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Vetted: A brand new magazine

Fresh veterinary publication combines VetEc, VetMed—and a whole lot of fun

page 6

January 2016 | Volume 47 | Number 1 | dvm360.com

State of the veterinary profession

State OF THE PROFESSION 2015

The 2015 results from this triennial dvm360 survey shows that veterinarians are holding steady in recovery.

Sure, the veterinary profession has plenty of challenges to deal with: massive student debt, dwindling client visits, emotional burdens associated with the job, and increasing competition from retailers and nonprofit groups, to name just a few.

But in 2015, many of you began to experience a true rebound in your practice fortunes—one that's here to stay. We saw glimpses of this rebound the last time dvm360 conducted its State of the Profession survey, in 2012, and the data this year appear to confirm that improvements in practice health are more than just a blip.

We launch our study coverage with a focus on business measures in this issue—watch for more data and analysis in the months to come.

See page 22>

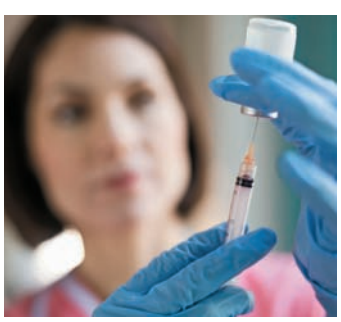
Beagle vs. bedbug

Pest-detection dogs prove their sniffers can locate just a single bedbug (or a few eggs) with astonishing accuracy—but deploying them in the real world is not yet a perfect science. *By Ed Kane, PhD*

Calls to pest-control professionals for bedbug infestations have increased 100-fold in the United States in recent years, experts say. The common bedbug, *Cimex lectularius* Linnaeus, has been feeding on the blood of sleeping humans for more than 3,500 years, but it was eradicated during the 1930s in the United States with the use of dichlorodiphenyltrichloroethane (DDT). Since the 1990s, about two decades after DDT was made illegal because of its adverse effects on the environment, the pests have made a resurgence in American homes, apartments and hotels. The resurgence is primarily due to people traveling more, the increased trade in secondhand furniture, and resistance of bedbugs to available pesticides, experts say.

Bedbugs hide in cracks and crevices during the day and leave their harborages to feed at night, especially attacking sleeping humans. Their cryptic nature makes small infestations hard to detect, especially by visual inspection. Eventually an infesta-

See page 29>

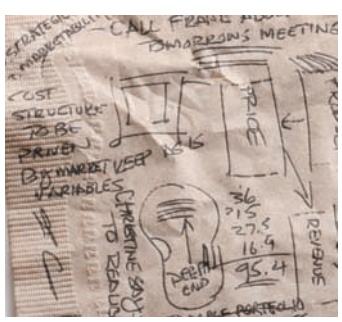


Don't miss the top 10 veterinary news articles of 2015

page 12

Old school faces off with new school. So who's right?

page 40



A practice owner wants his clever tricks kept secret

page 50

Guess who's appearing on the pages of dvm360?

page 74

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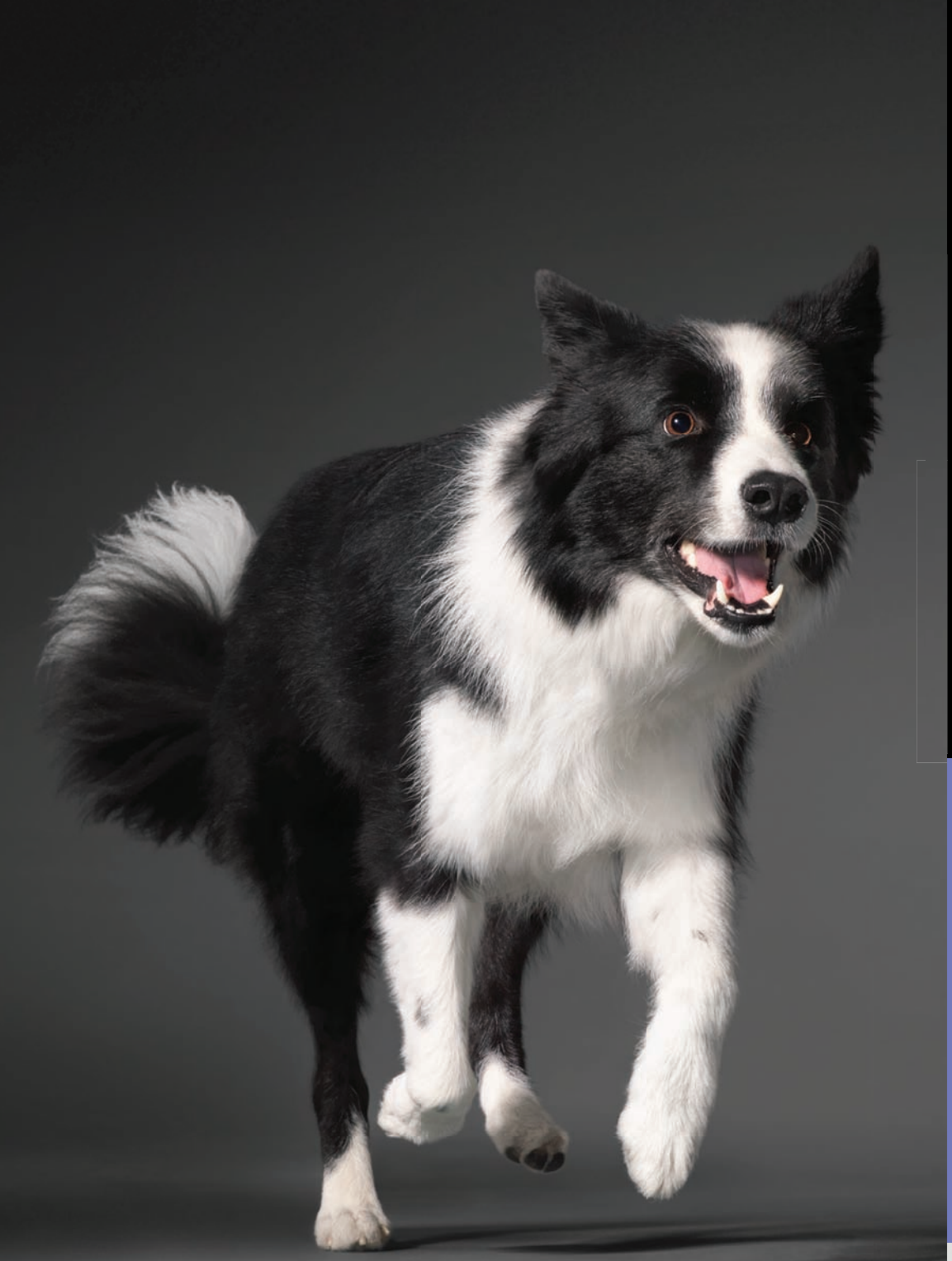

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UBM

A new year means *lots of changes* around here

Want to know what's new? Read on—and try to keep up.

There's a good chance you're reading this issue of dvm360 during the North American Veterinary Community conference in Orlando. And if there's one question I hear repeatedly during NAVC, it's "So what's new?"

Veterinarians, consultants and industry representatives alike all want to know what the buzz is at the beginning of the year, and being the editor of dvm360 magazine, I'm expected to know. And sometimes I do—like now.

This year the buzz is all about *Vetted*, the new print magazine combining *Veterinary Economics* and *Veterinary Medicine*. But it's so much more than that. While *VetEc* and *VetMed* have been around for decades (in *VetMed*'s case, more than a century), their spawn is unlike anything the profession has seen before. Geeky, irreverent and insanely relevant, this new baby is preparing to go into the world ready to poke, prod and push the envelope. I'm sure we'll hear about it when it's successful.

A little closer to home, new content is gracing the pages of dvm360 as well. Jeremy Campfield, DVM, brings us Old School, New School, a column taking a smart look at the generations in practice. Drs. Codger and Greenskin have their foibles, but in the end they have a lot to learn from each other—maybe you'll catch a glimpse of yourself in one of them.

If the illustrations look familiar, it's because they're created by Ryan Ostrander, who lent his skill to Dr. Michael Obenski's column for so many years. As I was reading Campfield's series for the first time, it smelled a bit Obenski-ish, so we pulled Ostrander out of retirement and asked him to pick up his (digital) brush once again. The ideas for the illustrations come from Campfield's wife, Anne McDonald Campfield.

Speaking of old school, a venerable and much-loved voice—that of Robert Miller, DVM, author of the Mind Over Miller column in *Veterinary Medicine* for many years—is returning to print in dvm360. His no-nonsense wisdom and humor have inspired veterinary colleagues for years, and those who just can't get used to reading him online can enjoy his words (and occasional offbeat cartoon) here in this magazine.

Starting in March, dvm360 will also be hosting the Hospital Design content you've loved and looked for in *Veterinary Economics*. The hospitals that inspire our architect judges to bestow awards and praises will be on display for your inspiration and edification in each issue.

And last but not least, I got married in 2015. For the first time. At age 42. Definitely an old dog trying to learn new tricks—and loving it.

So if you ask me, "What's new?" and I beam forth a ridiculous happy smile, chances are I'm thinking about my adorable husband. Or maybe I'm super-excited about the latest Campfield or Miller column. Whatever it is, there's plenty to be excited about. **dvm360**

>>> In your mailbox. Watch for your first issue of *Vetted* in January 2016. Or confirm your subscription today at dvm360.com/subscribe.

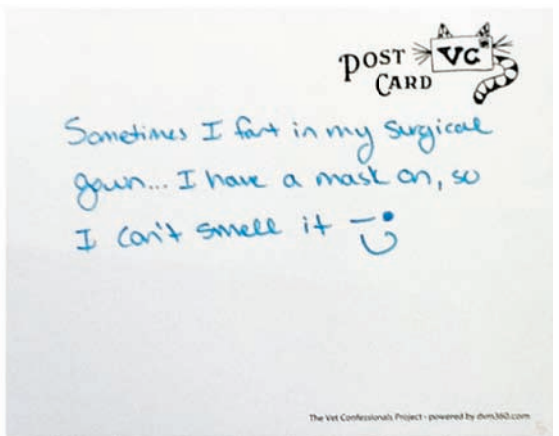
New veterinary publication delivers different mix, voice

dvm360's sister publications team up to deliver a smart new publication. Welcome to (fun) evidence-based publishing.

After more than 100 years of thoughtful clinical content creation for veterinarians, *Veterinary Medicine* will cease print publication. But really, this is just the beginning for this legacy brand and its sister publication, *Veterinary Economics*. These two beloved publications are moving online—and teaming up in print to bring a new, next-generation publication to veterinarians.

Meet *Vetted*: VetEc + VetMed, shaken not stirred.

"You start to get a feel for our new approach in print from just these first few words on the cover," says Medicine Channel Director Mindy Valcarcel, who develops clinical content for the entire dvm360 family—including dvm360 magazine, dvm360.com, *Vetted*, and the CVC conventions—and serves as editor of *Veterinary Medicine*. "With all the content we develop for *Vetted*, we're leveraging emotion wherever it makes sense, which helps us make the critical information that veterinarians need more engaging as well as enlightening. And judging from the data we see on Web pieces that deliver information that's both smart and fun, that's a mix veterinarians really respond to. Who are we to argue?"



>>> We know you're hilarious. Featuring peer-to-peer tips, insights, and experiences, *Vetted* helps veterinarians share, smile and learn from each other. (And we're always available to listen.)

Valcarcel calls the team's approach "evidence-based publishing," because the new content is developed in response to concrete data in the market.

It's in touch

"One of the most important things I think we can do is help veterinarians understand that they're not alone," says Business Channel Director Brendan Howard, who develops business content for the dvm360 properties.

"That lesson particularly hit home with the feedback we received in response to the Burden of Care package in May 2015." With that perspective, Howard says one key element of the *Vetted* approach is to continue to build a sense of community. "Our partnership with The Vet Confessionals project gives veterinarians and their teams an opportunity to get their burdens off their chest. *Vetted* builds on that effort and gives them the ongoing support and the career options, communication tools and business smarts they need to manage the particular challenges they face in veterinary practice today."

It's comprehensive

The team says key articles in Vetted combine clinical know-how with super-powered business and products information and pre-made tools. "The goal is to make veterinary practice easier in any way we can," says dvm360 Content Director Marnette Falley.

"*Veterinary Economics* and *Veterinary Medicine* are amazing publications that got their start by looking ahead," Falley says. "I have to say, it's a little scary to mess with a century of success. But when we look at the data about how veterinarians today consume information, we think we can do even better for veterinary teams if we leverage the lessons we learn from dvm360.com data. And at the same time, the mission of service to veterinarians hasn't changed at all."

Watch for your first issue of *Vetted* to arrive in January. Or confirm your subscription today at dvm360.com/subscribe. **dvm360**

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Check out the personal introductions of Vetted from Business Channel Director Brendan Howard and Medicine Channel Director Mindy Valcarcel at www.dvm360.com/vetted

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AVMA economist warns of education problems ahead

Opening new veterinary schools could bring about lower than optimal applicant-to-seat ratio.

By Mike Dicks

In one of my former roles of advising foreign governments and agencies on small-business development, I would always begin with three basic prerequisites that I feel are most important and need to be answered before starting a new business. First, can you physically do it? Second, can you make money doing it? And third, can you sustain it in a competitive market?

The continued push to expand the number of veterinary schools (and thereby the number of seats available to veterinary students) certainly has me wondering whether all of these basic prerequisites are being considered in the planning process and before commitments are made to pursue the necessary approvals and begin the accreditation process.

There's no doubt that the necessary resources, both capital and expertise, to build new veterinary colleges can be acquired anywhere in America. Based on current information about the willingness of veterinary college applicants to pay for the veterinary degree, new colleges can probably be profitable, more so if they are state-funded.

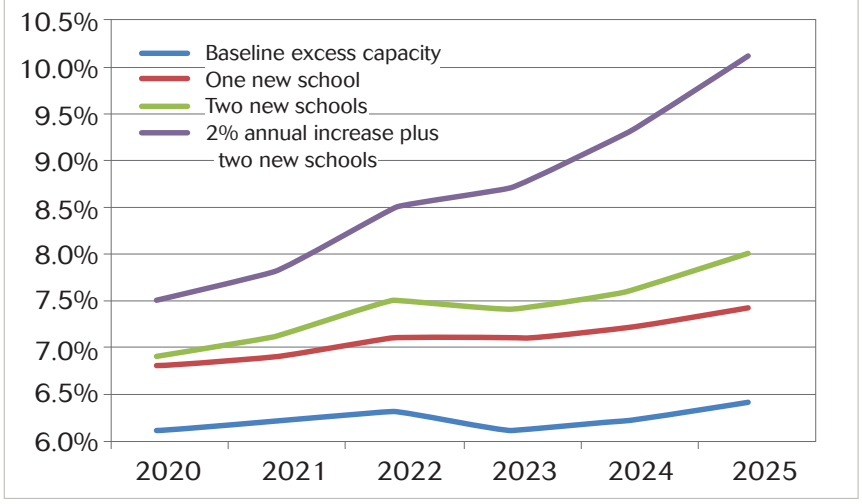
The third prerequisite, however, offers a more daunting hurdle, as is frequently the case. The market for veterinary education faces a competitive demand for seats from applicants as well as a competitive market for veterinarians that is derived from the competitive market for veterinary services. Thus, the new veterinary college must consider both forces, now and in the future, in determining the sustainability of its business.

The starting salaries of veterinarians will likely be adversely impacted by an increase in the number of graduates.
—Mike Dicks, PhD
AVMA Economics Director

The number of applicants may have already reached its apex in what has historically been a roughly 22-year cycle of steady growth followed by a decline in the number of applicants. The number of applicants peaked with the classes admitted in 2014,

TABLE 1

Effect of increasing graduates on excess capacity



Source: AVMA Economics Division

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See brief summary on page 08

when there were 6,769 applicants and 4,230 seats available, yielding an applicant-to-seat ratio of 1.6:1 (see the 2015 AVMA Report on the Market for Veterinary Education). As the cost of education continues to climb, and as college students become increasingly knowledgeable of the financial hardships associated with the profession's high debt-to-income ratio, this applicant-to-seat ratio is forecast to decline even with a constant number of available seats through 2025.

However, if the rate of increase in the number of seats at existing schools continues the long-term trend and two new schools are added, then the combination of new seats and declining applicants will bring the applicant-to-seat ratio to an estimated 1.04:1 by 2025. While this is likely to be a worst-case scenario, the competitive environment at veterinary schools is currently increasing from highly competitive to extremely competitive; veterinary schools will in the near term have to compete for students. With the addition of even more seats, the market for veterinary education would become a buyer's market, meaning that each applicant (the buyers in this case) would face less competition for seats at veterinary colleges (the sellers in this case).

Based on our modeling, there is a threshold value for tuition costs that the average student is willing to pay; above that threshold, the number of applicants decreases, and recent analysis has shown that this threshold may be declining. Those schools whose total costs fall in the top 20th percentile are currently above that threshold.

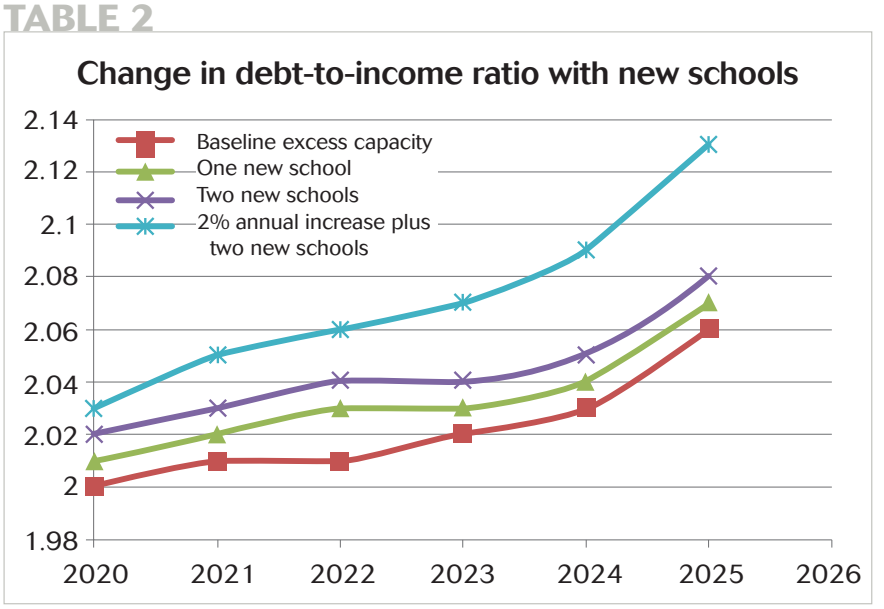
The bottom line here is that unless a new school can provide a veterinary education at a cost to students at or below the threshold in this increasingly competitive market, a veterinary degree program will not likely be sustainable. This analysis assumes that no change from the baseline occurs in the applicant pool. But because the applicant pool will be adversely impacted by an increasing debt-to-income ratio, this assumption likely won't hold. Therefore, what is presented is essentially a conservative scenario.

The increase in the number of seats will increase the number of graduates entering the employment market for veterinarians. At this time, we do not have a model for the effect on unemployment. However, our analysis has tied increases in excess capacity in veterinary practices to increased numbers of graduates without an accompanying increase in the demand for veterinary services. If one new school opens, providing 100 new seats, the impact on excess capacity will likely be approximately a one percentage point increase, from 6.4 percent to 7.4 percent by 2025. Two new schools of 100 students each will likely increase excess capacity by about 1.6 percentage points. And if we consider a scenario where two new schools are created and the number of graduates increases continuously at 2 percent per year, then excess capacity will increase by more than three percentage points to 10.1 percent by 2025.

The starting salaries of veterinarians will likely be adversely impacted by an increase in the number of graduates. The longer-term trend has been that for every 100 students, 39 take a full-time position at graduation; this modeling is based on the AVMA Senior Survey reports for full-time positions accepted at the time of graduation and does not include those who accepted part-time employment, internships, residencies or additional education as well as those who accepted full-time positions after the survey was completed. The addition of 100 students above our baseline projection would potentially reduce annual income for each new veterinarian (1,298 in the class of 2015) by $500, and the combined effect of two new schools and a 2 percent growth rate in existing school class sizes would potentially lower starting salaries by over $3,000 per year per veterinarian by 2025.

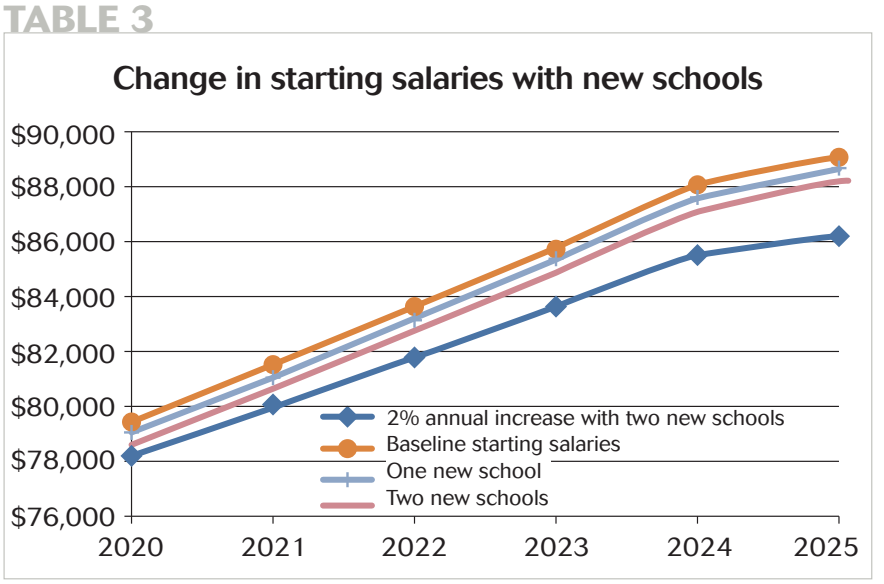
This decline in income would exacerbate the existing disparity between growth rates in income and debt, causing the debt-to-income ratio to rise. The rising debt-to-income ratio will likely accelerate the reduction in applicants, perpetuating the potentially negative effects on the market for veterinary education. **dvm360**

TABLE 2



Source: AVMA Economics Division

TABLE 3



Source: AVMA Economics Division

Mike Dicks, PhD, is the director of the American Veterinary Medical Association's Veterinary Economics Division.

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The BIGGEST NEWS of 2015

Check out last year's most-read veterinary news stories from dvm360.

Whenever we sit down to rank the top-performing news stories on dvm360.com, we look for common themes that could tie the year together. And in 2015, you couldn't be bothered with a certain reality-TV veterinarian's behavior—this year, your focus was all about the medicine. So without further ado, your top ten stories of the year:

1 Xylitol now found in certain peanut and nut butters

When we reported that xylitol, a natural sugar alcohol sweetener known to cause hypoglycemia and hepatic necrosis in dogs, was found in several specialty peanut and nut butter brands, we saw a major spike in activity on dvm360.com. It was unsurprising why so many veterinary teams were on high alert—after all, peanut butter is a beloved treat among dogs.

2 Apoquel Q&A: Will oclacitinib revolutionize the treatment of allergic dermatitis?

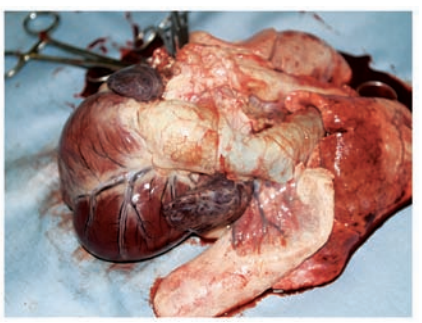
After years of waiting for a new proposed drug for itching that was being developed by Zoetis, oclacitinib (Apoquel) became available in limited supply. In July, our expert veterinary dermatologist Alice Jeromin, Rph, DVM, DACVD, reported on her experience with the drug as someone who has been prescribing it for the past two years to about 500 patients. So, is the "miracle drug" all it's cracked up to be? Jeromin says she's still concerned about the long-term use and adverse effects down the road. "Today, everyone wants a "quick fix" and Apoquel does work quickly without the damaging effects seen with corticosteroids and I like that," she says.

3 The midlevel veterinary professional: Has the time come?

dvm360's "practitioner in the trenches" Dr. Sarah Wooten delivered this report on an interesting development in Colorado—the potential rise of a mid-tier veterinary professional, similar to a physician assistant (PA) or nurse practitioner in human medicine. Wayne Jensen, DVM, PhD, MBA, associate head of clinical sciences at Colorado State University (CSU), introduced the idea of a veterinary professional associate (VPA) master's program that would be completed in three semesters. In the same way PAs do, VPAs could focus on serving underrepresented areas and populations. Problem is, not everyone is on board.

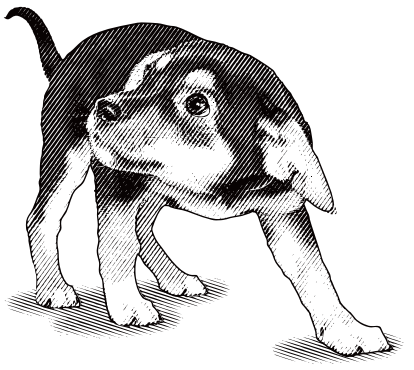
4 Pictorial evidence: Heartworm disease and its damage

In parternship with the American Heartworm Society, dvm360 published a set of images showing the devastating effects of heartworm disease in a pet. Heartworms are present and known to be transmitted in all 48 contiguous states in the United States and Hawaii, making the risk of infection and the development of permanent disease real. These images, from a variety of canine cases, represent the various types of gross pathology heartworms can cause.



5 The 5 ways to get started with Fear-Free veterinary practice

Contributing writer Jessica Vogelsang (aka blogger Dr. V at pawcurious.com) reported on the concept of Fear-Free practice and its major payoff for Canadian practice owner Jonathan Bloom, DVM. Bloom believes that pet fear and stress are one of the major factors keeping clients away from the hospital, and it's one of the easiest to fix—and he tells readers how, too, using videos that show his techniques



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*Blue Buffalo Co., Ltd., July 2015 Consumer Study

in action as well as tips to create a Fear-Free culture.

6 Veterinarians call for evidence-based approach in wake of Beneful lawsuit

The usual hum of consumer-driven pet food chatter increased to a fever pitch in February in the wake of a lawsuit

launched against Nestlé Purina's Beneful dog food. Filed in California, the lawsuit claimed that Beneful was to blame for the illness of two dogs and death of another. Stephen Ettinger, DVM, DACVIM, who serves as the Nestlé Purina Fellow in Veterinary Medicine, says he read many of the comments in the news and online regarding Beneful. "None provides evidenced-based rationale for making claims about Beneful having a negative impact on the health of a pet," he says.

7 High-volume veterinary clinic slashes prices

It seems improbable that a not-for-profit practice in Missouri neuters cats for $20 and serves approximately 100,000 animals per year—but it's reality, as we found in this exclusive report. The appeal of Angels Vet Express to pet owners is simple—it offers low-cost services. The clinic will spay a cat, give rabies and feline leukemia vaccinations, and deworm it for $67. The story unleashed a torrent of social media comments from readers, many of whom admitted to feeling uncomfortable with the practice model.

8 Pet food facts—and fiction

Nutrition information (and misinformation) was a hot topic all year. And we're betting you've fielded questions like *What should I feed my pet? Should it be grain-free? Gluten-free? What about raw diets?* for some time. Dr. Alice Jeromin was on the case for dvm360, explaining that as the national pet nutrition conversation intensifies, veterinary views may contradict national marketing campaigns or grassroots fads that have little or no basis in proper pet food nutrition. Her article provides

the information and expertise you need to recommend diets with confidence.

9 Flatulence in dogs: Annoyance or sign of GI illness?

Be it a boxer, a bulldog or even a tiny Boston terrier, flatulence in dogs—especially when it's bad enough to clear the room—can be challenging for some pet owners. In thispiece, contributing writer Ed Kane, PhD, examines the common culprits of flatus, GI-associated illness, diagnosis, dietary and environmental management for veterinarians to discuss with clients with (unintentionally) stinky pooches.

10 Kissing spines in veterinary equine patients: Easy to diagnose, complicated to treat

Resident dvm360 equine expert Kenneth Marcella, DVM, rounds out the top 10 new stories this year with his examination of "kissing spines," or overriding dorsal spinous processes (ORDSP), which has become a commonly discussed and more frequent concern among sport horse owners. Recently, a number of new surgical techniques have been developed and implemented to address ORDSP, which Marcella addresses, in addition to explaining the various (and sometimes complicated) treatment options for this condition. dvm360

Southern California a hotspot for anesthesia-free dental controversy

A recently publicized client horror story keeps care, revenue and oversight regarding the procedure in the spotlight. *By Julie Scheidegger*

Recently a local news station in Southern California, NBC4, reported that a cat named Monkey-face died after a visit to Smile Specialist, an anesthesia-free pet dental service.

A week after Monkey-face's $100 cleaning, which was supervised by a veterinarian, the cat wouldn't eat or drink, according to the report. Monkey-face's owner took the cat to her regular veterinarian, who found that the patient's tongue was almost completely severed and infected. The cat was euthanized.

The story has revived the controversy over anesthesia-free dental cleanings for pets. "This is a discussion that's been going on in the state of California at least 20 to 25 years," says Peter Weinstein, DVM, MBA, executive director of the Southern California Veterinary Medical Association.

Weinstein says anesthesia-free dental care lives in a hazy gray area of the practice act. His take? Veterinarians should keep hold of the service rather than shunning it to the point that it's beyond veterinary oversight.

Like it or not, there's a market for it

Weinstein says what started as an influx of uncertified grooming, pet stores and boarding facilities that aggressively marketed anesthesia-free dental cleanings has grown into four highly competitive business models in Southern California:

> Anesthesia-free dental cleanings done by uncertified groomers, boarding facilities and pet stores

> Nonveterinary businesses providing anesthesia-free dental cleanings with direct supervision by veterinarians

> Anesthesia-free dental cleanings performed by certified technicians at veterinary hospitals with direct veterinary supervision

> Veterinarians and veterinary technicians with mobile premise permits setting up outside boarding and

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alfaxan.com/how-to (1 min video)

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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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grooming facilities to do anesthesia-free dental cleanings.

Weinstein believes the procedure should always be done with veterinary oversight, as stipulated by the practice act. But it's difficult for the California Veterinary Medical Board to crack down on unlicensed activity, he says. At most it can impose a fine—and then only if a consumer makes a complaint of significant damage.

Educate the uneducated

Weinstein believes the pet owners who pursue anesthesia-free dental care at nonveterinary facilities fail to understand the risks. "They're making the pet look pretty for all intents and purposes, but there's still disease going on," Weinstein says. "From a clinician's standpoint, that's totally inappropriate."

Furthermore, Weinstein says, these consumers have two fears: money (spending it) and anesthesia (death from it). "Both fears can be ameliorated with education," he says.

But the Internet isn't helping, Weinstein says. Uncertain pet owners will find their fears confirmed in anesthesia-free marketing. For example, a recent post on the Smile Specialist Facebook page reads, "The Journal for the American Animal Hospital Association did a study to evaluate the health risks of a routine anesthetic dental cleaning. Over 300 of the dogs in this study had major complications from the anesthesia, including low blood pressure, abnormal heart rhythm and

"The veterinarian gets to see the animal six months later and see all these loose white teeth. The client has never been told about the pathology."

—Peter Weinstein, DVM, MBA
Southern California Veterinary Medical Association

even death due to complications of sedation."

The post fails to mention that AAHA guidelines state that general anesthesia with intubation is necessary to properly assess and treat companion animal dental patients and, without it, patients are subject to increased stress and risk.

Keep your enemies close

However, Weinstein believes there's room for veterinary hospitals to offer high-quality, veterinarian-supervised anesthesia-free dental cleaning as a dental maintenance service.

"There are probably patients with minimal tartar, no disease, that have had a full cleaning who warrant an anesthesia-free cleaning at a hospital," he says. "I think it's a maintenance-type situation or starting some young dogs with hand scaling to get used to it. It's not appropriate for every dog or cat, or appropriate for every technician, doctor, hospital or client."

He says it's all about case selection and a judicious approach to the issue. "I've watched the procedure being done," he says. "We had one of the anesthesia-free technicians come in with a dog and sit on the floor and clean the dog's teeth. It was very impressive." He adds that the patient was a black Lab—he'd like to see her try it with a Chihuahua.

Weinstein also watched the technician clean a cat's teeth while it was wrapped in a towel. "It can be done in what appears to be a low-stress fashion," Weinstein says.

But he says the appropriate judicious approach is unlikely to happen without veterinary oversight. "The veterinarian gets to see [the animal] six months later and see all these loose white teeth," Weinstein says. "The client has never been told about the pathology." dvm360

dvm360 Find it all here

Read more online

For another article on this controversial topic, see "Getting to the root of anesthesia-free dental care" by Sarah Moser at dvm360.com/anesthesiafree.

Urgent care business model comes to veterinary medicine

N.C. clinic sees cases that can't wait but don't need emergency care.

Taking a cue from human medicine, a veterinarian has opened an urgent care clinic for pets in Belmont, North Carolina.

UrgentVet Pet Clinic was founded by Jim Dobies, DVM, owner of South Point Pet Hospital in Belmont, North Carolina, according to a release from the practice. The walk-in clinic is open after hours, 365 days a year, and it's meant for non-emergency issues that include ear infections, postoperative infections, minor wounds and vomiting. Clients also receive guidance for follow-ups and records for their primary veterinarians.

UrgentVet™ PET CLINIC
Your pet can't wait to feel better.

The clinic's motto is, "Prompt care shouldn't only be available to humans. After all, your pet can't wait to feel better." If more emergency assistance is needed, UrgentVet will work with other animal hospitals.

"In recent years, the number of urgent care clinics for people has significantly increased, yet there existed a noticeable gap in comparable services for animals," Dobies says in the release. "We knew it was time to rise and meet the growing need for quick, easy-access, after-hours care for pets that need comfort and relief."

The clinic is open 5 p.m. to midnight Monday through Friday and noon to 8 p.m. Saturday and Sunday. dvm360

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Supreme Court declines to review 'Internet vet' case

Ron Hines' 'advice' remains outside of First Amendment protection—but telemedicine isn't going away. *By Julie Scheidegger*

The U.S. Supreme Court has declined to review the case of Ron Hines, DVM. The March 2015 Fifth U.S. Circuit Court of Appeals decision now concludes that the online veterinary "advice" Hines doled out from his website, 2ndchance.info, is not speech protected by the First Amendment.

"I didn't really think they'd take it," Hines told dvm360 from his home in Brownsville, Texas. But he thinks he put up a good fight.

"People are going to be using the Internet to discuss their pets, lives, health and other important subjects," he says in a release. "Ultimately, legislatures aren't going to be able to stop it."

The case began when the Texas Board of Veterinary Medical Examiners found that Hines went beyond giving general advice or information but was instead advising individual pet owners about specific animals without the physical examination required to establish a veterinary-client-patient relationship and satisfy the state's practice act. The board suspended Hines' license for one year and ordered him to cease his online veterinary correspondence in 2013.

Hines' lawyers at the Institute for Justice argued that the Texas practice act violated Hines' freedom of speech because the First Amendment protects professional advice, and in 2014 a federal trial court in Brownsville, Texas, agreed. However, the appeals court ruled that the practice act does not regulate the content of any speech, require veterinarians to deliver any particular message or restrict what can be said once a veterinary-client-patient relationship has been established.

Further, the court said, states have broad power to establish standards for licensing practitioners and regulating the practice of professions. Therefore, the court ruled, the requirement for physical evaluation does not violate the First Amendment.

Along with the court case, Hines' probation is now over. His license is active and, according to board spokeswoman Loris Jones, he has satisfied the requirements of the administrative order. But while Hines no longer invites people to contact him for veterinary advice on his website, they still do. "They all still email. They keep coming," he says.


Dr. Ron Hines

Hines stops short of confirming that he continues to give veterinary advice but he did tell dvm360 that "[the board is] going to have to cut my phone line if they don't want me to talk to people. I'm going to tell them my opinion or tell them I don't know the answer," he says.

Still, Hines says he's done battling with the board. He won't sue them again. "I don't want to antagonize anymore. I've had enough of the Texas board and the AVMA," he says.

And according to Jones, the board will have nothing more to do with Hines unless it receives a complaint. But Hines is confident the issue of telemedicine isn't going away. "You can't put the cork back in the bottle," he says.

Hines thinks it will take one of the emerging human telemedicine companies to see the issue through the courts. "Insurance companies are backing them because it saves them a bunch of money," he says. "I don't have the resources. The veterinarians are going to have to ride on the coattails of the physicians." **dvm360**

Canine flu vaccines receive conditional license

Zoetis and Merck Animal Health have both received conditional licensure from the U.S. Department of Agriculture (USDA) to market vaccines for the prevention of the H3N2 strain of canine influenza virus, according to company releases.

In 2015 veterinarians in more than 20 states found themselves fighting an outbreak of canine influenza, specifically the H3N2 strain. The only vaccines on the market at the time protected against H3N8. The outbreak started in Chicago, where about 2,000 dogs became ill.

Veterinary health experts hope the addition of two new vaccines that protect against the H3N2 strain of canine influenza will curb the spread of the virus and prevent another outbreak on the same scale as the one from 2015.

The Zoetis vaccine is formulated with killed virus and is to be administered in two doses three weeks apart to healthy dogs at least 8 weeks old, the Zoetis release states. The Merck vaccine is recommended for healthy dogs 6 weeks or older and is also formulated with killed vaccine, the Merck release says. **dvm360**

Texas Tech announces plans for new vet school

Amarillo being discussed as a possible location for the new program.

The Texas Tech University System has announced plans to develop a veterinary school and veterinary medicine doctoral program, citing student demand and industry needs, according to a university release. The College of Agricultural Sciences and Natural Resources at Texas Tech and the Texas Tech University Health Sciences Center will collaborate to develop a program that provides animal health solutions and veterinarians to address the agricultural challenges facing the region and state, university officials say.

"Addressing the veterinary education needs in Texas is crucial not only because of the region's and state's deep-rooted history with agriculture and ranching, but also because of its continued prosperity," says Robert L. Duncan, Texas Tech University System chancellor, in the release. "Our vision goes beyond the establishment of a veterinary school, setting out to transform the landscape of veterinary medicine education and provide innovative solutions for the industry's future."

There are currently more than 150 students enrolled in preveterinary education at the College of Agriculture Sciences, but "the lack of veterinary schools prohibits many qualified students from becoming veterinarians," the release states. "Therefore, the new veterinary school will serve the needs of both Texas students and agriculture." Texas Tech's Amarillo campus is being considered as a location for the initiative.

The discussion about launching a veterinary school at Texas Tech goes back for decades, the release says, but this announcement comes after much internal planning, including conversations with higher education colleagues, representatives from the agriculture industry and philanthropists. Discussions will continue throughout 2016 and the university will seek approvals from the Texas Legislature and Texas Higher Education Coordinating Board, according to the release.

This is not the first time a veterinary college proposal has come from Texas Tech. The last go-round was in 2001, after Texas legislators approached the university about creating a second veterinary school in the state, in part because a friend's daughter had been rejected from the Texas A&M program. The plan failed to draw the support needed. **dvm360**

University of Arizona aims to open veterinary program this August

The University of Arizona's College of Agriculture and Life Sciences will host the American Veterinary Medical Association Council on Education (AVMA COE) this month for a site visit to earn a reasonable assurance of accreditation.

The group visited the university in spring 2014 for a consultation and provided a report, Shane C. Burgess, BVSc, PhD, dean of the college, tells dvm360. The recommendations were small and manageable, Burgess says.

The COE will issue a decision about accreditation in April, and U of A hopes to open its doctor of veterinary medicine program in August. The program would be the state's only public education option for aspiring veterinarians, althought the private Midwestern University recently opened a veterinary college in Glendale, Arizona.

Keeping more students in Arizona, reversing the shortage of veterinarians in rural areas and providing doctors for the animals involved in the region's growing biotech industry are among the factors driving the program's creation, Burgess says. Although rural areas nationwide struggle to attract veterinarians, Burgess says the program will seek to alleviate the problem by selecting students who are more inclined to live in rural areas and graduating students with less debt so they can afford to work in those regions. **dvm360**

State of the Profession

> Continued from the cover

A look at veterinary business health

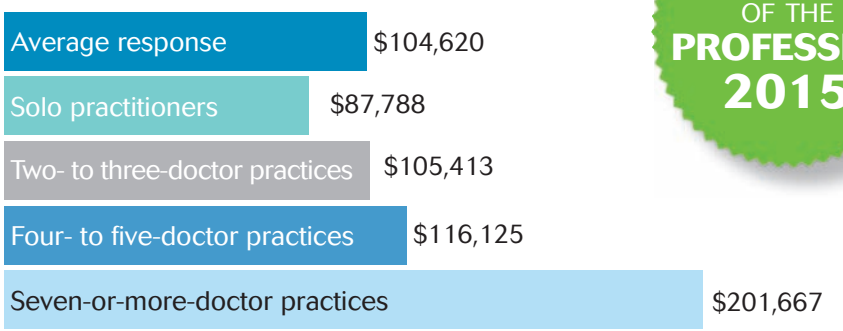
Practices surveyed by dvm360 continue to recover after a difficult stretch.

State OF THE PROFESSION 2015

COMPENSATION: PRACTICE SIZE MAKES A DIFFERENCE

Q: What was your personal veterinary compensation (before taxes) in 2015?

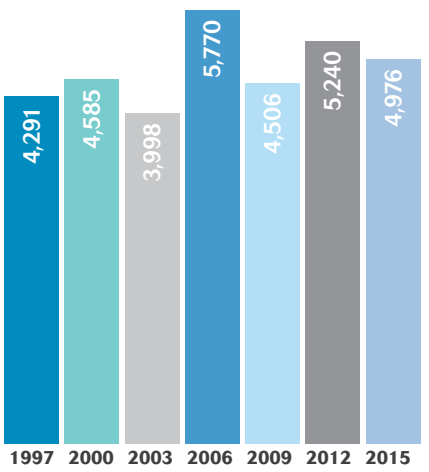
The larger the practice a veterinarian works in, the greater his or her personal veterinary compensation appears to be.



ACTIVE CLIENT BASE

Q: What is the approximate size of your active client base *(one or more visits per year)?*

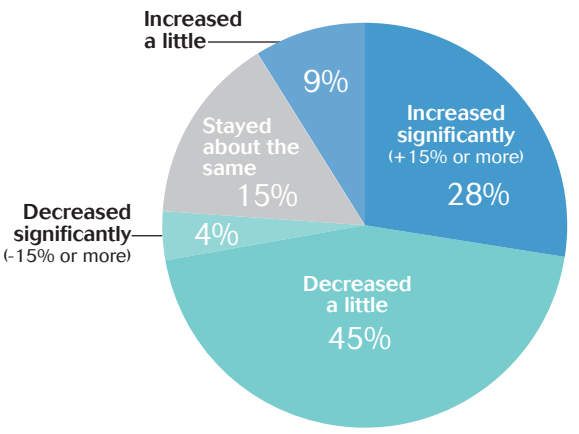
The size of the average client base has dropped about 5 percent since 2012. But veterinarians say their average client transaction is increasing (see page 24).



CHANGE IN ACTIVE CLIENT BASE

Q: Over the past three years, how has the size of your active client base changed?

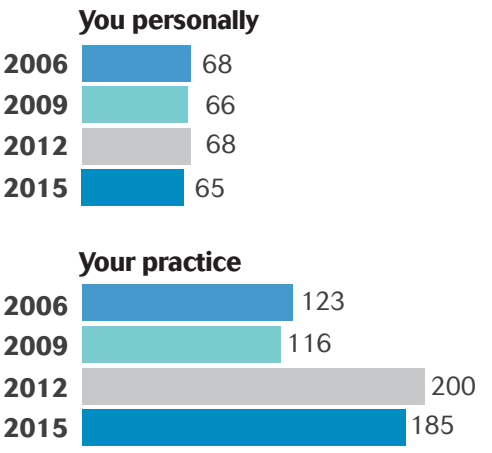
Nearly half (49 percent) of survey respondents say their active client base has decreased since 2012, which matches the results shown in the chart at left.



PATIENTS SEEN PER WEEK

Q: How many individual patients do you and your practice see in an average week?

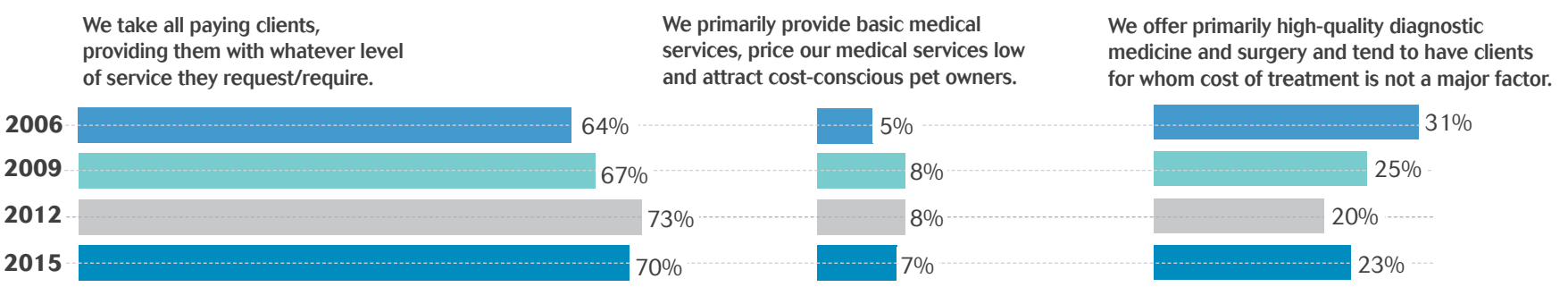
While the number of patients seen by individual veterinarians has remained fairly steady over the last nine years, the number seen at the average practice has increased significantly.



PRACTICE PHILOSOPHY

Q: Which statement most closely reflects your practice and client base?

From 2006 to 2012 there was a steady increase in the number of veterinary practices that took all types of clients and a decrease in the number that focused on high-end services. Now, however, the trend may be shifting the other direction.



SOURCE: dvm360 STATE OF THE PROFESSION SURVEY, 2006-2015

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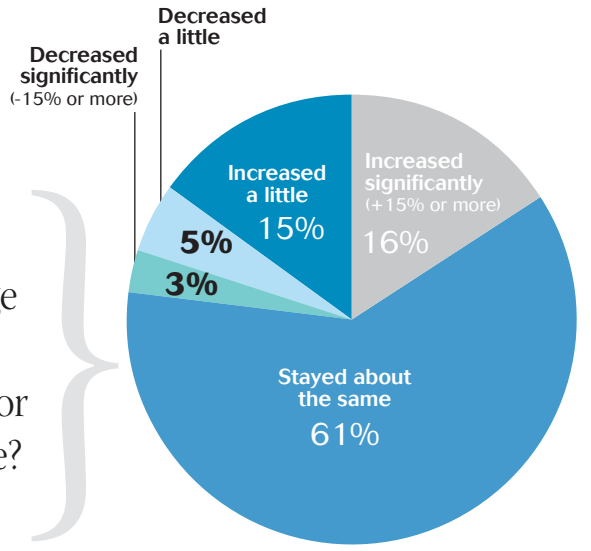
AVERAGE CLIENT TRANSACTION

Q: What is your current average client transaction?

Average response:

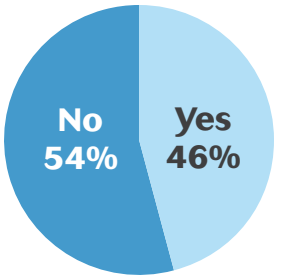
$162.48

Q: Over the past three years, has your average client transaction increased, decreased or stayed about the same?

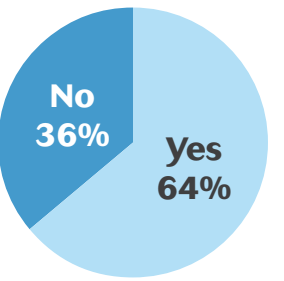


OWNERS: PLANS FOR EXPANSION

Q: Does your practice plan to hire additional veterinarians in the next two years?



Q: Can you find qualified associate veterinarians in the area in which you practice?



Why not?

"It's difficult to find associates willing to do mixed practice and be available after hours (on a rotation basis) for emergencies."

"They want to work less and make more then the owners."

"I'm rural; I require them to take call; I require them to work more than 40 hours a week."

"Debt too high, salary expectations too high."

"No one wants to work part time."

"Very few want to work full time."

"Can't find those willing to work by rules of the hospital and not state their own terms."

"I do alternative work and cannot find someone to work with me."

"Most associates prefer the larger practices where hours are less stringent and benefits are better."

"Lack of hands-on training, inability to do basic surgery at graduation, complete lack of core knowledge in products and services."

SOURCE: dvm360 STATE OF THE PROFESSION SURVEY, 2015

SERVICES PROVIDED, PROJECTED

Q: Are you providing more, about the same amount or less of these services compared with three years ago?

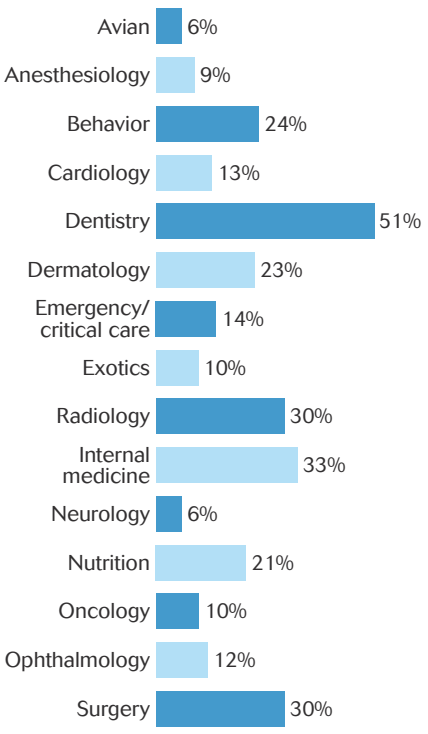
Diagnostics and dentistry continue to lead the pack when it comes to services veterinarians say they're providing more of. In keeping with current trends, product sales are the top categories respondents say they're providing less of.

	MORE	SAME	LESS	DON'T PROVIDE
Boarding	17%	31%	13%	40%
Sales of non-prescription products	17%	48%	**25%**	9%
Sales of prescription products	25%	52%	**23%**	1%
Behavioral consulting	22%	45%	7%	26%
Nutritional consulting	24%	57%	6%	13%
Dentistry	**54%**	36%	6%	3%
Surgery	33%	44%	21%	2%
Diagnostics	**61%**	32%	5%	1%
Diagnostic imaging	52%	38%	4%	6%

State OF THE PROFESSION 2015

Q: In which of these areas, if any, do you intend to develop greater expertise or expand services?

Dentistry and surgery are the areas in which veterinarians most want to develop their expertise or expand their services.



Methodology

dvm360's triennial State of the Profession Survey was sent by e-mail to subscribers of dvm360 magazine, *Veterinary Medicine* and *Veterinary Economics*. The survey generated 762 responses, creating a margin of error of about 3 percentage points (although sample sizes—and statistical reliability—on individual questions may be considerably lower). Respondents who completed the survey were eligible to download the top 10 most popular client handouts from dvm360 for 2015.

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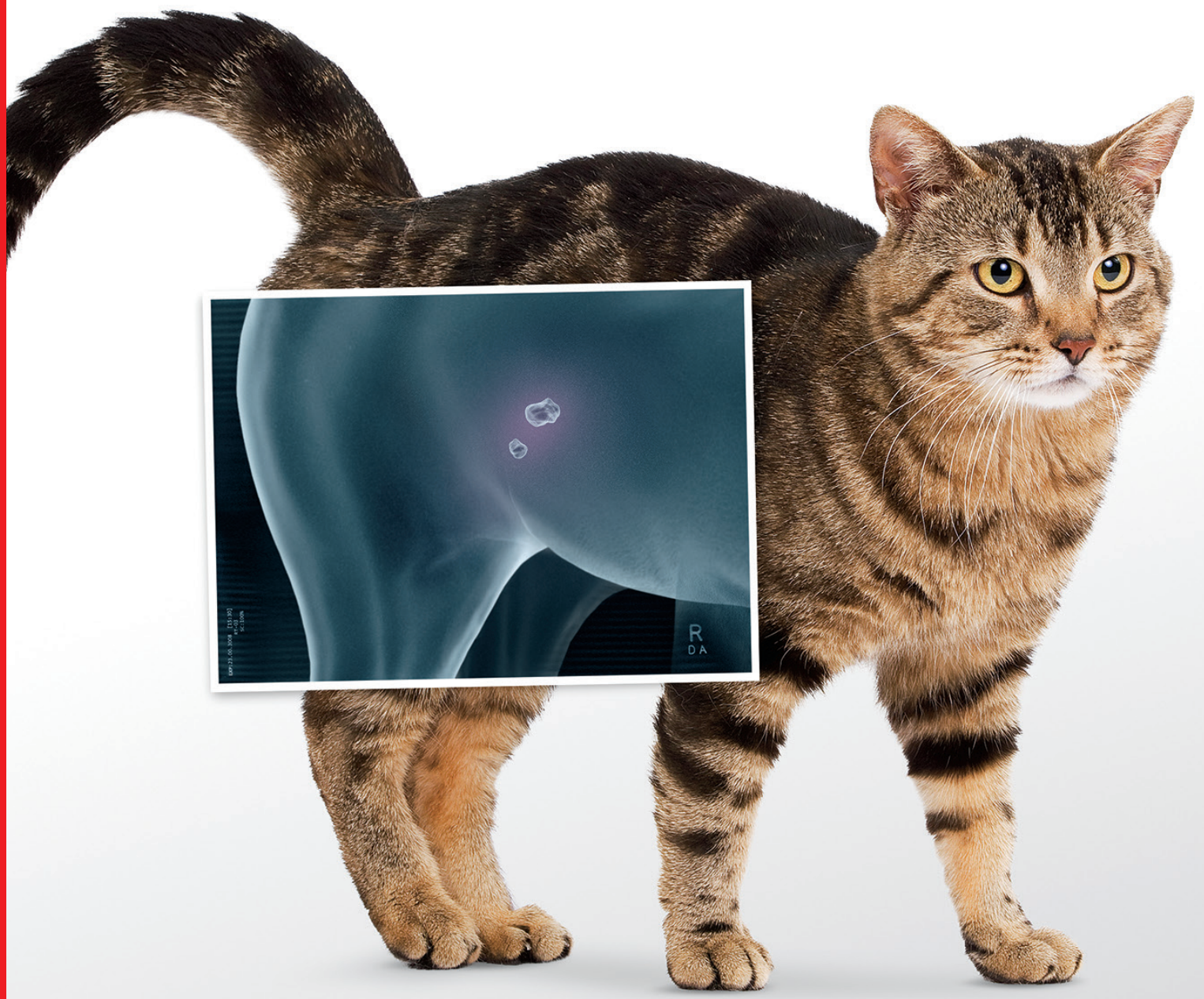

For more information about the science behind ROYAL CANIN VETERINARY DIET® URINARY SO®, visit **www.royalcanin.us/urinary** or call our Technical Services team at 1-800-592-6687.

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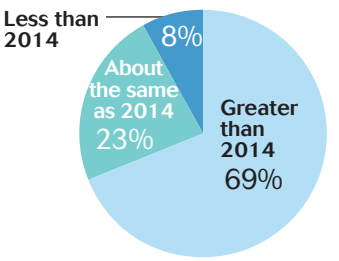
Royal Canin also offers URINARY SO® canine diets.

State OF THE PROFESSION 2015

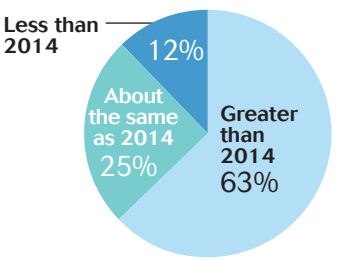
VETERINARY PRACTICE REVENUE

Q: Were your 2015 practice revenues greater than, about the same as, or less than 2014 revenues?

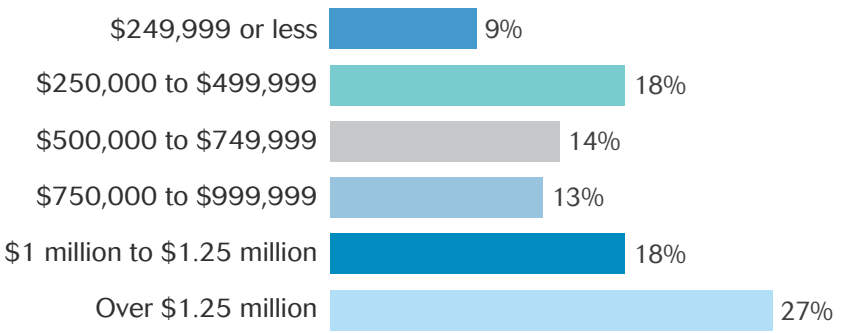
Gross practice revenue



Net practice revenue

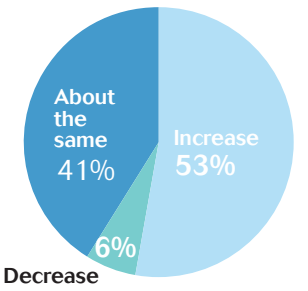


Q: What is the approximate annual gross revenue for your veterinary practice?



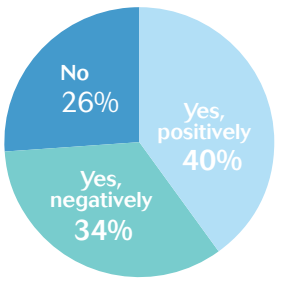
LOOKING AHEAD

Q: Do you anticipate any revenue swings for 2016?



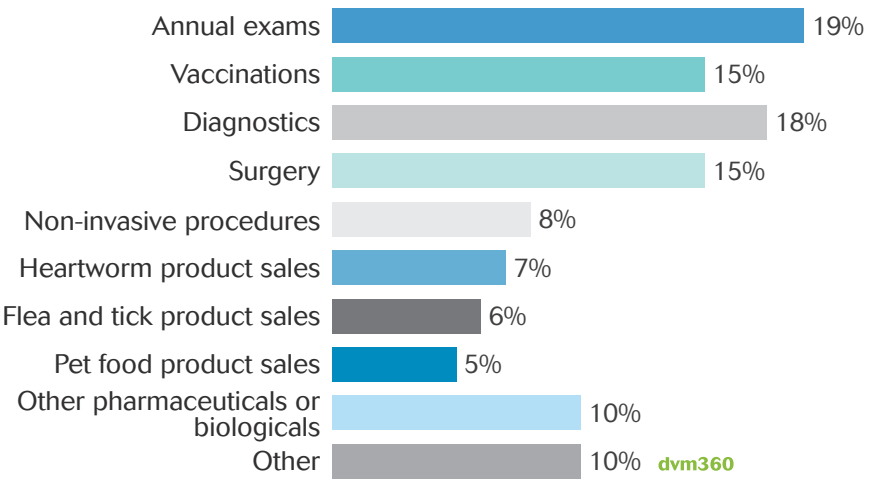
THE ECONOMY

Q: Has your local economy influenced practice revenue?



REVENUE CATEGORIES

Q: Approximately what percent of your practice's annual gross comes from each of the following categories?



SOURCE: dvm360 STATE OF THE PROFESSION SURVEY, 2015

Beagle vs. bedbug

> Continued from the cover

>>> Brody, a bedbug-sniffing beagle, alerts—gives a positive indication that he's found bedbugs or their eggs—in a hotel room.

tion can reach significant numbers, especially in low-income areas where limited income is available to deal with infestations, or in hotels and apartments that may have growing levels of infestation before they're detected.

The U.S. Centers for Disease Control and Environmental Protection Agency consider bedbugs a pest "significant of public health importance" and an emerging public health problem.[1]

Bedbugs require human blood as part of their life cycle, necessary for molting from nymph to adult. Their bites can create an immune response ranging from a minor irritating rash to severe allergic hypersensitivity. Heavy infestation can result in anemia. Though human laboratory results have not shown bedbugs to be vectors of viral, bacterial or protozoal pathogens, some health researchers suspect they might be capable of transmitting hepatitis B virus and antibiotic-resistant bacteria.

Impressive results of a controlled study

Because dogs don't rely only on visual cues, their enhanced olfactory ability has propelled their use in bedbug detection. In a series of studies by Margie (Pfiester) Lehnert at the University of Florida, properly trained dogs were shown to be extremely accurate at bedbug detection, indicating on as few as one male or female bedbug and as few as five viable eggs.

The researchers used a modified food- and verbal-reward training system with dogs who worked with individual scent-detection stations. The dogs were shown to have a 97.5 percent positive indication rate and no false positives. They also were able to discriminate live bedbugs and viable bedbug eggs from dead bedbugs, cast skins and feces. In a controlled experiment in hotel rooms, dogs were shown to be 98 percent accurate in locating live bedbugs.[2]

"Breed selection was left up to the trainers, but we know that one of their main criteria was selecting smaller dogs that would be less of a burden when working in a home," Lehnert says. The trainers used beagles, Jack Russell terriers and other smaller breeds with the appropriate temperament, personality, assertive work tendency and scent drive. Most of the dogs were rescued from shelters.

Lehnert and her colleagues also showed that dogs were able to distinguish live bedbugs from other household pests, including carpenter ants, cockroaches and termites. Furthermore, dogs trained to locate the scent of live bedbugs in experimental scent-detection stations were able to shift that ability to a more realistic hotel room situation.[2]

But what about the real world?

So are bedbug detection dogs as effective in natural field conditions? Rick Cooper, PhD, technical director of Cooper Pest Solutions in Lawrenceville, New Jersey, and co-owner of BedBug Central, set out to answer that question. He and his research colleagues at Rutgers University studied the ability of 11 dog handler–bedbug-detection teams to detect bedbug infestations under natural field settings.[3] The experiments were as follows:

- Experiment 1: Blind evaluation in preselected apartments.
- Experiment 2: Informed inspection of preselected apartments.
- Experiment 3: Informed building-wide inspection.

PHOTO COURTESY OF RICK COOPER, PhD

"One particular dog we worked with was capable of locating on the scent of the bedbugs without ever entering the room, just from the airflow seeping out from below the door. The room was later shown to have only five live bedbugs in it."

—Margie (Pfiester) Lehnert, entomologist

> Experiment 4: Detection of live "hides."

The results? Cooper's dog-handler teams were far less successful than those studied by Lehnert. There was great variation among the teams, and the percentage of efficacy was markedly reduced. In three distinct settings, the mean effectiveness of the 11 dog teams studied was 44 percent, with a mean false-positive rate of approximately 15 percent, though the companies involved promoted their dogs' accuracy as greater than 95 percent.

The results of experiment 1 showed that dog-handler teams accurately detected bedbugs 47 percent of the time, with 19 percent false positives. In experiment 2, the time for a team to inspect an apartment was 5.3 minutes. The team with the highest detection rate (77 percent) also had the highest false positive rate (57 percent). The team with the lowest detection rate (15 percent) had the lowest false positive rate (14 percent). In experiment 3, the mean inspection time per apartment was 1.2 and 4 minutes for the two canine teams. The detection and false positive rates were 22 percent and 8 percent, and 43 percent and 5 percent, respectively. In experiment 4, the two canine teams detected 83 percent of live hides and falsely alerted—gave a positive signal that bedbugs were present—on 25 percent.

Cooper says he and his fellow researchers are still trying to understand why the results of the dog-handler teams in the field were so much lower than those in the controlled training environment of Lenhert and colleagues. A followup study to try to determine the cause failed to receive funding, he notes.

>>> A bedbug dog checks out a printer in an office building.

Handler experience makes the difference

Based on the known capability of dogs' olfactory system to detect a variety of substances—from cancer to explosives—one would expect them to be highly effective in detecting bedbugs in a variety of environments, as long as the handlers know how to assist them. And that's Cooper's explanation for the teams' poor performance: handler inexperience.

"If you look at Pfiester's study, their dogs were very well-trained, the handlers provided by the training facility were highly skilled, and the study was done in a very simple, controlled environment: a hotel room," he says. "The Pfiester study clearly demonstrated the ability of the dogs to detect bedbugs at a very high degree of accuracy if you have a properly trained dog and a highly skilled handler."

He says many companies in the bedbug detection business don't have previous experience working with dogs and may not be as committed to the continued maintenance training and handling as those who handle bedbug-sniffing dogs for a living.

Cooper was certified as a bedbug dog handler several years ago. "I was given a trained dog and went through three to five days of basic bedbug dog handling, and a certification exam in a controlled environment," he says. "I would imagine that's what many of these companies' dog handlers did, too."

It's not that the handlers don't try, he reiterates. "It's that they're only as good as they're capable of with the minimal training they receive. If the handlers don't keep their dogs maintained at a high level of ability, or their handling experience is not to the degree it should be, that might account for the poor results we encountered."

Public confidence at stake

The concern is whether the public can be confident in such bedbug pest control services. Cooper believes more research is needed.

"If I were contracting for canine bedbug scent detection and a dog gave an alert, I would want that alert confirmed by visual inspection or monitor detection. At this point I do not have the confidence to trust the handler-dog teams," he says. "It's one thing to work with a dog in a controlled environment,

{ 4 questions to ask when buying or leasing a bedbug dog

If your veterinary clients—or you—are curious about employing the olfactory services of a bedbug detection dog, here are some things to check.

1 Is the dog's training up to date?

Most training is performed using proven apparatus, but it is also important that dogs be trained in the field. The dog should be inspection-ready at the time of service—in other words, it should be able to go into a house or hotel room on the first day and be qualified to do the inspection. The dog's work routine should be programmed during the training process, not afterwards.

2 Can the dog differentiate between live bedbugs and old evidence of infestation?

It's important that dogs don't alert in the absence of live bugs and eggs on old evidence.

3 Can the dogs detect bedbug eggs?

The earliest stages of an infestation may be limited to just a few eggs. The ability of a dog to alert to eggs when there are no other stages present is the highest level of detection possible. Such accuracy enhances confidence in declaring that a treated infestation probably has been eliminated.

4 Are reliability claims backed by evidence?

You may hear trainers and dog handlers claim that their dogs are 97 percent accurate. Ask for the data that back up their claims.

Source: Cooper, R. Four-Legged Bedbug Detectors. *Pest Control Technology* 35(8):76-78.

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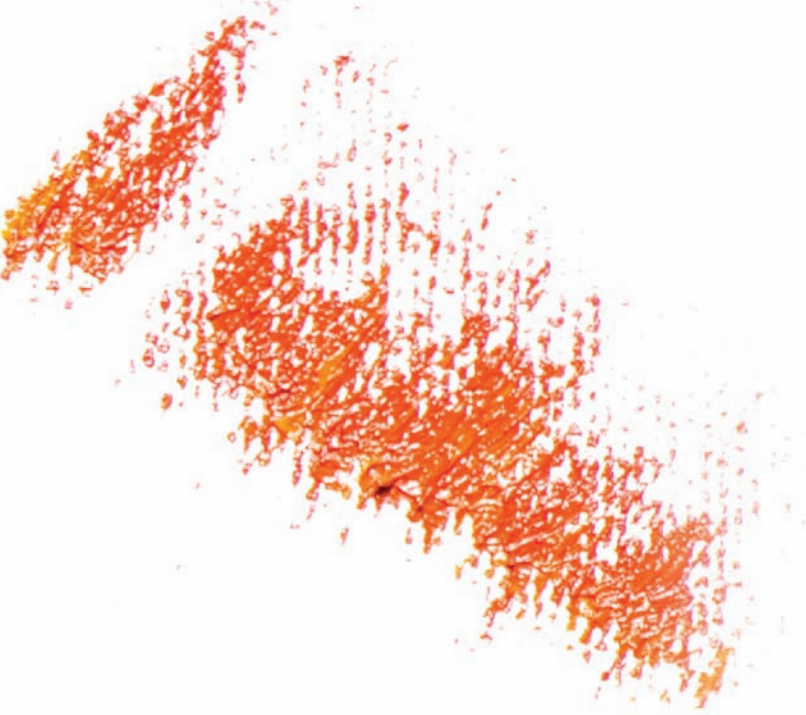

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but the real world is much more complex. Unfortunately, our study found that there are some problems."

In his *Bedbug Handbook: The Complete Guide to Bedbugs and Their Control*,[4] Cooper offers some conclusions. "The more bedbug detection tools you can deploy, the more likely you are to detect infestations early when bedbugs are the easiest to control," he writes. "Canine scent detection offers the only practical method for large-scale inspections in non-residential settings, such as schools, office buildings, retail stores, theaters, or mass transit, where thousands of square meters may require inspection and where bedbugs

>>> Depending on handler expertise, bedbug dogs can locate the pests with up to 98 percent accuracy.

PHOTO COURTESY OF JOSE "PEPE" PERUYERO, HIGH SPRINGS, FLORIDA

are less predictable, making them more difficult to detect by other methods."

Lehnert says she's glad Cooper did his study, because it showed the difference between a controlled experiment and the real world. "Cooper's study was pivotal to show the reality of bedbug detection in natural settings," she says. "Our study was done to show the possibility of training a dog to locate bedbugs, and the accuracy of trained dogs to differentiate live bedbugs and viable bedbug eggs, both a sign of an active infestation, from dead bedbugs."

She agrees with Cooper that the variance between her study and his is human error, not the dogs' capabilities.

"Bedbug-detecting dogs are exceptional at what they do—their olfactory capability is so great," she says. "One dog we worked with was capable of locating on the scent of the bedbugs with 100 percent accuracy, without ever entering the room, just from the airflow seeping out from below the door. The room was later shown to have only five live bedbugs in it." **dvm360**

References

1. Vaidyanathan R, Feldlaufer MF. Bedbug detection: Current technologies and future directions. *Am J Trop Med Hyg* 2013;88(4):619.
2. Pfiester M, Koehler PC, Pereira RM. Ability of bedbug-detecting canines to locate live bedbugs and viable bedbug eggs. *J Econ Entomol* 2008;101(4):1389.
3. Cooper R, Wang C, Singh N. Accuracy of trained canines for detecting bedbugs (*Hemiptera cimicidae*). *J Econ Entomol* 2014;107(6):2171.
4. Pinto LJ, Cooper R, Kraft SK. *Bedbug handbook: The complete guide to bedbugs and their control* (Mechanicsville, MD: Pinto & Associates, 2007).

Suggested Reading

1. Brooks SE, Oi FM, Koehler PG. The ability of canine termite detectors to locate live termites and discriminate them from non-termite material. *J Econ Entomol* 2003;96:1259.
2. Lenhert MP, Weeks ENI Weeks. Canine olfaction science and law: Advances in forensic science, medicine, conservation, and environmental remediation. (Boca Raton, FL: CRC Press, available March 2016).
3. Cooper R. Are bedbug dogs up to snuff? *Pest Control* 2007;75(1):49-51.

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.

Veterinary education and intellectual freedom

Distributive model of clinical education is a necessary part of the evolution of our professional education.

By Peter Eyre, DVM&S, BVMS, BSc, PhD

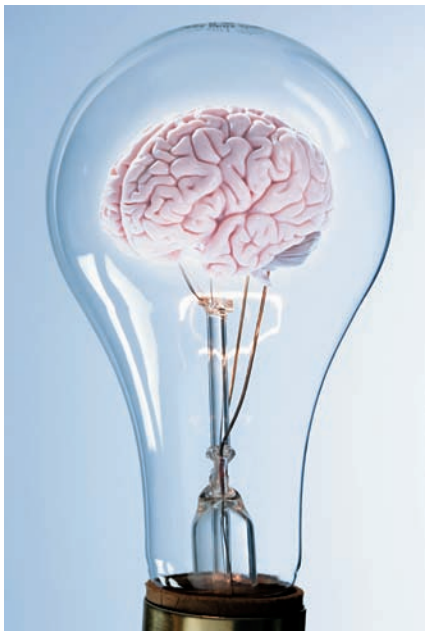
Certain bold innovations in veterinary education have created unnecessary controversy between the academic community and the general veterinary profession—particularly regarding accreditation by the American Veterinary Medical Association Council on Education[1,2]—but also among the colleges themselves.

Some veterinarians proclaim that the profession's future can only be built on veterinary educational structures from the past rather than honestly weighing the results and effectiveness of new models.[3] Dr. Robert Marshak adamantly condemns distributed education,[3] even though all veterinary colleges (including the two institutions with which he is closely associated) have successfully employed community-based clinical education for many years.

A decade ago, Dartmouth Medical School published a study that compared medical students' clinical skills development at a variety of distributed sites with skills learned at its own teaching hospital.[4] A class of 156 senior medical students was randomly assigned to two equal-size cohorts and randomly rotated through three clinical education settings: Dartmouth's medical teaching hospital, college-affiliated off-campus clinics, and independent primary care community (family) practices. Four basic clinical skills were evaluated: communication, history taking, physical examination, and patient (human) education.

Researchers found no measurable differences in students' clinical skills among the three practice settings and no variations associated with the different body systems examined. Evidently, a campus-based, university-owned and -staffed teaching hospital may not be the perfect educational "gold standard" that Dr. Marshak advocates.[1,3] Indeed, a fixed physical location should no longer be considered necessary to meet high educational standards in science, technology, engineering or medicine. Given the wealth of excellent private veterinary practices, corporate organizations and public agencies—together with state-of-the-art digital and other technologies—education that is well-managed can take place where it makes most sense, including (of course) college laboratories and teaching hospitals if those are the best choices.

In our ever-changing world, we must be wary of authoritarianism that fosters notions of intellectual superiority and threatens imaginative thinking and the pursuit of new ventures. We should keep an open mind about what works.



Without doubt, the veterinary profession is facing several major issues that will be very difficult to resolve. Securing a prosperous future will require flexible thinking and much more professional harmony and trust than we have so far been able to achieve.[5] We must respond appropriately to society's needs and expectations, as society will not adapt itself to our hapless behavior. Whatever we do—or fail to do—there will be real consequences that we'll all share equally, for better or for worse, whichever "side" we are on.

All progress depends on change. Even some of history's most sacred myths were forced to align with new scientific observations. Had it not been for a few condemned sixteenth- and seventeenth-century heretics, the earth might still be flat with the sun still rotating around it!

In our ever-changing world, we must be wary of authoritarianism that fosters notions of intellectual superiority and threatens imaginative thinking and the pursuit of new ventures. As with biogenetic diversity, intellectual diversity and opportunism are essential for advancement. We should keep an open mind about what works. There can be little doubt that community-based (distributed) clinical veterinary education will endure—as it should. **dvm360**

References

1. Marshak RR. Veterinary school accreditation: on a slippery slope? *J Am Vet Med Assoc* 2011;239:1183-1187.
2. Nelson PD. Veterinary college accreditation: setting the record straight. *J Am Vet Med Assoc* 2012;240:810-814.
3. Marshak RR. The rise of anti-intellectualism in veterinary education. *dvm360* magazine 2015;46(9):30-34
4. Carney PA, Ogrinc G, Harwood BG et al. The influence of teaching setting on medical students' clinical skills development: is the academic medical center the "gold standard"? *Acad Med* 2005;80:1153-1158.
5. Eyre P, Cohn TJ. Thinking and working together for the common good. *J Am Vet Med Assoc* 2015;247:591.

Dr. Peter Eyre is professor and dean emeritus at the Virginia-Maryland College of Veterinary Medicine in Blacksburg, Virginia.

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[1] Straubinger RK, Chang YF, Jacobson RH, Appel MJ. Sera from OspA-vaccinated dogs, but not those from tick-infected dogs, inhibit *in vitro* growth of *Borrelia burgdorferi*. *J Clin Microbiol*. 1995;33(10):2745-2751.

[2] Rice Conlon JA, Mather TN, Tanner P, Gallo G, Jacobson RH. Efficacy of a nonadjuvanted, outer surface protein A, recombinant vaccine in dogs after challenge by ticks naturally infected with *Borrelia burgdorferi*. *Vet Ther*. 2000;1(2):96-107.

[3] Probert WS, Crawford M, Cadiz RB, LeFebvre RB. Immunization with outer surface protein (Osp) A, but not OspC, provides cross-protection of mice challenged with North American isolates of *Borrelia burgdorferi*. *J Infect Dis*. 1997;175(2):400-405.

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Let's stop berating veterinarians who uphold medical standards

When pet owners fail to exercise personal responsibility, they bear the resulting ethical burden—not the doctors who advise them.

We are submitting this response to Dr. Marc Rosenberg's December column, "Shades of gray in the veterinary-client relationship," for two reasons. First, the time has come to stop disparaging veterinarians for upholding medical standards. Second, it is time to stop ethically and morally burdening veterinarians when pet owners fail to exercise personal responsibility.

Dr. Rosenberg did not include the state in which Dr. Hanes, the subject of his piece, practices. But in Pennsylvania, the state in which Dr. Rosenberg attended veterinary school, the law states, "A veterinarian shall only prescribe prescription drugs to animals that are under the veterinarian's care. 'Under the veterinarian's care' means that the veterinarian or one of the veterinarian's licensed associates has examined the animal.'"

New Jersey, where Dr. Rosenberg practices, defines the veterinarian-client-patient relationship (VCPR), in part, with the requirement that "the veterinarian has undertaken to make medical judgments regarding the health of an animal" and "the veterinarian has sufficient knowledge of the animal … "

Statutes in the other 43 states with specific VCPR laws read similarly. Of course, these clauses are open to some degree of interpretation. We ought not debate, however, Dr. Hanes' obligation to meet his state's minimum requirement. In this case, his interpretation included an annual blood test—a component of examining the animal in order to gain sufficient knowledge for making medical judgments about a patient prescribed a controlled drug. The client was aware of this requirement, and she had a variety of options to consider:

> Extended payment options have become more readily available, allowing clients to spread out the cost of annual monitoring.

> The client could have made priority adjustments in her personal budget to allow for the anticipated cost.

> In the moment of crisis, the niece provided financial support. The client could have spoken with her niece prior to the epileptic event.

> Employing any of the above, the client then could have taken advantage of the discount Dr. Hanes offered on the blood test.

> The client could have sought out a different provider who might meet her desires before she ran out of medication.

In the end, she did none of these.

While Dr. Rosenberg suggests that Dr. Hanes could have evaluated previous laboratory results, we suspect that Dr. Rosenberg's own clinical experience might reveal that patients do often show a change in health and laboratory results over time.

Dr. Rosenberg also suggests having the client sign a waiver acknowledging the risks of continued treatment without monitoring. In reality, such waivers do not protect a veterinarian from liability. As the knowledgeable professional, the veterinarian will be held liable if he continually dispenses a controlled drug with known potential adverse effects if those adverse effects emerge and progress.

In Dr. Rosenberg's account, the niece's veterinarian required the *same blood test* prior to dispensing phenobarbital. Further, Dr. Rosenberg claims Dr. Hanes "lost a good client." In fact, he lost a client who endangered her dog by refusing an anticipated annual blood test at a discounted rate and whose extended family filed a baseless complaint with the veterinary board.

Finally, Dr. Rosenberg believes Dr. Hanes "exercised poor judgment." We disagree. Dr. Hanes behaved as we presently behave and will continue to behave. Veterinarians should be neither belittled for upholding practice standards nor ethically or morally chastised for a client's refusal to assume personal responsibility.

Ryan G. Gates, Cuyahoga Falls, Ohio
Annmarie Hill, Aliso Viejo, California
Brenda Mostco, Chagrin Falls, Ohio
Harold Jones, Spring Lake, Florida
Adolf K. Maas, Bothell, Washington
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Elizabeth Noyes, Bluemont, Virginia
Jamie Snow, Mason, Michigan
Jennifer Taylor, Franklin, New Hampshire

Fictional scenario concludes with fictional response

In "The Dilemma" column of December 2015, Dr. Marc Rosenberg suggests that Dr. Hanes used poor judgment in how he handled informing clients that animals on certain long-term medications need to have periodic blood test done prior to refilling. "Not monitoring the drug's impact could solve one problem in the pet but create another," he writes.

The scenario describes a retired pet owner with a dog that had been on phenobarbital for five years to control epilepsy. The pet owner says she can afford the relatively inexpensive medication but not the yearly blood profile testing. Dr. Hanes loses the client.

Dr. Marc's response: Have the owner sign a waiver acknowledging the risks and dispense the medication. Make the blood testing affordable for this needy client. Make a calculated exception, since previous annual blood tests were essentially normal. His last piece of advice for Dr. Hanes? "Live and learn."

Every one of us has faced a similar if not this exact dilemma. "The Dilemma" column's disclaimer: "The veterinary practices, doctors and employees described in 'The Dilemma' are fictional."

That takes a tremendous load off my back, because by simple extrapolation, I realize that the author's "response" is also "fictional."

A.H. Miceli, BSc, DVM
Oxterville, Michigan

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A shroud of secrecy cloaks the veterinary loan repayment program

The VMLRP's misplaced priorities don't address glaring shortages.

I'm writing in response to the December 2015 *dvm360* cover article "Report pinpoints heavy veterinary shortage in Appalachia" and the News/Politics article "USDA awards $4.5 million in veterinary loan repayments" that ran inside the same issue.

I had always assumed that once an area of shortage was identified, veterinary practitioners like myself in underserved areas could apply for loan forgiveness. I was wrong.

As a large animal practice owner in Georgia, my office receives calls to treat horses, cattle and small ruminants from counties up to 100 miles away throughout the entire northern portion of our state. This is because there is a paucity of mobile practitioners in the surrounding counties willing to work on food animals. We didn't need a large-scale study like the 2015 State of Animal Health in Appalachia report to bring this to our attention.

Consequently, I was incredulous when I reviewed the Veterinary Medicine Loan Repayment Program (VMLRP) website and found that in 2014-2015 the only shortfall in my 28-county area as identified by my state veterinarian was a "critical" shortage of "food safety" and "public health" veterinarians—otherwise known as meat inspectors! In 2015, two smaller areas in the southern portion of Georgia had critical shortages of veterinarians treating food animals. Remarkably, there was a "high" degree of shortage identified in the cities of Athens and Tifton, Georgia—the location of the University of Georgia's College of Veterinary Medicine Diagnostic Laboratories. In these locations, loan forgiveness could be awarded to applicants serving in food safety, public health, epidemiology and laboratory diagnostic capacities.

The only shortfall in my 28-county area as identified by my state veterinarian was a "critical" shortage of "food safety" and "public health" veterinarians—otherwise known as meat inspectors!

Being curious, I spoke to someone from the VMLRP who said it wasn't possible to identify recipients of the $4.5 million in taxpayer-funded veterinary school loan repayment awards (except perhaps through the Freedom of Information Act). Don't get me wrong, I'm confident that every award recipient is improving services, and I'm heartened to know that someone from my home state of Georgia actually received a repayment award in 2014. This award recipient lives in one of 74 counties identified by multiple studies as lacking food animal services, according to the individual's nomination information.

Fortunately for that recipient, he or she had the option of applying for loan repayment as a practitioner and not just as a government employee. The state veterinarian signing off on county nominations had tagged the recipient's six-county area in eastern Georgia as needing a food animal practice. Meanwhile, veterinarians in my specific 28-county area in the foothills of the Appalachian Mountains could only apply for an award in 2014-2015 if they were employed in the food safety or public health arena (aka meat inspectors).

I'll be writing the office of my state veterinarian to remind it that critical shortages in 2016 will go beyond filling positions at my alma mater (UGA) and well beyond filling government regulatory positions. If we're serious about encouraging veterinarians to keep doing the dirty (and sometimes dangerous) work associated with cattle production or the financially unrewarding work of helping small ruminant owners maintain their herds, the rest of us need some help too. I hope the next article I read about the VMLRP doesn't fit so neatly into the News/Politics page and that increased transparency dispels any hint of gerrymandering.

Pam Milligan, DVM
Cleveland, Georgia

An ethical practice helps its loyal lower-income clients

Pets need care ... even those owned by folks with less money.

I agree with Dr. Michael Blackwell in "Commentary: Nonprofit veterinary clinics do far more good than harm." If a client declines up-to-date diagnostics and therapies, then "medicine from the 1960s" can be an appropriate treatment for many problems. Anyone who has practiced medicine in or visited a third-world clinic—human or veterinary—knows that we treat our pets better than most of the world treats humans. Of course, treating a blocked tomcat just with urinary acidifiers is inappropriate. But an animal only has a right to a humane life and humane euthanasia. When we attribute additional rights to our patients, the costs are borne by the pet owners.

An ethical veterinary clinic will work with its active clients and charge amounts for sick-animal medical services that are appropriate for the animals and clients' ability to pay. At my practice, we help those who are at the lower end of the income scale as long as the patient has been seen within the last one to two years for a health preventative service. Clients receive reduced sick-animal exam fees and reduced emergency fees, and we provide them with the ability to pay later.

Steven Benscheidt, DVM
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See brief summary on page 38

References: 1. Trifexis® [product label]. Indianapolis, IN: Elanco; 2014.
2. Heartgard® Plus [product label]. Duluth, GA: Merial Inc; 2011.

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Jeremy Campfield, DVM

Introducing *Codger* and *Greenskin*

One of the more obvious discrepancies in veterinary medicine stems from the natural antagonism that arises between the old farts and us newbies. Here's a closer look.

How much do you really have in common with your current boss? Take a close look at those ripe experienced practitioners who want nothing more than to sell their two-man practice and retire. Now examine the throngs of wet-behind-the-ears, newly minted DVMs who just can't wait to take on that first cat neuter in their large corporate-run practice.

It seems that the last couple of decades have jumbled some widely accepted ideals and left some of us wondering which way is up. Sure times are changing, but who is right in all of this? We young'uns are pushing for work-life balance and career satisfaction. Yet we would never have any room to move forward if it weren't for our forefathers who have lived out tough careers in the trenches and may not necessarily have a whole lot to show for it.

Of course, this phenomenon isn't unique to our profession. To quote Tupac and Grand Puba: "What more could I say? I wouldn't be here today if the old school didn't pave the way."

RYAN OSTRANDER AND ANNE McDONALD CAMPFIELD

Or take Lloyd Christmas' insightful perspective in *Dumb and Dumber*: "Senior citizens, although slow and dangerous behind the wheel, can still serve a purpose."

I'm dedicating this column to the ever-growing generation gap in veterinary medicine and the divergence in the way we view our mission, approach business opportunities, and even how we practice medicine or communicate with clients. I don't intend to comment on whether such differences are mostly "good" or mostly "bad." After all, veterinary medicine is constantly evolving to serve the needs of society and provide better care for our patients.

We newbies have a lot to gain from respecting and paying attention to those who have been doing this stuff for longer than we've been alive. Likewise, those crotchety old dudes will need to stay abreast of current medical and business trends if they wish to stay relevant, or at the very least be able to cash out and sell that practice.

To illustrate some of the foundational differences in a hope to find some common ground, I've taken on the role of moderator between two fictional characters. In the coming months, these two are going to have to hear out each other's differences on a variety of subjects. Let's meet our two prototype veterinarians in this great drama:

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.*

The good Dr. Codger

Student debt at graduation: What's that?

Career summary: Graduated in 1963. Worked for an even older guy for three years, then bought the practice. Been working there 6 a.m. till 10 p.m., six days a week ever since, except for that one week trip to the Grand Canyon with the family in 1972. He has protected the environment by producing zero medical waste during his entire career. Well, there was that one piece of catgut that one time, but his boss put an end to that real quick.

Hobbies: Fly fishing. Basic woodworking. Reading the newspaper—yes, the actual paper one. Backgammon with the boys is a real thrill on Friday nights. Model trains. Not wasting anything.

His clients: Love him. The diagnosis is always right. He doesn't even need all those fancy tests. The more injections the better. No medical record? No problem.

Exit plan from veterinary medicine: Been "working" on selling the practice. For some reason the last prospect done and runned off. Them kids just don't know how to work these days.

The new Dr. Greenskin

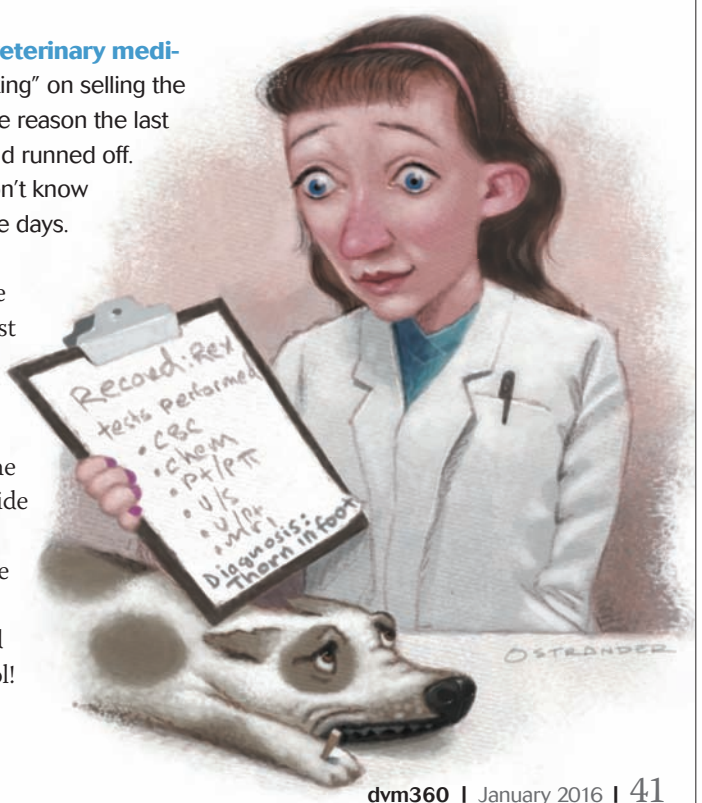
Student debt at graduation: $150,000 (omg)

Career summary: Graduated top of the class. Completed an internship in a large referral practice where she was allowed to complete medical records and got too close a cat's abdomen one time. Her current four-day workweek in general small-animal practice is so. much. stress. She's waiting for her dream job to open up: developing microvascular procedures for ferrets.

Hobbies: Binge-watching *Orange Is the New Black* and Bravo reality shows. Dressing her cats in costumes (most of the guys she dates don't stick around long for this reason). Instagram all day, every day. Baking brioche.

Her clients: Mildly terrified she's there. Often ask, "Will the real doctor be coming into the room soon?" and "When is your boss back from vacation?"

Exit plan from veterinary medicine: Wait, what? My Roth IRA should have me covered, right?



So which of these veterinarians is most like you? I would venture to guess that the Dr. Greenskins outnumber the Dr. Codgers by a wide margin these days. We'll see what these two doctors are up to next time, in Old School, New School!

dvm360

The year ahead: Are we headed for another recession?

Take a look at the indicators so your veterinary practice is prepared.

If we know that a business cycle exists, why is there one?

I have asked this question for more than three decades and rarely get an answer. The U.S. economy's alternating periods of expansion and contraction have occurred throughout its history and will likely continue into the foreseeable future.

In the summer of 2015, the economy began to send out mixed signals on its position in the business cycle. During that period, some events responsible for the growth in our gross domestic product (GDP) showed considerable weakness, while other events appeared strong.

Why does this cycle of increasing and then declining GDP growth occur?

The business cycle is measured by gross domestic product (GDP), the value of all goods and services produced in the United States. The cycle is essentially caused by the difference between the production of goods and services and the consumption of those same goods and services. When production exceeds consumption, inventories begin to accumulate, sending a signal to producers to cut back on production.

Reduced production is usually achieved by reducing workers' hours. As a result, their incomes decline and consumption drops below production, which in turn stimulates another round of reduction in workers' hours. Eventually, production is reduced until it is less than consumption and inventories begin to decline. At that point, workers' hours are increased and consumption once again exceeds production—which stimulates growth.

Some believe that the last recession was set off by the housing bubble, but this is not the case. The housing bubble was burst by the decline in economic growth. As short-term adjustable rate mortgages came due, many loan holders could not afford to pay down the loans. Some of the delinquency was due to the already cooling economy, while others defaulted on their loans because they received mortgages that were beyond their means to pay after the short-term period of the loan expired.

As a result of the contraction phase of the business cycle and the crash of the mortgage market, GDP declined sharply and has yet to return to the long-term growth trend. Since the start of the last recession in December of 2007, the economy has lost roughly $7.1 trillion in gross output. The Congressional Budget Office (CBO) has forecasted that this gap between actual and potential GDP will close by 2018 (see Table 1, page 44).

How can you determine where the economy is in the cycle?

The CBO projection does not include any estimate of when the business

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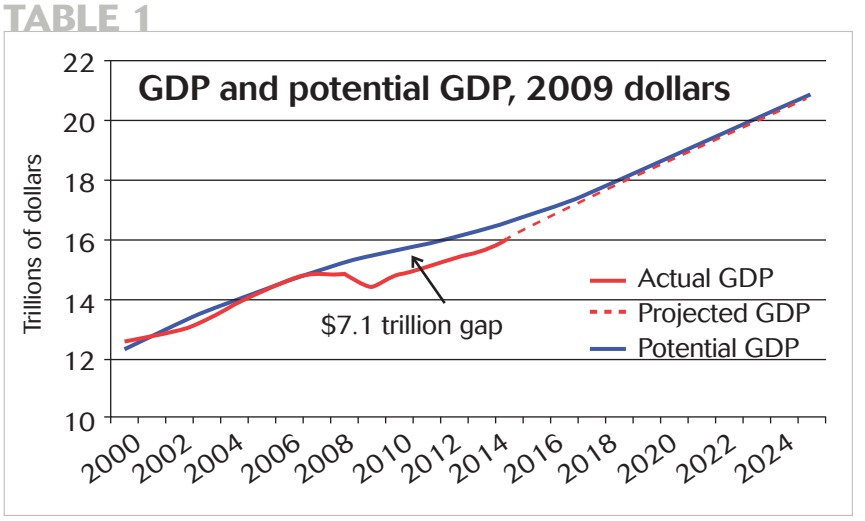
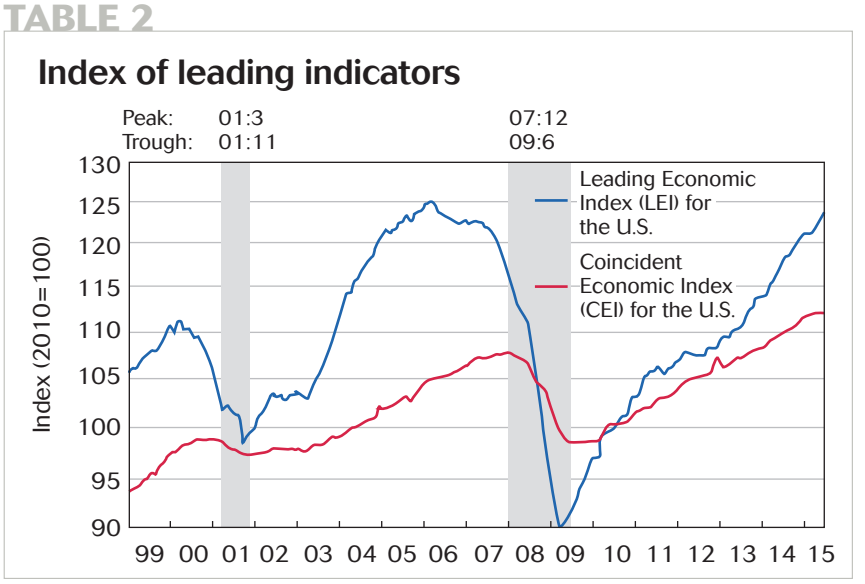
From the data available at the time of this writing, I would suggest that the next recession could begin as early as eight months from now to as far away as 20 months from now.

TABLE 1



Source: AVMA Veterinary Economics Division

TABLE 2



Source: AVMA Veterinary Economics Division

cycle may turn downward, and thus its projection of GDP is not helpful to businesses trying to make decisions that reflect the potential of a pending recession. For that projection, we can turn to the Conference Board and its leading economic index (LEI). Table 2 illustrates both the LEI and the coincident economic index (CEI) from January 1999 to September 2015.

The LEI is like the windshield of a car, designed to show what's ahead, while the CEI is like the side window, designed to show what's occurring now. The gray bars indicate the recession periods when the economy contracted. The dates at the top indicate the month and year at the beginning and end of the recession. Note that the LEI turned downward months before either recession actually occurred. The LEI thus provides an advance warning of an economic downturn.

Currently the LEI appears to be climbing, but this appearance is misleading. From June to August the LEI was flat, showing no increase, while from August to September the LEI declined. And GDP growth fell from 3.9 percent in the second quarter of 2015 to 1.5 percent in the third quarter.

Whether or not the last three months of LEI values is a harbinger of conditions to come, the economy has been in a growth period since 2012. This steady improvement sets expectations of growing demand and increased levels of output to ensure that supply can keep pace with growing demand. As a result of slower growth in output around the world, the U.S. economy's expansion has also softened. If U.S. production has overshot consumption during this period, the beginning of a new economic contraction period is likely. How quickly that contraction becomes a recession will depend on how far production overshoots consumption. From the data available at the time of this writing, I would suggest that the next recession could begin as early as eight months from now to as far away as 20 months from now.

What can you do to take advantage of the cycle?

The longest economic expansion period in the last seven decades was 120 months and the shortest was 12 months, with a mean length of 61 months. The current expansion has lasted 78 months. Using the recessionary target range, the expansion could last 86 to 98 months before the next recession. Knowing that, what strategies might be implemented to reduce financial hardships among veterinary practices?

First, **create a reserve account** to help ensure that you can cover any negative cash flow. Take a look at your cash flow from 2008 to 2011 to get an idea of what that amount was and accumulate a fund equal to the total negative cash flow that occurred during that period.

Second, **forego capital purchases.** The best time to purchase large capital items is during a contraction when manufacturers are struggling to eliminate inventory and builders find it difficult to maintain full-time employment for their crews.

Finally, **cull inventory** of pharmaceuticals and consumables and eliminiate underutilized equipment. Attempt to reduce fixed costs while adding value to services. It's not necessary to reduce fees during a recession if clients see greater value for the same costs.

The index of leading indicators is found on the Conference Board's website (conference-board.org) and is typically posted on the third Thursday each month. By learning how to interpret this index, you'll have access to the U.S. economy's early warning signals and be able to plan accordingly.

Interestingly, if enough people made financial decisions using this index, there would be no business cycle. But history shows us that is unlikely, and that's why there continues to be one. dvm360

Dr. Mike Dicks, director of the AVMA's Veterinary Economics Division, holds a doctorate in agricultural economics from the University of Missouri. He has worked in Africa on water delivery and energy production technologies and has served with the USDA's Economic Research Service.

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We mean **business**

We're rounding up the hottest market trends and industry issues of 2015 so you can head into next year informed and empowered.

We're calling it: 2015 was the year of transparency in veterinary medicine. Not that you had anything to hide in years past, but this year? This year was different. You were vocal about the issues affecting your life and your practice, and it spurred us into action. Our sister magazine, *Veterinary Economics*, focused on covering the emotional side of veterinary medicine, and the response? A resounding "More, please." Articles on regrets, frustration with clients, and raw, honest admissions about life in practice were some of our most highly trafficked pieces this year—and it was as if a barrier of silence was broken. So let's take a look back and then move forward, empowered.

1 Veterinary medicine's top 10 regrets

Data from the 2015 *Veterinary Economics* Career and Family Survey shows that in general veterinarians are happy with where they are in their lives, with 59 percent responding yes when asked, "Are you happy with how your life has turned out to this point?" Five percent replied no, and 36 percent said yes and no. But there are still things that you'd change. We tallied up everything our respondents said they wish they'd done differently.

2 I'm a veterinarian—not a superhero

In this hot-button piece, Dean Scott, DVM, offers an unapologetic objection to the veterinary profession's seemingly obligatory requirements to work long hours, be the good guy or care more about pets than their owners. He calls for "a paradigm shift in practice," wherein veterinarians learn to set boundaries for their time and get over the "good guy" complex.

3 10 things you must do on a veterinary team member's first day

Melissa Tompkins, BS, CVPM, offers her expert advice on how to handle a first day—when it's not your own.

Her first rule of first days? Don't throw them in and hope they swim. After all, well-trained team members are happier and more productive, plus, they stay in their positions longer (hooray for no turnover!).

4 6 reasons why the proposed Fairness to Pet Owners Act fails veterinary patients, practices

Part open letter to Congress, part editorial, and a whole lot of passion make up this piece by Bash Halow, LVT, CVPM. In it, he reminds veterinary professionals that "any legislation that drives animal healthcare away from our profession, grows big business, weakens small business and erodes opportunities to improve care isn't fair. It's folly."

5 Top 5 client complaints and why they ditched their veterinarians

Veteinary Economics called on the experts—Karen Felsted, CPA, MS, DVM, CVPM, CVA, and owner of PantheraT Veterinary Consulting, Sheila Grosdidier, RVT, consultant with VMC Inc., and Sharon DeNayer, *Firstline* Editorial Advisory Board member and practice manager of Windsor Veterinary Clinic—to guide veterinary teams through a few responses received after *Veterinary Economics* surveyed pet owners to ask why they left their veterinary practices. Think these scenarios could never happen at your clinic? Felsted says don't be too sure.

6 Kindergarten life: All I really need to know about veterinary medicine I learned in kindergarten

Let's take it back ... way back. It's been 26 years since Robert Fulghum wrote the bestselling *All I Really Need to Know I Learned in Kindergarten*, a look at childhood lessons that stay true in adulthood. It's past time for the veterinary school edition, courtesy of Michael Nappier, DVM, DABVP, and based on the timeless lessons he sees students at Virginia-Maryland College of Veterinary Medicine model for him year in, year out ...

Get your fix

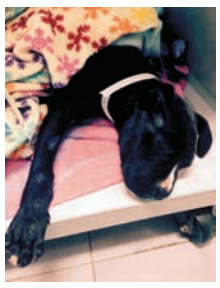
Scan the code to get more of our top 10 business stories of the year—or go to **dvm360.com/bizyearinreview**.

7 When pet owners just make you sigh ...

As veterinarians and veterinary team members, your love for pets and clients is legendary, but sometimes you need to blow off steam so you can get back to being your normal, compassionate self behind the veterinary practice front desk, in the exam room or rocking the treatment area. We plucked the best bits of venting from Twitter feed @eyerollatthevet about the clients you (mostly) love.

8 To save a puppy

And now for the tearjerker on the list: Contributor Andrew Rollo, DVM, penned a personal story of the race to save a dog found abandoned in a freezing cold dumpster. It's one of a million reminders every day that veterinarians have to charge for their services to keep the doors open, but very few are "in it for the money."

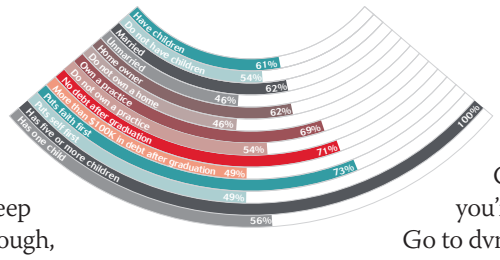


9 Smart moves to declutter, prettify your practice

And because veterinarians are nothing if not practical: Advice from longtime hospital design contributor Dan Chapel, AIA, NCARB, on the back-room touch ups that can make all the difference in your hospital's function *and* appearance.

10 Veterinary happiness: Do you fit the profile?

And finally, even more on happiness. After combing through the responses regarding the personal decisions of veterinarians who participated in the 2015 *Veterinary Economics* Career and Family Survey, we established two profiles based on those who answered if they were happy—or unhappy—with their life at this point.



Some traits in relation to happiness aren't surprising (hey, no debt? Keep walking). Others, though, might hit closer to home. You may even recognize yourself—we hope in the happy profile—or maybe you recognize the young associate in the break room staring blankly at yet another bologna sandwich. Bottom line: Good or bad you're not alone. Go to dvm360.com/burdenofcare to read more about the emotional pressures veterinarians are highly susceptible to and experiencing in veterinary medicine today—and what you can do about them. **dvm360**

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The *marketplace* of ideas

Sharing is caring—except when it isn't. Does a doctor "own" his own tips and tricks?

Dr. Marc Rosenberg is director of the Voorhees Veterinary Center in Voorhees, N.J. The veterinary practices, doctors and employees described in "The Dilemma" are fictional.

Dr. Samp owns a successful small animal practice in an upscale neighborhood. He and his staff of four doctors and 16 support personnel are dedicated to fine medicine and attentive client service—so much so that Dr. Samp often finds himself thinking of ways to make his practice more user-friendly for both pets and owners. He thinks of himself as an innovator, and his "practice hacks" are his pride and joy.

Practice hacks? Huh?

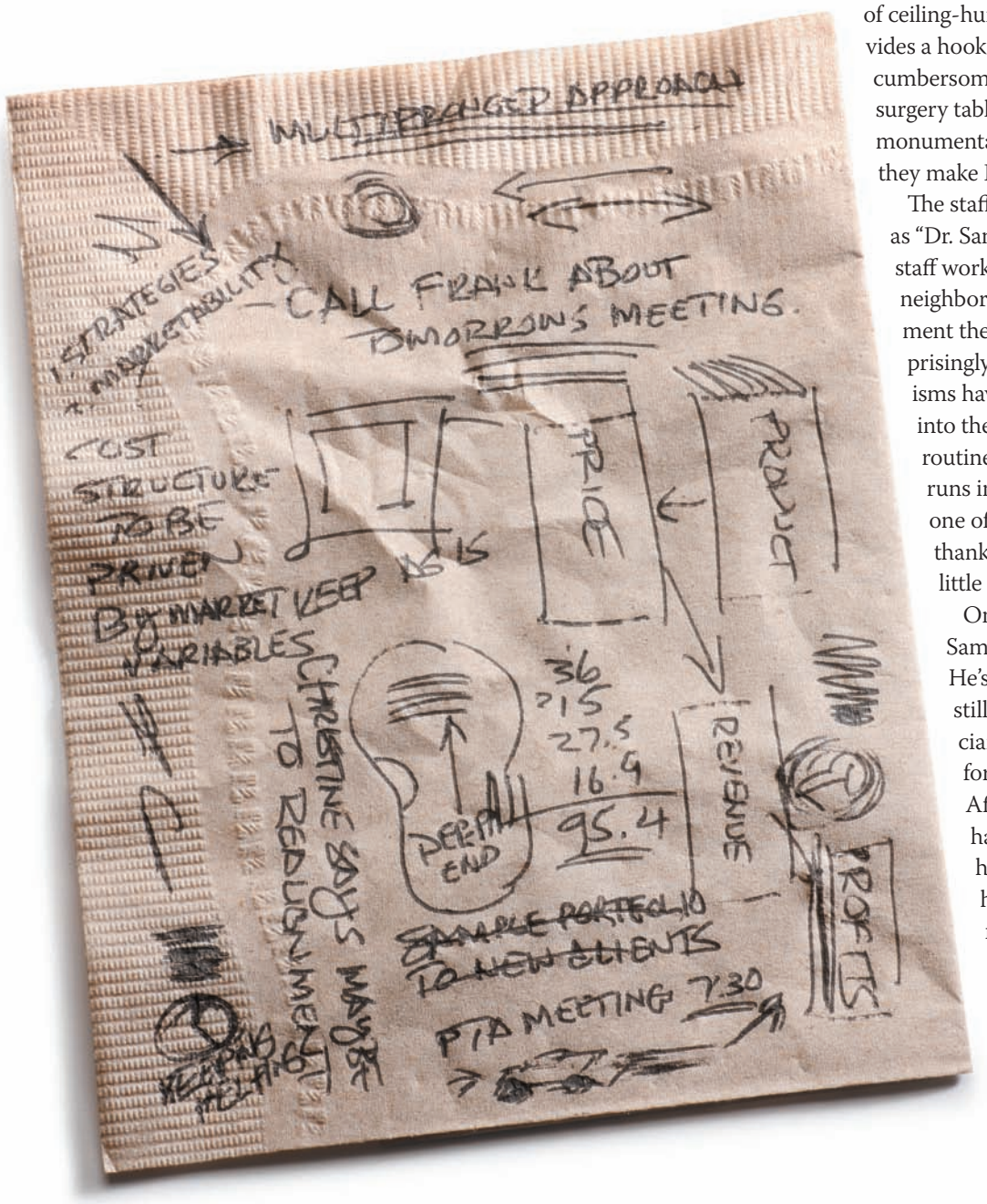
When technicians take pets' temperatures, Dr. Samp has them give him the results in a code. This way, the pet owner isn't startled to hear their dog's temperature is 102 degrees. Dr. Samp believes that answering machines directing after-hours callers to unfamiliar clinics is no good, so the doctors keep old-school pagers and respond personally to after-hours calls. Even a little PVC piping added to the shaft of ceiling-hung surgical lights provides a hook for IV bags without cumbersome poles next to the surgery table. None of these are monumental innovations, but they make Dr. Samp proud.

The staff refer to these hacks as "Dr. Sampisms." Some of the staff work occasional shifts at neighboring clinics to supplement their incomes. Unsurprisingly, some Dr. Sampisms have been incorporated into the other clinics' routines. One day, Dr. Samp runs into a colleague from one of these clinics, who thanks him for his brilliant little hacks.

On his drive home, Dr. Samp becomes agitated. He's flattered, sure, but still feels his technicians were out of line for sharing his ideas. After all, he knows his hacks keep his clients happy and coming to his clinic. And the fact is, all the clinics in the neighborhood are competing for the same clients. He can't have his staff risking his bottom line!

At the next staff meeting, after discussing routine business matters, Dr. Samp decides now's the time to make his feelings known about the staff sharing his ideas with neighboring veterinary clinics. Rather than taking the risk and having his staff believe that he only cares about the money, he tells them that cases, procedures and clinic equipment were not to be shared with other clinics—it's a confidentiality issue, and a personal preference. A veteran staff member questions this policy, remarking that sharing information helps pets and the profession as a whole. Dr. Samp responds that he understands her good intentions, but that as the owner *he* will decide when to personally dispense his ideas to his colleagues. With that, he acknowledges that he will just have to agree to disagree with some of his staff.

So, what do you think? Is Dr. Samp in the wrong?



Dr. Rosenberg's response

The fact is, Dr. Samp can make any reasonable rules for employees of his veterinary clinic. Nevertheless, he is faced with two questions: First, was he, or should he have been totally honest at his staff meeting? And secondly, does the sharing of his trade secrets actually hurt or help his practice bottom line?

If he is in fact a well-respected clinic owner, telling his staff that their actions might affect the clinic bottom line is honest and completely understandable. On the other hand, his reputation among his colleagues as an innovative progressive clinician should ultimately help—not hurt—his bottom line. You can never underestimate the potential for referrals and word-of-mouth goodwill that results when you share your ideas with colleagues and the community. I believe Dr. Samp used bad judgment. **dvm360**

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MEDICINE | Oncology

Monoclonal antibody therapy for canine lymphoma: *Promoting the fight from within*

Success in people has led to the investigation of using this therapeutic technology in veterinary practice to help dogs.

Rodney Ayl, BSc, BVSc, MRCVS DACVIM (oncology), DACVR (radiation oncology) Emi Ohashi, DVM, PhD

The standard treatment for canine lymphoma is vincristine, cyclophosphamide, doxorubicin and prednisone, known as a CHOP-based protocol, with or without L-asparaginase.[1-3] Remission rates for canine lymphomas are greater than 85 percent, with survival times ranging from eight to 12 months, but there has been no substantial improvement in patient outcome in nearly two decades.[1-4] Canine monoclonal antibodies (mAbs) against lymphoma may one day be available for veterinarians to use in their treatment of patients with canine lymphoma.

What *are* monoclonal antibodies?

Antibodies are made by B cells. Antibodies ambush foreign antigens circulating in the blood stream. When a B cell encounters the kind of antigen that triggers it to become active, it gives rise to plasma cells, which pro-

>>> Basset hounds are one of the dog breeds susceptible to canine lymphoma.

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duce antibodies. An mAb is a type of antibody that is more uniform than a natural antibody and binds specifically to its target protein.

Originally, mAbs were produced by fusing B cells from the spleen of an animal that had been immunized with the target protein with a myeloma cell line that was selected for the inability to produce immunoglobulin. Köhler and Milstein developed this hybridoma technology, which made it possible to produce large quantities of antibodies with high purity and monospecificity for a single binding region (epitope) on an antigen.[5] Newer technologies have been developed since to generate humanized and human antibodies.

An antibody is divided into three domains consisting of two identical antigen-binding (Fab) domains connected to an effector, or Fc region, by a flexible hinge sequence. IgG antibodies are composed of two identical light chains and two identical heavy chains, with the chains joined by disulfide bonds, resulting in a bilaterally symmetrical complex.[6] The Fab domains mediate the binding of IgG molecules to their cognate antigens and are further divided into variable (Fv) and constant (Fc) regions.[6]

Canine mAbs that have been recently developed by Aratana Therapeutics are caninized antibodies, where the hypervariable regions of the variable antigen-binding domain (Fv) are derived from a mouse antibody and the rest of the Fv and the entire Fc region are derived from canine sequences.

How mAbs work

Two types of mAbs are available in human medicine—unconjugated mAbs and conjugated mAbs. Conjugated mAbs indirectly exhibit antitumor effects by delivering cytotoxic payloads. Conjugated mAbs have been used to deliver a wide variety of agents, including chemotherapy, toxins, radioisotopes and cytokines.[7] Unconjugated mAbs display direct antitumor effects that are mediated by the following mechanisms[6,8]:

1. Antibody-dependent cell-mediated cytotoxicity (ADCC) and antibody-dependent cellular phagocytosis (ADCP). When antibodies engage the tumor antigen on the surface of tumor cells, Fc-gamma receptors that are expressed on the cell surface of effector cells, such as natural killer cells and monocytes or macrophages, bind to the Fc domain of the IgG molecules. This bridging induces effector cell activation, resulting in natural killer cell cytotoxicity or phagocytosis by neutrophils, monocytes or macrophages.

2. Complement-dependent cytotoxicity (CDC). mAbs can recruit the complement cascade to kill cells via CDC. Antibodies activate complement through the classical pathway, which kills the antibody-bound cells.

mAb therapy for human lymphoma

In human medicine, chemoimmunotherapy regimens incorporating rituximab, a chimeric mAb targeting the CD20 receptor, were the first strategies in decades to prolong the survival of patients with diffuse large B-cell non-Hodgkin's lymphoma, follicular lymphoma and chronic lymphocytic leukemia.[9] The first study to show the benefit of rituximab involved patients more than 60 years of age who were randomly assigned to receive CHOP plus rituximab (R-CHOP) or CHOP alone.[10] In this study, the complete remission rate (76% versus 63%, $P = 0.005$) and two-year event-free survival rate (57% versus 39%, $P < 0.001$) were improved with R-CHOP, ultimately translating to an improvement of overall survival at 10 years (43.5% versus 27.6%, $P = 0.005$).[10,11]

In a randomized phase III trial investigating the efficacy of R-CHOP versus CHOP in untreated, younger (less than 60 years of age), good-prognosis patients with diffuse large B-cell lymphoma, patients treated with R-CHOP had significantly higher rates of three-year event-free survival (79% versus 59%, $P < 0.0001$) and three-year overall survival (93% versus 84%, $P < 0.0001$) compared with CHOP alone.[12]

In most studies, the combination of rituximab and standard chemotherapy did not result in an increase in toxicity, so rituximab became a common part of many lymphoma treatment regimens. Rituximab has been used both in combination with chemotherapy or alone as an induction, maintenance and rescue agent. Other types of mAbs have been developed since and used in combination with chemotherapy for different types of lymphoma.

mAb therapy for canine lymphoma

Because of the success in human medicine, mAb therapy could potentially be effective in treating canine lymphomas. Rituximab was investigated for potential therapeutic efficacy in treating B cell lymphoma in dogs. An ex vivo study showed that rituximab does not bind to canine CD20, likely because of lack of conservation of the rituximab epitope in the canine protein.[13] Recently, mAbs for both T-cell and B-cell lymphoma have been developed and are under clinical investigation.

1. Canine CD52 antibody. CD52 is a glycoprotein highly expressed on both B and T cells. The U.S. Department of Agriculture granted a conditional license to an mAb targeted to CD52 in January 2014; the product is available in a limited number of sites nation wide. In a poster presentation at the Veterinary Cancer Society 2014 meeting regarding bioavailability and safety of intravenously administered CD52 antibody in dogs with high-grade T-cell lymphoma (WHO stage stage IV to V), the canine CD52 antibody was detectable in plasma after a single dose and accumulated after multiple doses.[14] No meaningful changes in hematology or serum chemistry values were observed. Clinically relevant hypotension was infrequent, and anaphylactoid reactions were rare. A multicenter, randomized,

Aratana looks to next-generation mAbs for lymphoma

Despite its promising initial outlook, Aratana Therapeutics has scaled back its plans for its two products—AT-004 and AT-005—designed to treat canine lymphoma.

Aratana has approximately 50 dogs enrolled in a study investigating the use of AT-004 in combination with abbreviated chemotherapy in canine B-cell lymphoma, according to a company release. The results are expected this year. Previously, Aratana had received encouraging results from three studies looking at AT-004 in combination with chemotherapy.

Aratana has also been conducting two studies looking at the potential benefit of AT-005 in combination with two chemotherapy protocols and conducting a "clinical experience program" where oncologists use the product at their discretion and share the data with Aratana.

Although dogs are still being followed in those studies and final results are expected by mid-2016, Aratana analyzed the results as of September 2015 and concluded that AT-005 was not adding significant progression-free survival in dogs with T-cell lymphoma. Recent scientific studies suggest that AT-004 and AT-005 are not as specific to the targets as expected.

Given the mixed results, Aratana says it does not believe AT-004 or AT-005 in their current, first-generation forms will perform in the market to its expectations. Therefore, the company is pursuing second-generation monoclonal antibodies and other efforts in lymphoma intended to deliver breakthrough benefits.

Both first-generation products, AT-004 and AT-005, are expected to continue to be available to oncologists as they are USDA-licensed and currently being manufactured. Aratana believes the revenue with the products will be modest, but "given that there are not alternative monoclonal antibodies available to veterinarians, Aratana intends to maintain product availability," the Aratana release states.

Steven St. Peter, MD, president and CEO of Aratana, says in the release, "Aratana has been aggressive in its pursuit of truly innovative therapies for pets and we have been remarkably successful from a regulatory perspective. From a commercial perspective, we only prioritize products that truly hit the mark with respect to addressing unmet medical needs. We will go back into development when we believe we need to optimize a product to capture a significant opportunity. The ability to take such a disciplined approach is an attractive attribute of the pet therapeutics opportunity."

placebo-controlled study of CD52 antibody in combination with lomustine (CCNU) chemotherapy in the treatment of canine T-cell lymphoma is currently underway (see sidebar, above).

2. Canine CD20 antibody. CD20 is a glycoprotein expressed exclusively on mature B cells. This mAb was granted full approval for licensure on Jan. 1, 2015, but is currently only being manufactured for certain institutions. Two pilot studies were presented at the Veterinary Cancer Society 2014 meeting:

In a prospective, double-blind, randomized, placebo-controlled study of CD20 antibody in combination with L-CHOP chemotherapy, 26 of 27 dogs that received L-CHOP with mAb achieved complete remission. The median-progression-free survival and overall survival times for the canine mAb arm of the study were 167 days and 325 days, respectively, compared with 93.5 days and 177 days for the placebo arm.[15] Adverse events were restricted to the L-CHOP cycle.

In an open-label pilot study of CD20 antibody in combination with doxorubicin chemotherapy, nine of 12 dogs treated with doxorubicin and mAb achieved complete remission. The median-progression-free survival time for the canine mAb arm of the study was 98 days compared with 57 days with doxorubicin alone.[16]

Conclusion

The efficacy of these mAbs against canine lymphomas is still under investigation, but using combinations of mAbs with current treatments is likely to help prolong the life of dogs with lymphoma, while also providing them a good quality of life. **dvm360**

Rodney Ayl, BSc, BVSc, MRCVS DACVIM (oncology), DACVR (radiation oncology), and Emi Ohashi, DVM, PhD (practice limited to oncology or oncology resident), practice at the Animal Specialty Group, Los Angeles.

References

1. Chun R, Garrett LD, Vail DM. Evaluation of a high-dose chemotherapy protocol with no maintenance therapy for dogs with lymphoma. *J Vet Intern Med* 2000;14(2):120-124.
2. Garrett LD, Thamm DH, Chun R, et al. Evaluation of a 6-month chemotherapy protocol with no maintenance therapy for dogs with lymphoma. *J Vet Intern Med* 2002;16(6):704-709.
3. Burton JH, Garrett-Mayer E, Thamm DH. Evaluation of a 15-week CHOP protocol for the treatment of canine multicentric lymphoma. *Vet Comp Oncol* 2013;11(4):306-315.
4. Keller ET, MacEwen EG, Rosenthal RC, et al. Evaluation of prognostic factors and sequential combination chemotherapy with doxorubicin for canine lymphoma. *J Vet Intern Med* 1993;7(5):289-295.
5. Köhler G, Milstein C. Continuous cultures of fused cells secreting antibody of predefined specificity. *Nature* 1975;256:495-497.
6. Borghaei H, Robinson MK, Adams GP, et al. In: Devita VT, Lawrence TS, Rosenberg SA, eds. DeVita, Hellman, and Rosenberg's cancer: principles & practice of oncology. *10th ed. Philadelphia:* Lippincott Williams & Wilkins, 2014;300-307.
7. Adams GP, Weiner LM. Monoclonal antibody therapy of cancer. *Nat Biotechnol* 2005;23(9):1147-1157.
8. Hansel TT, Kropshofer H, Singer T, et al. The safety and side effects of monoclonal antibodies. *Nat Rev Drug Discov* 2010;9(4):325-338.
9. Roschewski M, Staudt LM, Wilson WH. Diffuse large B-cell lymphoma-treatment approaches in the molecular era. *Nat Rev Clin Oncol* 2014;11(1):12-23.
10. Coiffier B, Lepage E, Briere J, et al. CHOP chemotherapy plus rituximab compared with CHOP alone in elderly patients with diffuse large-B-cell lymphoma. *N Engl J Med* 2002;346(4):235-242.
11. Coiffier B, Thieblemont C, Van Den Neste E, et al. Long-term outcome of patients in the LNH-98.5 trial, the first randomized study comparing rituximab-CHOP to standard chemotherapy in DLBCL patients: a study by the Groupe d'Etudes des Lymphomes de l'Adulte. *Blood* 2010;116(12):2040-2045.
12. Pfreundschuh M, Trümper L, Osterborg A, et al. CHOP-like chemotherapy plus rituximab versus CHOP-like chemotherapy alone in young patients with good-prognosis diffuse large-B-cell lymphoma: a randomised controlled trial by the MabThera International Trial (MInT) Group. *Lancet Oncol* 2006;7(5):379-391.
13. Impellizeri JA, Howell, K, McKeever KP, et al. The role of rituximab in the treatment of canine lymphoma: an ex vivo evaluation. *Vet J* 2006;171(3):556-558.
14. Rodriguez C, Guerro T, Hansen G. Bioavailability and safety of caninized anti-CD52 monoclonal antibody in dogs with T-cell lymphoma, in *Proceedings*. 34th Annual Veterinary Cancer Society Conference, St. Louis, 2014.
15. Ogilvie G, Proulx D, Van Horn L, et al. Treatment of canine B-cell lymphoma with chemotherapy and a canine anti-CD20 monoclonal antibody: a prospective double-blind, randomized, placebo-controlled study, in *Proceedings*. 34th Annual Veterinary Cancer Society Conference, St. Louis, 2014.
16. Bulman-Fleming J, Rosenberg M, Hansen G, et al. Treatment of canine B-cell lymphoma with doxorubicin with or without an anti-CD20 monoclonal antibody: an open-label pilot study, in *Proceedings*. 34th Annual Veterinary Cancer Society Conference, St. Louis, 2014.

>>> Banana split containers are just one of the ingenious ideas readers have shared for methods of collecting urine from patients.

Need a urine sample? Urine luck!

Firstline and *Veterinary Medicine* have collected their 9 favorite tips to help you collect that elusive sample from your veterinary patients.

You'll never look at ice cream the same way again, and Orville Redenbacher will be rolling over in his grave, but nonetheless, here are *your* ingenious ideas for collection, submitted to us over the years.

1 Repurpose banana split boats

I had several banana split containers, so I brought the extras to the hospital to be used for urine collection. These containers work better than a typical bowl does because their oblong shape and shallow depth fit better between the legs and under short dogs, and their extra length keeps your hands away from the urine stream.

—Jennifer Bentley
veterinary technician
Raleigh, North Carolina

2 Catch urine samples with popcorn kernels

To make it easier for owners to catch feline urine samples at home, we suggest they replace their cats' litter box with a clean box filled with unpopped popcorn kernels. The popcorn is similar to kitty litter in texture but doesn't absorb urine. After a cat uses this litter box, the owners can easily pour the

GETTY IMAGES/MICHAEL SHUM/JON STOKES

urine into a container and then bring it to the clinic for analysis. We have had great success with this method.

—Laura Wiglusz, LVT; Melissa Campbell, assistant; Beth McCrea, receptionist; Grand Island, New York

3 MacGyver would be impressed with this urine catch kit

We send owners home with urine catch kits if we were unable to obtain urine at the patient appointment. The kits include a urine catch tray, a pipette and a urine tube marked with the owner's name, the patient's chart number and a paid label—all in a laboratory bag. When the owner collects a urine sample, he or she can drop the sample off at the front desk without having to wait for the chart to be pulled up. All we have to do is fill out the laboratory paperwork and put the sample in the fridge.

—Dawn Elza, LVMT
Nashville, Tennessee

>>> A DIY urine catch kit to send home with clients (see tip number 3, at left).

4 Bet you never thought of using an IV line *this* way

We were out of Nosorb (Catco), the nonabsorbent granule cat litter used to collect urine samples, and needed to collect a sample that day. We cleaned and dried a few used intravenous infusion lines, cut them into litter-size pellets, and then placed them in a clean litter box. They didn't take long to make and worked well in a pinch.

—Dr. Maria D. Gonzales
San Antonio, Texas

5 Surprise! You can use syringe casings too

We use the caps from syringe casings as a false litter for cats that we need to collect urine from. It makes collecting the urine easier and saves money.

—Ashley G. Carter, CST
York, South Carolina

6 We see a disturbing trend with kitchen items here ...

When collecting a urine sample from a cat by cystocentesis, we place the animal in lateral recumbency in a "cat stretch" position for bladder palpation on a wet table. We place a clean, dry, stainless steel bowl under the grate of the wet table and position it under the cat's hips. So if the cat is scared or voids from the pressure of the bladder palpation beforehand, at least we've caught our sample in a clean bowl. Sometimes, a voided sample is better than no sample. Also, when collecting blood and urine from the same feline patient, we collect the urine in this fashion first because the cat may urinate during restraint for venipuncture. Collecting urine first with this backup, free-catch method and obtaining the blood sample afterward works well for us.

—Mary Weeks, RVT, practice manager
Keller, Texas

7 Seriously ...

To make it easier to obtain free-catch urine samples, especially from low-squatting female dogs, we screwed a stainless steel ladle to the end of a broomstick. Now our technicians don't have to bend down or get urine on their hands.

—Dr. Suzanne Ellis
Xenia, Ohio

8 Imagine the Pinterest photos for this DIY idea in action

I frequently request that pet owners collect urine samples at home to help diagnose and monitor urinary tract problems. My technician, Jess, has implemented a collection-transport system that not only helps owners but recycles as well. She provides a plastic pipette with a small screw-cap vial in an empty vaccine carton. Clients use the vaccine carton to catch the urine (the top and bottom offer two chances to catch a sample), and the pipette cleanly transfers the sample to the screw-cap vial for transport. This has increased our clients' recheck urinalysis compliance greatly.

We screwed a stainless steel ladle to the end of a broomstick. Now our technicians don't have to bend down or get urine on their hands.

—Dr. Suzanne Ellis

—Dr. Michael Frenette
Bismarck, North Dakota

9 Two pans and a plan: Using an actual litter box

To get a free-catch urine sample from a cat when you don't need a sterile sample, drill holes in a plastic litter pan, and nest that litter pan inside a normal litter box. When the cat eliminates, the urine will drain into the lower box, where the cat is less likely to spill or contaminate the sample. Afterward, the litter box and pan can be disinfected and reused. **dvm360**

—Linda K. Watson, RVT
San Jose, California

PHOTO COURTESY OF DAWN ELZA

>>> Nucharin Songsasen, left, and Jennifer Nagashima, reproductive researchers at Cornell University, hold two of the first puppies born through in vitro fertilization.

First 'test tube' puppies born at Cornell veterinary college

Researchers hope to use IVF pups to study genetic diseases in people.

Researchers from Cornell University and the Smithsonian Institution have collaborated on solving the decades-long puzzle of canine in vitro fertilization (IVF), resulting in the world's first litter of IVF puppies, according to a release from Cornell.

The development, described in the Dec. 9, 2015, issue of the online journal *Public Library of Science ONE*, opens the door for preserving endangered canid species using assisted reproduction techniques. It could also enable researchers to eradicate heritable diseases in dogs and facilitate the study of genetic diseases in dogs and humans, which share many of the same or similar illnesses, study authors say.

Researchers at the Cornell laboratory transferred 19 embryos to a host female dog, who gave birth last spring to seven healthy puppies. Genetic testing shows that two are from a beagle mother and a cocker spaniel father, and five are from two pairings of beagle fathers and mothers.

"Since the mid-1970s, people have been trying to do [IVF] in a dog and have been unsuccessful," says co-author Alex Travis, associate professor of reproductive biology at the Baker Institute for Animal Health in Cornell's College of Veterinary Medicine.

The paper's first author, Jennifer Nagashima, was a graduate student whose participation in the project was funded by the Smithsonian Conservation Biology Institute (SCBI) and Cornell's Atkinson Center for a Sustainable Future. The National Institutes of Health and the Baker Institute provided funding for the project itself.

Laboratories perform successful IVF with other mammals—including humans—by retrieving mature eggs and sperm and combining them in an artificial environment to produce embryos. The embryos are transferred to a host female at the right time in her reproductive cycle.

Past attempts at canine IVF failed because a female dog's reproductive cycle differs from that of other mammals. Canine eggs retrieved at the same stage of cell maturation as other animals failed to fertilize. By applying the oocyte biology expertise of SCBI's Nucharin Songsasen, a research biologist and co-author, the team found that if they left the egg in the oviduct one extra day, the eggs reached the stage where fertilization was most likely to occur.

In addition, the female canine tract

PHOTOS COURTESY OF CORNELL UNIVERSITY

>>> Genetic testing shows that the puppies have beagle and cocker spaniel parents.

>>> Previous attempts at canine IVF have not been successful because of differences between dogs' reproductive cycle and that of other mammals. The researchers at Cornell were able to overcome those challenges.

>>> Researchers hope they can use IVF to protect endangered canine species and study heritable disorders.

Dogs share more than 350 similar heritable disorders and traits with humans, almost twice the number as any other species.

plays a role in preparing sperm for fertilization, so researchers had to simulate those conditions in the lab. Building on Travis's earlier work on sperm physiology, the team found that sperm could be artificially prepared by adding magnesium to the cell culture.

"We made those two changes, and now we achieve success in fertilization rates at 80 to 90 percent," Travis says.

The final challenge arises because female dogs can become pregnant only once or twice a year. This means embryos must be created ahead of time and preserved until the host female is at the right point in her cycle. The team solved this problem by using the technique, developed by Travis's lab in partnership with SCBI, that produced Klondike, the first puppy born from a frozen embryo in the Western Hemisphere, according to the release.

The birth of IVF puppies has wide implications for wildlife conservation, experts say. "We can freeze and bank sperm, and use it for artificial insemination," Travis says. "We can also freeze oocytes, but in the absence of in vitro fertilization, we couldn't use them. Now we can use this technique to conserve the genetics of endangered species." The method can also be used to preserve rare breeds of show and working dogs.

In addition, embryonic dogs now offer a "powerful tool for understanding the genetic basis of diseases" in canines and humans, Travis says. Dogs share more than 350 similar heritable disorders and traits with humans, almost twice the number as any other species.

A successful IVF process for canines may one day enable researchers to remove genetic diseases and traits in an embryo, ridding dogs of heritable diseases such as lymphoma, a cancer that is more prevalent in breeds like golden retrievers. "With a combination of gene editing techniques and IVF, we can potentially prevent genetic disease before it starts," Travis says. **dvm360**

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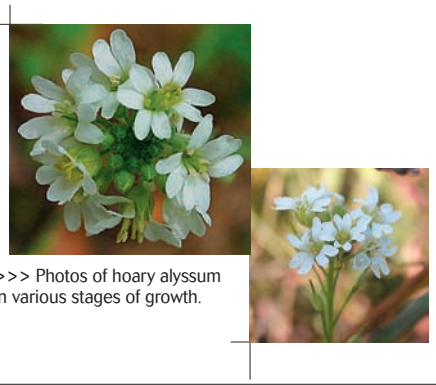
Hey! Hoary alyssum can be fatal for horses

About 50 percent of horses appear to be susceptible to this toxin, which, in its dried form, bears a striking resemblance to alfalfa. Here's what you need to know to help horse owners prevent fatalities.

By Lynn R. Hovda, RPh, DVM, MS, DACVIM

Hoary alyssum (*Berteroa incana*) is a toxic weed that grows throughout most of the United States, except for California, Arizona and the southeastern states. It has adapted exceptionally well to the cooler winters and hotter, drier summers of the northern states and Canada.[1-3] Part of the mustard family (*Brassicaceae*), hoary alyssum is also known as false alyssum, false hairy madwort, healbite or heal bite, hoary berteroa and hoary false alyssum. A few states, such as Montana, have designated hoary alyssum as a noxious weed, which means that it has the ability to injure crops, livestock, wildlife or people.

GETTYIMAGES/CHARLOTTE BJÖRNSTRÖM/EYEEM



>>> Photos of hoary alyssum in various stages of growth.

The toxin in hoary alyssum is unknown. What is known, based on years of observation and little scientific research, is that horses are the species affected by the toxin. No case reports or even clinical signs of hoary alyssum poisoning exist for ruminants, including cattle, sheep and goats. Recent reports of equine deaths in Washington state, however, have once again put hoary alyssum poisoning foremost in the minds of many horse owners and producers.

Hot and dry: Hoary conditions

Hoary alyssum prefers hot, dry conditions and grows well from early spring to late fall in ditches, railroad beds, trails and other areas with sandy to rocky soil. It is also found in pastures, meadows and rangeland and is a known contaminant of hay fields. Direct sunlight is preferred, although growth occurs in shady areas as well. Typically, large stands of hoary alyssum occur during or following a drought year or pasture or rangeland winterkill.[1] Hoary alyssum reproduces and spreads rapidly by seeds, and it has been estimated that one plant alone can produce 2,500 seeds a year. People and animals, farm equipment and environmental factors such as wind and rainwater runoff rapidly spread hoary alyssum seeds.

Hoary alyssum is poisonous in fresh or dried hay, reportedly retaining toxicity for up to nine months. Most toxicologists and field extension

Hoary alyssum prefers hot, dry conditions and grows well from early spring to late fall in ditches, railroad beds, trails and other areas with sandy to rocky soil.

agents believe that hay must contain at least 30 percent hoary alyssum before it is considered toxic.[1,2] Toxicity is not limited to hay, however, as clinical signs occur when the weed is grazed in pastures, meadows or rangelands, especially when they are unimproved or overgrazed and hoary alyssum has been allowed to grow unchecked. The amount of grazed hoary alyssum necessary to cause signs in grazing areas is unknown.

One of the difficulties in understanding the toxicity of hoary alyssum is that not all horses appear to be susceptible to the toxin. About 50 percent of horses eating contaminated hay will develop clinical signs, and the remaining 50 percent eating a similar amount will not.[1] There does not seem to be any association between a particular breed, gender or occupation and the development of clinical signs. Toxicosis does seem to occur

hoary alyssum toxicosis, although rare, has occurred even in those most well-managed cases.

Keep hoary alyssum out

Control of hoary alyssum poisoning depends on identification and removal of the weed. Hoary alyssum in fields and ditches is quite easy to identify, although it is sometimes confused with pennycress (*Thlapsi arvense*) and false flax (*Camelina microcarpa*). Typically, hoary alyssum flowers are small (generally less than 0.1 inch across) with four white petals, each of which is notched in the middle to form a "rabbit ear" shape, and the leaves are smooth and without notches.[3] Leaves more often in housed horses such as racehorses and show horses, but this is likely due to stall confinement and feeding of baled hay.[3,4]

Clinical signs

Clinical signs usually occur within 12 to 24 hours after horses eat enough hoary alyssum to cause toxicosis. The most common signs are "stocking up" or the development of edematous, swollen lower legs and an elevated body temperature (generally greater than 103°F).[3,4] The legs are often so swollen, in particular from the knees and hocks down, that people palpating the area leave behind discernible fingermarks or fingerprints (pitting edema) that do not disappear for quite some time. Diarrhea, when it occurs, is generally mild and self-limiting.

If contaminated hay is removed from the diet or animals moved from contaminated pasture or rangeland, recovery generally occurs in one to four days, with only minimal treatment. Most horses respond well to cold-water therapy, support wraps and the judicious use of a nonsteroidal anti-inflammatory drug, such as phenylbutazone, flunixin or firocoxib.[4] Left unchecked, however, many horses go on to develop signs of "founder" or laminitis.[1,2] When this occurs, hoof walls are warm to hot, digital pulses pounding and the stance not only stiff but often described as "standing on eggshells." Complete rotation of the coffin bone through the sole of the foot or "sinking" at the coronary band with sloughing of the hoof wall are known sequela. Death from complications of

on the flowering stem come from the stem without a stalk or have a very short, almost imperceptible stalk. The plant itself is covered with tiny hairs visible only with a magnifying glass. Identifying the plant in cut and baled hay is generally more difficult, as once hoary alyssum dries it bears a striking resemblance to alfalfa.

Use these steps to get rid of this noxious weed

Removal of hoary alyssum can be accomplished by many different means. If the stand is small, such as around a house or barn area, pulling by hand or digging out the weed and taproot before flowering is an effective means of removal. Mowing before or at the time of flowering is also effective but generally needs to be repeated several times to keep the weed from producing seeds. A few herbicides labeled for hoary alyssum are commercially available, but grazing restrictions may limit their use, and instructions must be followed carefully.[1,4] Herbicide application will need to be repeated during the growing season, as growth and seed production may continue if all the plants are not all killed or new seeds disseminated. Currently, there are no broadleaf herbicides labeled for control of hoary alyssum on grass and legume-mixed pastures that would be effective without killing the legume as well as the weed.[4]

Pasture and rangeland management play an important role in preventing large stands or growth of hoary alyssum. Pastures and rangelands should not be overgrazed, as the lack of grass and presence of bare soil sets up an ideal situation for hoary alyssum to begin encroaching on the land. Hoary alyssum is unpalatable to most animals, including horses, so remaining grasses are grazed even more, resulting in a vicious circle until hoary alyssum and other weeds dominate the pasture.

Hoary alyssum, either as fresh or baled hay, should not be fed to horses. And horses on contaminated pastures or rangelands should be moved to hoary-alyssum-free areas. Horse owners and producers should be aware of weeds growing in their pastures or rangelands and be able to accurately identify hoary alyssum so it can be removed—or the horses moved to other areas—before the onset of clinical signs. Most animal owners and producers knowingly feed hoary alyssum contaminated hay to ruminants, although many veterinarians and extension personnel recommend diluting it with a hay not contaminated with hoary alyssum.[1] Ruminants fed known contaminated hay should be monitored closely and hay removed at the first sign of any abnormalities.[4]

Hoary alyssum poisoning in horses is not a newly discovered finding and, in fact, is well known by many older horse owners and veterinarians. Despite this knowledge and a variety of university extension fact sheets, new cases of toxicosis occur each year. Most of them are diagnosed and treated before clinical signs advance to a serious nature. Sadly, a few horses succumb to the toxin's effect despite early and aggressive therapy. Equine veterinarians can help horse owners, especially those new to the industry, learn to identify the weed and take all measures necessary to keep it out of their horse's diet and environment. **dvm360**

Typically, hoary alyssum flowers are small with four white petals, each of which is notched in the middle to form a "rabbit ear" shape. Identifying the plant in cut and baled hay is generally more difficult, as once hoary alyssum dries it bears a striking resemblance to alfalfa.

References

1. Becker RL, Martin NP, Murphy MJ. Hoary alyssum: Toxicity to horses, forage quality, and control. www.extension.umn.ude'agriculture/horse/health-alyssum. Accessed 12/16/2015.
2. Parkinson H, Mangold J, Jacobs J. Biology, ecology and management of hoary alyssum (*Berteroa incana L.*). Montana State University Extension. store.msuextension.org/publications/AgandNaturalResources/EB0194.pdf. Accessed 12/8/2015.
3. Martinson K, Murphy, M, Hovda LR, et al. Hoary alyssum. www.extension.umn.edu/agriculture/horse/pasture/hoary-alyssum/. Accessed 12/8/2015.
4. Geor RJ, Becker RL, Kanera EW, et al. Toxicosis in horses after ingestion of hoary alyssum. *J Am Vet Med Assoc* 1992; 201:62-67

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.

PHOTOS OF HOARY ALYSSUM COURTESY OF WASHINGTON STATE NOXIOUS WEED CONTROL BOARD

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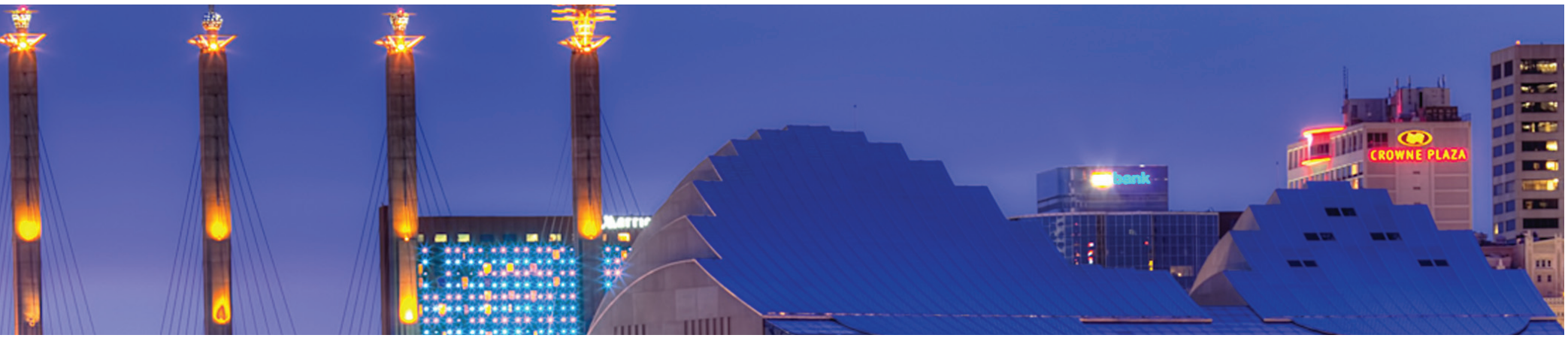

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Midmark Animal Health has introduced the VetPro CR Digital Dental Radiography Reader, an easy-to-use, compact dental imaging system. The unit provides rapid, high-quality readings quickly, has a small footprint and is low-maintenance with no brushes for ease of cleaning and reduction of image artifacts. Up to 4c plate size is available, enabling technicians to capture larger teeth with easier positioning. It eliminates the darkroom and chemicals and works with Midmark's Progeny Imaging Software to optimize acquisition, processing and management.

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Strategic Partners Inc.

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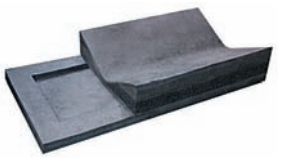
Strategic Partners Inc. has launched scrubs and lab coats with Certainty Plus, featuring antimicrobial and fluid barrier fabric technologies. The technologies are available in scrubs and lab coats. Certainty Plus provides odor control and fluid resistances, causing many fluids to bead up and roll off the apparel. Although garments featuring antimicrobial technology don't protect users against pathogens, apparel with Certainty Plus does minimize the growth of odor-causing bacteria, helping enhance the life of the garment and keep wearers odor-free.

For fastest response visit certaintytechnologies.com



Engler Engineering

Patient positioning dental platform

Engler Engineering and Dynax have introduced an affordable portable dental platform called the EZ Dental Table. It is a flexible yet supportive soft-foam platform for performing medical and dental procedures and can be used on any flat surface. The patient is placed in a supine position and is supported by the "v" shape of the table for dentistry, surgery, radiography, routine ear flushing and more. The EZ Dental Table is also easy to clean and disinfect and is radiolucent.

For fastest response visit ez-dentaltable.com

Elanco Animal Health

Broad-spectrum parasiticide

Elanco Animal Health has launched Interceptor Plus (milbemycin oxime and praziquantel). Interceptor Plus is a monthly chewable tablet that prevents heartworm disease caused by *Dirofilaria immitis* and protects against intestinal parasites as well, including adult hookworm, adult roundworm, adult whipworm and adult tapeworm in dogs. It is chicken-flavored, making it a good choice for dogs with beef allergies.

For fastest response visit elanco.com

Correction: Because of an editor's error, the listing for Interceptor Plus from Elanco Animal Health contained incorrect information in the December issue of *dvm360*. The corrected listing can be found at right.

Universal Medical Systems

Equine imaging system

Universal Medical Systems introduces a robotic CT technology for whole-body scanning of standing and moving horses. Equimagine, from Equine 4DDI, is a four-dimensional, ultra-precise and safe robotics-driven imaging system capable of providing CT, fluoroscopy, Dexa bone scan, tomosynthesis, dynamic videoradiography imaging and digital radiography. Equimagine operates as an imaging workstation that circles the animal with either two or four robotic extensions.

For fastest response visit equine4ddi.com

Kinetic Vet

Equine sun protection

Kinetic Vet has announced the immediate availability of Equishield SB, SPF 30 sunblock with soothing aloe vera for horses. Equishield SB enables owners to easily prevent sunburn as well as repel insects. The product is available through veterinary distributors.

For fastest response call (877) 786-9882 or visit www.kineticvet.com

Zoetis

Equine leptospirosis vaccine

Zoetis has introduced Lepto Eq Innovator, a vaccine licensed for use in horses 6 months of age or older to aid in the prevention of leptospirosis caused by *Leptospira interrogans* serovar pomona. The vaccine has been shown to be clinically safe for use in foals 3 months of age or older and healthy pregnant mares in the second trimester and has been field tested in more than 1,800 horses. In field safety studies with the administration of 1,808 vaccine doses, 99.8 percent of the horses remained reaction-free.

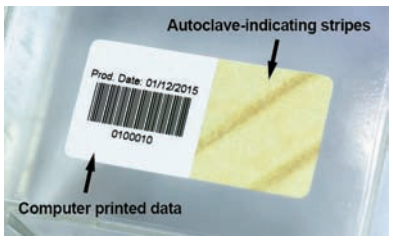
For fastest response visit leptoequinnovator.com

Engler Engineering

CO_2 monitor

Engler Engineering is now a distributor for the Masimo Miniature Emma II Capnograph CO_2 Monitor with waveform. Emma II requires virtually no warmup time, with full accuracy in 15 seconds to measure end-tidal carbon dioxide ($EtCO_2$) and respiration rate. The unit allows for confirmation of endotracheal tube placement, enables clinicians to assess the depth and effectiveness of compressions and recognize return of spontaneous circulation. The lightweight design fits in the palm of the hand for mobility and convenience during short-term $EtCO_2$ monitoring of all veterinary patient weight ranges.

For fastest response visit Engler411.com



Computer Imprintable Label Systems

Printable autoclave labels

Computer Imprintable Label Systems introduces labels that are compatible with thermal transfer printers. The CILS-8100ACL label range is designed to withstand the autoclave process, during which dark stripes appear on the labels to easily identify sterilized vessels. Labels also resist cleaning agents (e.g. isopropyl alcohol), moisture, humidity, repeated handling and extreme temperatures (-55°C to 155°C). The labels can be made to specific requirements either preprinted or blank.

For fastest response visit cils-international.com

Stone Manufacturing

Smart pet identification tag

Stone Manufacturing introduces its new smart rabies tag for veterinarians and pet owners. The tag includes a QR code on the back that provides a digital pet health data card with complete medical and vaccination history, along with key information on the owner and veterinary clinic. It includes a GPS feature that lets a smartphone scan the tag. It will automatically send a text or email alert to the owner, along with a GPS location of where the pet was found.

For fastest response visit vetidtags.com

Kinetic Vet

Dermatological sampling kit for veterinary patients

Kinetic Vet introduces the Dermal Diagnostic Kit, a presterilized pack that contains all of the necessary items in one place for the veterinary practitioner to obtain a dermatological sample. It is available through veterinary distributors.

For fastest response call (877) 786-9882 or visit www.kineticvet.com

Summit Hill Laboratories

Ultrasonic dental device

Summit Hill Laboratories' new Vetroson Illuminator 30K Ultrasonic Scaler. The unit provides excellent visibility to all areas of the oral cavity. It also features a light source built into the handpiece. The illuminator inserts have a light-transmitting glass sleeve, which transmits the light directly to the operatory site. It uses 30K inserts. The no. 10 insert is used for scaling above the gumline, the Perio insert is used for subgingival scaling and the Peter Emily insert may be used both above and below the gumline.

For fastest response visit summithilllaboratories.com

Vet24seven

Digital client communication platforms

Vet24seven has expanded its platform with Ask.Vet, a free online community, and AskNow, a text messaging service. The Ask.Vet community is a place where animal owners can engage with each other and veterinarians and access resources to help them with the health and well-being of their animals. The AskNow text messaging service lets owners text a number to get immediate answers to their questions from a member of the Ask.Vet veterinary network. The text messaging service is free to animal owners, while veterinarians receive revenue for participating.

For fastest response visit vet24seven.com

Victor Medical to distribute Putney's full line

Distributor rejects exclusivity deal to provide generic veterinary drugs.

Putney Inc., a pharmaceutical company focused on the development and sale of generic prescription medicines for pets, has announced that Victor Medical Co. will now distribute Putney's entire line of FDA-approved veterinary generic products. Victor Medical is the first distributor that has declined to sign Zoetis' exclusivity agreement in order to carry Putney's generic versions of carprofen, cefpodoxime, tiletamine-zolazepam, and dexmedetomidine, a release from Putney states.

Putney expects its partnership with Victor Medical to open new markets and drive increased revenues, building on its recent string of record revenue months, according to the release.

Jean Hoffman, president and CEO of Putney, says Victor Medical's commitment to providing veterinarians with excellent quality, value and customer service is a good fit for Putney. "We applaud the courageous, independent management team at Victor Medical, and we're pleased to work more closely with their knowledgeable sales representatives. Their strong, long-term customer relationships will help us expand our footprint and allow us to reach more veterinarians," says Hoffman.

Steve Liscomb, Victor Medical vice president, says offering the full line of Putney veterinary generics makes business sense—for his company and for its customers.

"Sales of the Putney products we already offer have increased every month, and we expect to gain even more traction with the full line. Veterinarians are looking for affordable alternatives to expensive brand medicines and they know that Putney stands for quality and value," says Liscomb. **dvm360**

Conditional approval expires for canine cancer drug

Five-year conditional approval for Kinavet-CA1 (masitinib mesylate) has ended, according to the U.S. Food and Drug Administration (FDA), and that means AB Science SA must cease marketing the drug in the United States. AB Science reports that testing of the drug will continue until full approval is reached.

The drug was given conditional approval to treat nonresectable grade 2 or 3 cutaneous mast cell tumors in dogs that have not previously received radiotherapy and/or chemotherapy except corticosteroids. AB Science says in a release that the company hopes to to complete the application for full approval by 2016.

Currently, AB Science says it is executing a prospective, multicenter, randomized, placebo-controlled phase 3 study to compare efficacy and safety of masitinib to placebo in the treatment of aggressive mast cell tumors in dogs not previously treated by chemotherapy or radiotherapy. An interim analysis based on the data of 74 dogs showed "statistically significant superiority on time to progression."

Masitinib is an orally administered tyrosine kinase inhibitor that targets mast cells and macrophages. Kinavet-CA1 is fully approved in Europe by the European Medicine Agency (EMA) under the brand name Masivet, according to the AB Science release. **dvm360**

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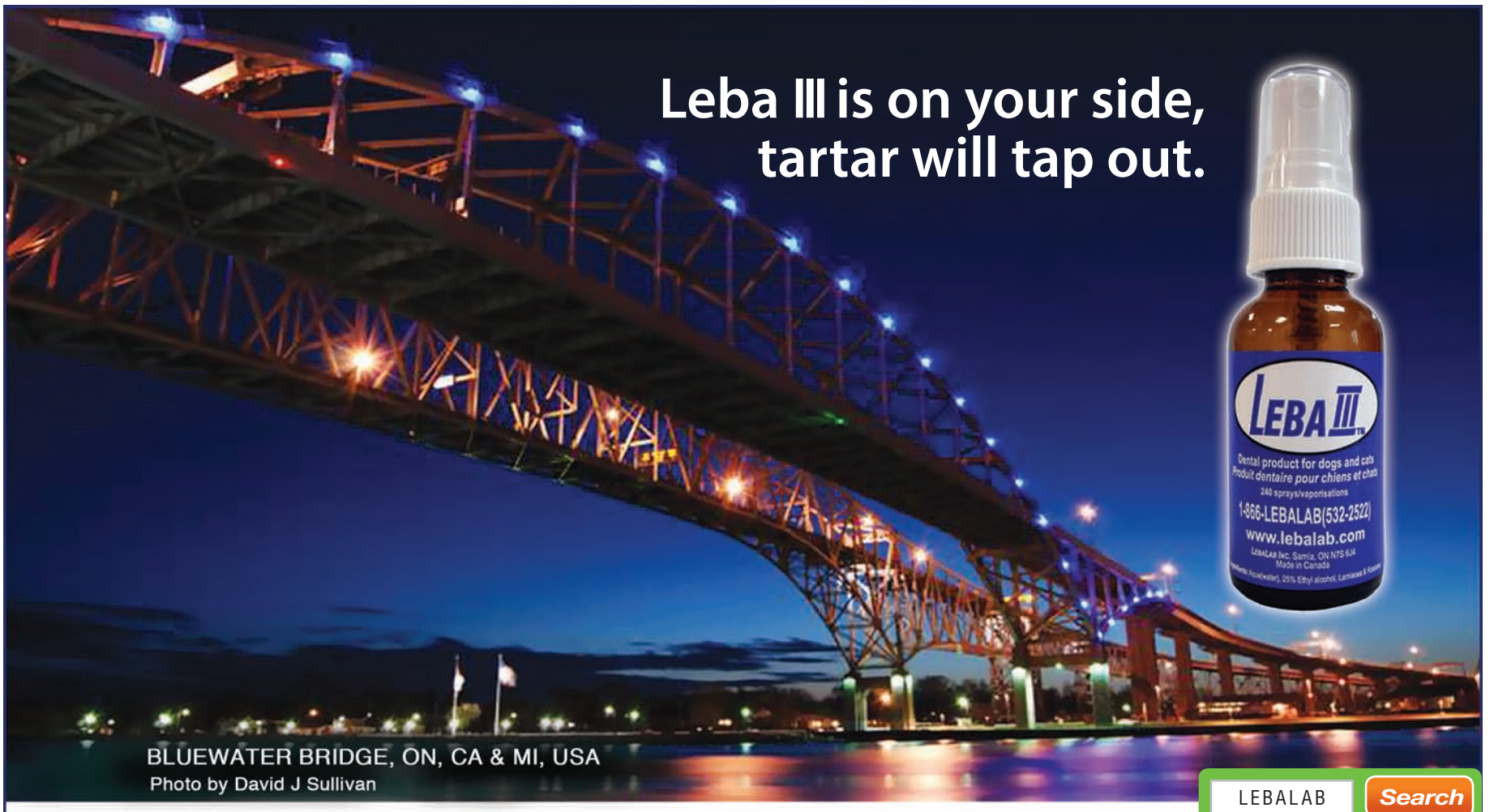

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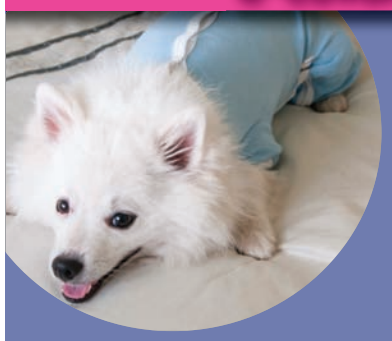

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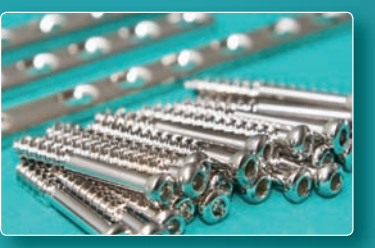

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Owner, Mission Valley Pet Clinic, San Diego, CA

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Peter Hartman, DVM
Owner, Valley Lakes Veterinary Clinic, Round Lake, IL

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Daniel L Otto DVM
Owner, Superior Veterinary Care, Lincoln NE

"The Hive is a new feature at TVC. I love having the ability to get questions about promotions and programs answered and I can ask questions, too. It's great to see the group come together to help a member if they have a challenging business situation or a medical case. It's like having a close colleague...well, hundreds of close colleagues...who are just a mouse-click away!"
Laura Betts, DVM
Owner, Parkdale Animal Hospital Manistee, MI

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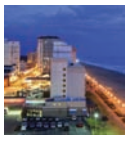
For a full listing of events in 2016, visit dvm360.com/calendar



May 12-15
CVC Virginia Beach
(800) 255-6864, ext. 6
thecvc.com/vb

August 26-29
CVC Kansas City
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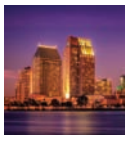

December 8-11
CVC San Diego
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thecvc.com/sd

CVC unconventional

Here are the CE opportunities coming in the next few months

January 22-23
Montana Veterinary Medical Association Winter Meeting
Bozeman, MT
(406) 447-4259
mtvma.org

January 23-24
West Virginia VMA 2016 Winter Meeting
Morgantown, WV
(804) 346-0170
wvvma.org

January 26-31
Special Continuing Education Conference and Road Biking Winter Training Camp
Tucson, AZ
(773) 234-8387
vetlectures.com/IUVC/IUVC.html

February 3
North Carolina Academy of Small Animal Medicine Meeting
Sanford, NC
(910) 452-3899
ncasam.org

February 4-6
Minnesota VMA 119th Annual Meeting
Minneapolis, MN
(651) 645-7533
mvma.org

February 5-7
2016 CenCan Conference
Winnipeg, Manitoba, Canada
mvma.ca/2016-cencan-conference-participants

February 19-21
ALVMA 25th Annual Conference for Food Animal Veterinarians
Columbiana, AL
(334) 395-0086
alvma.com/event/2016Conference

February 25-28
Midwest Veterinary Conference
Columbus, OH
(614) 436-1300
ohiovma.org

February 25-27
2016 Virginia Veterinary Conference
Roanoke, VA
(804) 346-2611
vvma.org

February 26-28
2016 Music City Veterinary Conference
Murfreesboro, TN
(931) 438-0070
tvmanet.org

February 27-March 1
American Association of Swine Veterinarians 47th Annual Meeting
New Orleans, LA
(515) 465-5255
aasv.org/annmtg/

February 28
Southwestern Indiana VMA Annual Conference
Evansville, IN
(812) 305-1865

March 2
North Carolina Academy of Small Animal Medicine Meeting
Sanford, NC
(910) 452-3899
ncasam.org

March 4-6
2016 AAFP Feline Practice Management Meeting
Incline Village, NV
(908) 359-9351
catvets.com/education

California VMA Annual Spring Seminar
Yosemite National Park, CA
(916) 649-0599
cvma.net

Oregon Veterinary Conference
Corvallis, OR
(503) 399-0311
oregonvma.org/oregon-veterinary-conference

March 11-13
Animal Chiropractic Program Module 1 of 6
Dallas, TX
(800) 266 4723
ce.parker.edu/programs/animal-chiropractic-program

March 12-13
Canine Dentistry
Orlando, FL
(931) 438-0070
veterinarydentistry.net/canine-dentistry-ce-course/

March 31-April 3
AAHA Austin 2016
Austin, TX
(800) 883-6301
aaha.org/austin/

April 8-10
Animal Chiropractic Program Module 2 of 6
Dallas, TX
(800) 266.4723
ce.parker.edu/programs/animal-chiropractic-program

April 9-10
Feline dentistry
Orlando, FL
(931) 438-0070
veterinarydentistry.net/feline-dentistry-ce-course/

April 14-16
2016 VECCS Spring Symposium
Los Cabos, Mexico
(210) 698-5575
veccs.org/

April 15-17
West Virginia VMA 2016 Annual Spring Meeting
White Sulphur Springs, WV
(804) 346-0170
wvvma.org

May 4
North Carolina Academy of Small Animal Medicine Meeting
Sanford, NC
(910) 452-3899
ncasam.org

May 12
Mid-Atlantic States Veterinary Clinic
West Friendship, MD
(410) 268-1311
mdvma.org

May 13-15
Animal Chiropractic Program Module 3 of 6
Dallas, TX
(800) 266-4723
ce.parker.edu/programs/animal-chiropractic-program

May 25-26
17th Annual Spring Clinic
State College, PA
(888) 550-7862
pavma.org

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Lessons taught—*and* learned—**from interns**

Interns may come to you to continue their education, but they can also teach you a thing or two, in practice and in friendship.

Never fear.
Dr. Bo Brock will return again next month in this space!

When our group practice had grown to three doctors, we began an annual internship program, which went on for 15 years. We deliberately sought out interns from many different schools. They learned a lot from us, but we also learned from them.

Without exception, every intern we had gave us a technique we were unfamiliar with. Sometimes it was a concept or medication used at their schools. One intern modernized our bookkeeping system. Another designed the multispecies logo that decorated our doors.

Several of these interns were graduates of European schools. I've had contact with each one of them ever since they interned in our practice, and all of them have had successful careers.

I commented to Sabina, who interned with us from Germany several years ago, how gratified I was that all of our foreign interns have been so successful. She answered, "Don't you think that European graduates who sought an internship in a big, mixed animal practice in the United States have some special qualities?"

Sabina's father and brother were veterinarians in Germany. Her dad was not pleased that she had chosen to intern in America. He told her, "I've seen so many American movies and TV shows, and I follow the news. I see so much violence. I fear that I may never see you again."

Late in her internship, Sabina was riding with me on my large animal calls when we passed a client's herd of longhorn cattle. "Oh," she said. "I should take some photos to take home."

So I stopped. She crawled through the fence with her camera, wearing the cowboy hat she had purchased early in her visit. "Let me take the picture of you with the cattle behind you," I said, and handed her a lariat. She posed with it and I took the picture over the fence.

Her dad wrote to her after he received the photo: "I am afraid for your life! You are in the Wild West. Be careful!"

Speaking of the Wild West, Paramount Studios had a western town movie set where countless western movies had been made a few miles from town. I received a call to treat a horse there, accompanied by Karl, an intern from Sweden. When we arrived I went to see the horse while Karl excitedly took pictures of the main street with its saloons, barbershop, sheriff's office and blacksmith shop.

Afterward, Karl asked, "Why are there no people in the town?" I explained that it was because they weren't filming a movie at the time. Realization flooded his face. It wasn't a real town.

Cecile was a young lady from Spain. In addition to the time she spent in our practice, she followed me around the world as I did horsemanship seminars in Hawaii, the contiguous states and Europe.

Four years after she graduated, I said to my wife, "Do you think she'll ever practice?"

"I don't think so," Debby replied. "I think she'll get married, raise a family and not go into a demanding equine practice."

I agreed.

We couldn't have been more wrong. Cecile did get married (to a farrier). The last time I saw her in the United States was at an American Association of Equine Practitioners convention. She bought a portable x-ray machine, an endoscope and all kinds of medical equipment.

She did raise a family, but she also built a very successful equine practice within sight of her alma mater, The Universitat Autonoma de Barcelona. She and her family, including her parents, have become good friends, and we have visited them in Europe. **dvm360**

Special guest columnist

Robert M. Miller, DVM, is an author and a cartoonist and speaker. He's lent his pen to the "Mind Over Miller" column for Veterinary Medicine *since 1968, and his thoughts are drawn from 32 years as a mixed animal practitioner. Watch for more of Dr. Miller's columns in future issues of* dvm360.

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