails to do so after multiple requests, there's a good chance you'll never see them. And if managers say they are "incensed" or "feel betrayed" by your request, then dollars to donuts there's a major problem, and you owe it to yourself to investigate it further. Or, at the very least, you owe it to yourself to demand a new agreement with a stipulated salary. dvm360

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

Chipping in to promote **microchipping**

Not sure how to mark National Pet Microchipping Month? Follow this practice's lead by reaching out to the community. *By Wesley Taylor*

I've seen firsthand how prevalent lost pets are throughout Alabama, so offering microchips is a cause close to my heart. Our shelter and rescue partners are constantly flooded with lost pets, and I felt it was important for our private practice, Mercy Animal Hospital, to make pet identification a community priority. I knew I'd need to overcome two challenges.

Challenge 1: Get staff buy-in for community outreach

Who wants to volunteer on weekends after you've worked all week? Still, once we organized and saw the difference we could make, our team's enthusiasm was contagious.

Challenge 2: Make it affordable

I pitched the idea of a microchip clinic to the owner of the microchip company we chose as our vendor. He was thrilled to hear that we wanted to feature their microchips at our festival. He threw in the first 100 microchips for free and provided t-shirts for our staff to wear and banners to display at the event.

It was simply amazing to watch the faces of our team members as they educated pet owners who would have never once thought about the importance of a microchip. And once their pet was chipped, you could see the sense of pride pet owners felt that they had done something important for their animal.

When all was said and done, we'd chipped more than 75 animals, and it cost us only $125. We could have done more if we had more time! And all 75 pet owners returned to Mercy within the next six months for pet care.

I've heard from many of these clients that their first interaction with us was to have their pet chipped at the festival. Many say they would have never even thought about pet microchipping if they hadn't been introduced to the concept during the event. We have since expanded our pet ID program through further partnerships with a collar company and an engraving system. We offer an ID package for $49 that includes a microchip, collar of choice and an engraved and personalized pet ID tag.

What we learned

Return on investment can't simply be measured in dollars and cents. ROI for businesses that provide service must always include community outreach and client development and retention.

At our first staff meeting after the festival, it was not me leading the conversation about the importance of community involvement—it was the team. The more we work outside our walls, the more successful we will be inside our walls.

The results are clear: Over the last three years we have increased revenue by more than 25 percent. We continue to welcome more than 130 new clients each month. Our clients are happier and excited to see us out in the community. And our team has a sense of pride that they aren't just employees who clock in and clock out everyday. They are part of something much larger—a business that maintains focus on the public—and they are proud to present Mercy Animal Hospital. **dvm360**

>>> The author, Wesley Taylor (front), and the team at Mercy Animal Hospital.

Wesley Taylor is the practice manager at Mercy Animal Hospital in Gardendale, Alabama, and the 2015 Veterinary Economics *Practice Manager of the Year winner, sponsored by Nationwide. Read more about Practice Manager of the Year nominees and winners at dvm360.com/PMOY.*

Find it all here dvm360.com

More on microchips

Visit dvm360.com to find these related articles:

> Client handout: 10 things to do if your pet is lost
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Grandma's big secret

You want to help an older client and an aging pet. You don't want to be the subject of a police investigation.

As a rule, golden retrievers don't age gracefully, and Frosty, age 13, was no exception. He was dealing with progressive chronic renal failure, painful arthritis and—for lack of a better term—older-age lumps and bumps. Also true to his breed, Frosty was one of the nicest dogs in the world and truly loved by his owner, Mrs. Rand.

Oscar Rey, DVM, had cared for Frosty since he was a pup. Mrs. Rand was dedicated to her dog and always did what she could reasonably afford to assist this gentle retriever. When he'd been young she couldn't afford a hip replacement for her dysplastic pet, but she used some nonsurgical options: at-home hip massages as well as glucosamine and omega-3 fatty acid supplements. She and Dr. Rey worked as a team to keep Frosty as comfortable as possible.

Now Frosty was starting to lose ground. His BUN and creatinine concentrations were starting to rise, his appetite and weight were decreasing and his arthritis was getting worse. Mrs. Rand knew his days were dwindling, but she wanted to do everything possible to make him comfortable at home.

She asked Dr. Rey if he could make weekly house calls to evaluate and assist Frosty with his pain. He said he couldn't, but he did offer to create a protocol for Mrs. Rand that would involve some injections. Dr. Rey said he could explain it all in a short instruction session at his clinic.

Dr. Rey proceeded to make up Frosty's at-home care pack-

dvm360 Find it all here

What readers are saying online

"Dr. Rosenberg's response suggests scripting home care supplies through a human pharmacy. I'm curious as to what sort of due diligence is expected of them?"—Caroline C.

"LVTs would be a great resource for the homebound. I'd like to see the industry move closer to mobile vet techs, as it works in New Zealand."—Carolyn L.

Visit facebook.com/dvm360 to read more comments or share your own thoughts at dvm360.com/drugdilemma.

>>> How much can you trust clients? And how responsible are you for what happens to medications and medical supplies after they've left your hospital?

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age: two bags of fluids with drip sets, needles for subcutaneous fluid administration, prefilled syringes of Adequan and tramadol for pain. Dr. Rey told Mrs. Rand to call him with any questions and made it clear that these steps weren't a cure—just a way to make Frosty's final days more comfortable.

The doting Mrs. Rand went home to assist her beloved pet. Eight days later, a police officer stopped at the clinic to see Dr. Rey.

It seems that a young man had been stopped in a car carrying several other teens, a bottle of tramadol tabs and some needles, all of which the police traced back to Dr. Rey. Some quick research showed that the drugs were part of the home care package Dr. Rey had dispensed to Mrs. Rand. The police officer said the young man was Mrs. Rand's grandson.

It was clear to the authorities what had happened, but they were still required to communicate the incident to the state controlled-substance regulatory agency. The agency didn't sanction Dr. Rey but did complete an audit of the practice's controlled-substance logs and storage procedures.

Dr. Rey called Mrs. Rand and told her what had occurred. She didn't know anything about the incident, she told him, and suggested he might be mistaken. She also said she thought Frosty's home treatment was helping.

Dr. Rey thought the grandson was pulling the wool over Mrs. Rand's eyes, and he was upset that his name and reputation had been put at risk by a negligent client. In the future, he decided, he would think long and hard before sending home medications that could put him in harm's way.

Where, in fact, does the fault lie in this scenario? Should the doctor have assessed not only the patient but also Mrs. Rand's home life? Does a veterinarian share in a pet owner's irresponsibility?

Rosenberg's response

Pet owners, in consultation with their veterinarians, choose to treat their pets at home for lots of reasons, but needles and controlled substances cannot be dispensed in a vacuum. Clinicians should make a tactful, professional inquiry into the home environment into which controlled substances are being sent. It's easy to say the client's irresponsible behavior isn't the veterinarian's concern, but drug abuse—both legal and illegal—continues to be a challenge in our communities.

I believe that if Dr. Rey had truly wanted to help Mrs. Rand and Frosty, he should have provided some level of supervision and made an attempt to gain insight into the destination of the medications. Dr. Rey had the option to script all his medications through an outside pharmacy or suggest that Mrs. Rand use a house call veterinarian. Because he did not, I feel he should have made reasonably certain that the needles and controlled drugs leaving his clinic would be used and not abused. It's not a lot to ask, and in the end, the community of both pets and people benefit. dvm360

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

Becton, Dickinson and Co.

Insulin syringes

BD Pet Syringes are veterinary syringes for use with U-40 insulins administered to dogs and cats with diabetes. The syringes are available in both 0.5-ml and 0.3-ml sizes to accommodate various levels of insulin dosing. They feature a red scale mark to distinguish the U-40 insulin syringe from the U-100 insulin syringe and half-unit scale markings to help ensure more precise dosing. The 12.7-mm needle length accommodates a variety of skin thicknesses and fur densities. The 29-gauge needle helps reduce the risk of bending and breaking should the pet move during injection.

For fastest response visit bd.com /us/petdiabetes

Pet Cause Media

Social media promotion

Pet Cause Media has released a free social media marketing tool for veterinary practices. The tool integrates into its core Veterinary Pre-Education Technology offering, which is also completely free to veterinary practices, and encourages pet owners to promote the practice using their own Twitter or Instagram accounts. Pet owners take a "selfie" of their pet using a specific hashtag designated by the practice, and their photo appears on the practice's TV screen in the waiting room within a minute or two.

For fastest response visit petcausemedia.com

My Eternal Family Tree

Pet burial product

BioUrn is a handmade, biodegradable cremation urn designed to hold a pet's cremated remains along with soil and the seed of a tree. My Eternal Family Tree offers the BioUrn as an affordable, green burial option. It comes with everything needed to grow any one of the memorial trees or flowering shrubs offered in the kit. There are a variety of sizes of urns available.

For fastest response visit biourn4pets.com

Vets First Choice

Mobile pharmacy app

ScriptConnect from Vets First Choice is a mobile app that enables veterinarians to manage patient prescriptions on their iPhone. The app, an extension of the company's digital prescription management platform, is integrated with a customized online store, allowing practices to offer their clients a range of prescription medications, OTC products, diets and compounds through the company's accredited pharmacy, with direct home or barn delivery. The app is available to current subscribers of Vets First Choice and can be downloaded through Apple iTunes.

For fastest response visit vetsfirstchoice.com

Medi-Dose/EPS

Metric dosing cups

Medi-Dose/EPS has released new metric-only dosage cups, meeting the latest ISMP recommendations for metric graduations. The cups are available in three sizes: 20, 30 and 60 ml and are manufactured from FDA-acceptable polypropylene and printed with compliant food grade inks. Graduations are on the exterior of the cup so there's no contact between the ink and the cup's contents. The high-contrast ink improves visibility of the graduations, and the friction-rib design allows for easy nesting and storage.

For fastest response visit medidose.com

Oxbow Animal Health

Redesigned packaging

Oxbow Animal Health has unveiled new packaging for its flagship Essentials line of fortified foods. New package highlights include warm imagery that evokes the family farm setting, product-specific color coding, updated feeding and transition charts, and an updated nutrition graphic detailing the components of the ideal small pet diet. The lot and expiration date are also clearly printed on the bag for improved traceability and inventory tracking.

For fastest response visit oxbowanimalhealth.com

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Harvard Apparatus

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Designed to make surgery and other manipulations on small animals easier, the Small Animal Physiological Monitoring System from Harvard Apparatus provides monitoring of multiple physiological parameters—rectal temperature, electrocardiogram, respiration, oxygen saturation, blood pressure and exhaled CO_2—on a single platform. It features a real-time display of numeric data and user-defined graphic waveforms, a wireless interface with touchscreen display and a heating platform to maintain the animal's body temperature. A stereotaxic adaptor option is available.

For fastest response visit harvardapparatus.com

VPR Cloud

Pharmacy reference software integration

Veterinary Pharmacy Reference Cloud (VPR Cloud) is now integrated with eVetPractice and ClientTrax practice management software platforms. Users of the software now have the ability to access an up-to-date drug formulary within their own practice management solution. Users can also access built-in smart and CRI calculators, a drug interactions checker to alert the user if any interaction may take place, and client information sheets that can be printed or emailed.

For fastest response visit vprcloud.com

VetBiotek

Otic treatments

VetBiotek has launched UltraOtic Rinse (0.2% microsilver) and UltraOtic Concentrate (0.5% microsilver, 0.5% climbazole and ceramide III) for the management of otic conditions in dogs and cats. Both products are recommended for use in an ear therapy protocol under the direction of a licensed veterinarian. UltraOtic Rinse is packaged in 4-oz bottles and the UltraOtic Concentrate is packaged in 1-ml pipettes with 20 pipettes per box.

For fastest response visit vetbiotek.com

Vettec

Pad adhesive dispensing gun

Vettec, a leader in equine sole support products for more than 20 years, has introduced the Ultra Automatic Dispensing Gun, which applies Vettec pour-in pad products to horses. The Ultra Gun helps farriers, veterinarians and hoof care professionals apply fast-setting adhesive accurately and quickly. The Ultra Gun's automatic operation dispenses adhesives at a consistent flow rate and minimizes hand and wrist fatigue.

For fastest response visit vettec.com

Elanco obtains licensing rights to Aratana's Galliprant

Therapeutic first in class for canine pain control.

Elanco Animal Health has licensed the animal health rights to Galliprant (grapiprant tablets) from Aratana Therapeutics. Galliprant is an FDA-approved therapeutic for control of pain and inflammation associated with canine osteoarthritis.

The agreement gives Elanco exclusive, global rights to manufacture, market and commercialize Galliprant, and the ability to co-promote the product with Aratana in the United States, according to a company release.

Galliprant is a prostaglandin E2 (PGE2) EP4 receptor antagonist (PRA), a non-cyclooxygenase inhibiting, nonsteroidal anti-inflammatory drug, which blocks PGE2-elicited pain and inflammation, and is the first in its class of drugs.

Aratana will receive an upfront payment of $45 million, with additional payments up to $85 million upon reaching certain milestones in development, regulatory and sales areas, as well as co-promotion fees and royalty payments.

"Aratana understands the value of relationships with the right collaborators," says Steven St. Peter, MD, president and chief executive officer of Aratana Therapeutics. "We believe that this collaboration with Elanco, a leading animal health company, is a watershed event for the emerging pet biotech sector and further validates our focus on the pet therapeutics opportunity." dvm360

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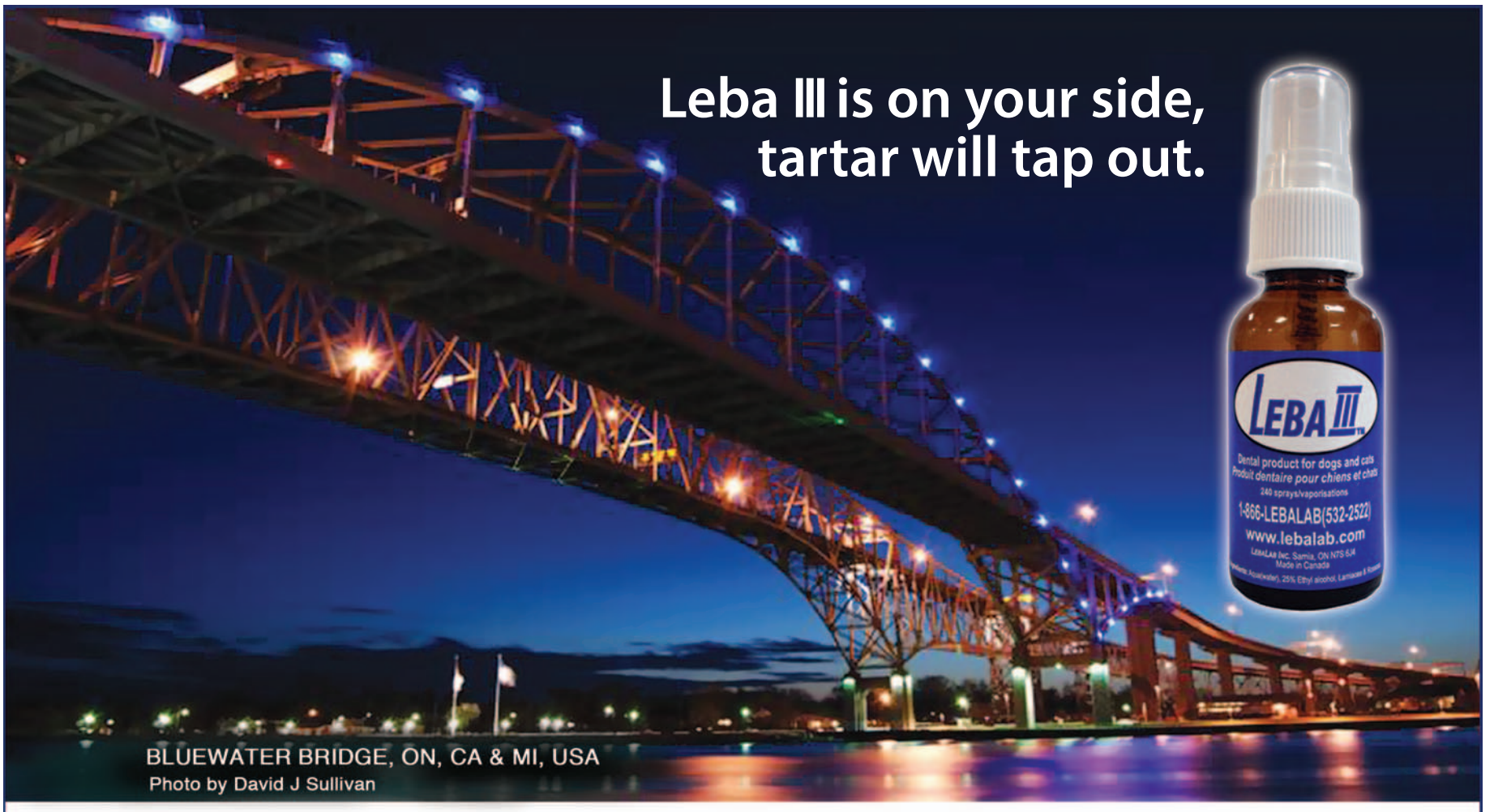

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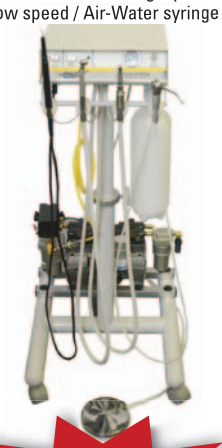

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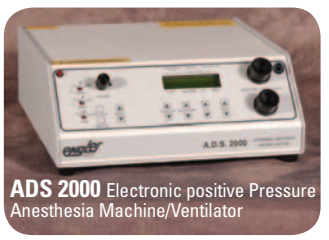

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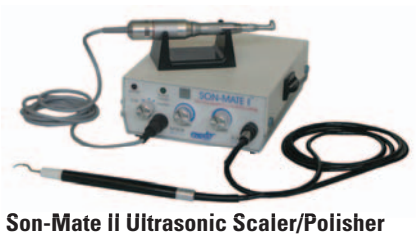

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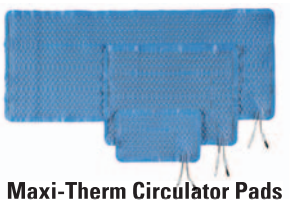

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North Carolina: Thriving Equine Practice! Unique opportunity for equine surgeon with room and clientele to add SA services. 6,250sf facility with +/-5.5 acres. NC12.

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Texas: Turn-Key, Mixed Animal. Multi-Doctor. Gross Income nearly $2.8. +/-15,000sf SA and +/-18,500sf LA with +/-5.5 acres. TX5.

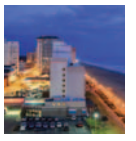
Iowa: Mixed Animal. 3,696sf facility w/RE. Approximately 95% companion/5% Large Animal. ADI +/-$113,000. IA1.

PS Broker
800-636-4740
psbroker.com
info@psbroker.com

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

August 26-29
CVC Kansas City
(800) 255-6864, ext. 6
thecvc.com/kc

December 8-11
CVC San Diego
(800) 255-6864, ext. 6
thecvc.com/sd



May 18-21, 2017
CVC Virginia Beach
(800) 255-6864, ext. 6
thecvc.com/vb

CVC unconventional

Here are the CE opportunities coming in the next few months

June 23-26
Pacific Veterinary Conference (PacVet)
San Francisco, CA
(916) 649-0599
pacvet.net

June 25
ACVC Summer Regional Conference on Feline Medicine
Providence, RI
(908) 281-5108
www.acvc.org

June 26-28
Montana Veterinary Medical Association Summer Meeting
Helena, MT
(406) 447-4259
mtvma.org

June 26-28
Maryland Veterinary Medical Association Summer Conference
Annapolis, MD
(410) 268-1311
mdvma.org

July 7-10
2016 Canadian Veterinary Medical Association Convention
Niagara Falls, Ontario, Canada
(800) 567-2862
cvma-acmv.org

July 15-17
Animal Chiropractic Program Module 5 of 6
Dallas, TX
(800) 266-4723
ce.parker.edu/programs/animal-chiropractic-program

July 27-30
2016 Therio Conference
Asheville, NC
(334) 395-4666
therio.org/event/2016Asheville

July 29-31
2016 Fred Scott Feline Symposium
Ithaca, NY
(607) 253-3200
cvent.com/d/ffqp4v

August 11-14
10th Keystone Veterinary Conference
Hershey, PA
(717) 220-1437
keystonevetconference.org

August 12-14
Animal Chiropractic Program Module 6 of 6
Dallas, TX
(800) 266-4723
ce.parker.edu/programs/animal-chiropractic-program

September 7-11
International Veterinary Emergency & Critical Care Symposium
Grapevine, TX
(210) 698-5575
www.veccs.org

September 7
North Carolina Academy of Small Animal Medicine Meeting
Sanford, NC
(910) 452-3899
ncasam.org

September 8-9
Montana Veterinary Medical Association Fall Symposium
Miles City, MT
(406) 447-4259
mtvma.org

September 11
Fall Vet Derm Seminar
Portland, OR
(503) 352-3376
skinvetclinic.com

September 23-25
105th Annual KVMA Meeting/43rd Mid-America Veterinary Conference Symposium
Louisville, KY
(502) 226-5862
kvma.org

September 24-25
Infectious & Vector Borne Disease for the General Practitioner Conference
San Diego, CA
(619) 640-9583
sdcvma.org

September 27-30
41st World Small Animal Veterinary Association Congress
Dundas, Ontario, Canada
(905) 627-8540
wsava2016.com

September 30 to October 2
California VMA Annual Fall Seminar, Palm Springs
Indian Wells, CA
(916) 649-0599
cvma.net

September 30 to October 2
Alaska Veterinary Medical Association Annual Symposium
Anchorage, AK
(208) 922-9431
akvma.org

October 6-8
ACVS Surgery Summit
Germantown, MD
acvssurgerysummit.org

October 6-9
21st Annual ABVP Symposium
San Antonio, TX
(352) 244-3731
abvp.com

October 7-9
WSVMA Pacific Northwest Veterinary Conference
Snoqualmie, WA
425-396-3191
wsvma.org

October 12-16
Wild West Vetrinary Conference
Reno, NV
(703) 978-7080
wildwestvc.com

October 15-18
2016 CanWest Veterinary Conference
Banff, AB, Canada
(780) 489-5007

October 17-20
Atlantic Coast Veterinary Conference
Atlantic City, NJ
(908) 281-5108
acvc.org

October 29 to November 5
The 32nd Muller-Ihrke Veterinary Dermatology Seminar on Maui
Kapalua, HI
(530) 304-3162
eduvets.com

November 1-5
The 17th Veterinary M-E-D (Medicine, Endocrinology, Disease) Seminar on Maui
Kapalua, HI
(530) 304-3162
eduvets.com

November 3-6
2016 American Association of Feline Practitioners Conference
Washington, DC
(908) 359-9351
catvets.com/education

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A successful practice, Brock-style

Practice personality is in the hands of the practice owner, and I've embraced my approach: prosperous inefficiency.

It dawned on me last week that I've been practicing this fine profession for half of my life. I'm 52 years old, and I've been practicing for 26 of those years. I've owned my clinic in Lamesa since I was 28. Sheesh … I had no idea what I was doing back then.

I've spent most of my time trying to learn how to make animals happy and very little time trying to learn how to run a business. Part of it was because I hate business and financial things. My mentor, Dr. Deyhle, came and spent a few days at my practice. His parting words as he got in his pickup to leave were, "Big Doctor (what he always called me), your prosperity has masked your inefficiency."

I've been blessed during my years of practice to be able to visit and be a part of many veterinary clinics. It's always amazed me that each has such a different personality—and such varied ways of doing the same thing.

I've been blessed during my years of practice to be able to visit and be a part of many veterinary clinics. It's always amazed me that each has such a different personality—and such varied ways of doing the same thing. Some run a tight ship, while others seem relaxed and spontaneous. But how that particular practice operates is a direct reflection of the person or people who own it.

Dr. Emily, a former intern who spent two years with us, went on to an internal medicine residency at a veterinary college. Her position put her in contact with many students, and one of them asked about an internship at Brock Vet Clinic in Lamesa. Dr. Emily smiled and told the student that our practice was wonderful. But what she said next made me scratch my head and ponder the result of all of my years of practice with no guidance on how to run a business.

"If you're looking for structure, that place isn't gonna work!" she said. Evidently Emily knew this student depended on an organized, structured regimen.

When I first heard this, it kinda hurt my feelings. I wondered just what she could possibly mean … no structure. It seems to me that we have fun and laugh almost all day. Animal care and happiness are our top priorities. We help each other out, and we arrive early and stay late. We try to keep owners updated on treatments and prognoses. We often see 100 animals a day, and none of the owners complain about waiting time or a lack of sincerity. We stay current on the latest procedures and do our best to educate owners and referring veterinarians on what's best for the patients.

As I thought about it, it occurred to me that we've accomplished those goals. But it also occurred to me that I'd never put forth a structured plan on how to get them done—it just seemed to happen.

When a new employee or veterinarian joins our practice, my message to them is always they same. It's brief and to the point, but it truly gives no structure. I simply point up and say, "That's the direction we're going. If you want to come with us, great. But if you weigh us down or pull us down, I'll get rid of you."

Maybe that doesn't outline exactly how a person continually strives to be better, but too many details and micromanagement from authority squelches a person's creativity. I'd rather someone assign me goal and let me figure out how to get there with occasional guidance than to be told every step of what I have to do.

It just reminds me that there's "a way" to do almost anything, and "the way" to do almost nothing. It's part of what makes being an owner of a veterinary clinic such fun. **dvm360**

Dr. Bo Brock owns Brock Veterinary Clinic in Lamesa, Texas.

ILLUSTRATION BY MATT COLLINS

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