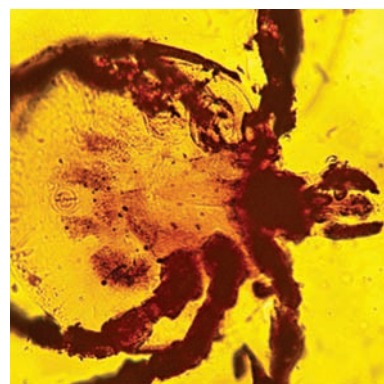


Jurassic Park discovery

Fossilized tick in amber reveals Lyme disease is older than the human species.

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May 2015 | Volume 46 | Number 5 | dvm360.com

The burden of care

Mental health isn't an issue that affects just a few individuals. It's something the entire veterinary profession needs to be aware of if it wants to protect its members from a frighteningly high risk for suicide. **Page 18**

dvm360
leadership
CHALLENGE
BURDEN OF CARE



Karen Bradley and fellow leaders are bridging the gap.
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Pictorial evidence of the damage caused by heartworms
page M1

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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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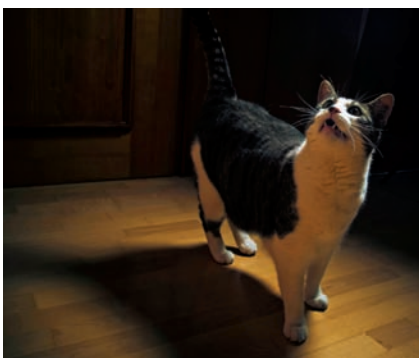
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[†]In month 8, veterinarians participating in the study were asked, "Overall, how satisfied are YOU with Seresto® for DOGS [CATS]?"^{††}

[‡]In month 8, clients participating in the study were asked, "How satisfied are you now with Seresto® for DOGS [CATS] after 8 months?"^{††}

^{**}In month 8, veterinarians participating in the study were asked, "How likely are you to recommend Seresto® to clients with DOGS [CATS] in the future?"^{††}

¹Data on file. Bayer HealthCare Animal Health.

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Through its extensive network of news sources, **dvm360** provides unbiased multimedia reporting on all issues affecting the veterinary profession.



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Depression: Hard to understand unless you've been there

Not everyone can empathize with those who struggle, but the veterinary profession must address its inherent mental health risks.

Recently I was speaking with a marketing executive who had spent a number of years on the human health side of his company before making the transition to animal health. We were discussing all the sophisticated ways he and his team learned about the motivations of human physicians—why they prescribed certain medications and how they felt about their patients with various conditions—when the conversation turned to depression.

He said that doctors, when they were really pushed to be honest and placed under the protective cloak of anonymity, would often admit that they didn't like treating patients with depression. Their attitude? "If I made it through medical school without having a nervous breakdown, they should be able to pull themselves out of whatever funk they're in and get on with it."

And I think some—many?—veterinarians might feel the same way. In fact, one respondent to our 2015 dvm360 Job Satisfaction Survey, when asked to share a tip for dealing with burnout, compassion fatigue or depression in veterinary medicine with other practitioners, responded, "Put on your doctor coat and buck up."

Callous as it might seem, I don't really fault this veterinarian for feeling that way. When I had a close family member going through depression a number of years ago, I tried to be supportive and understanding, but secretly I simply didn't understand why she couldn't pull herself together—at least enough to handle the basic activities of life.

And then a few years later I experienced a number of crises simultaneously in my life and pretty much fell apart emotionally—depression, anxiety and

physical pain became my "friends."

And then I understood the gray veil that depression casts over the world. The tunnel you can't see your way out of. The herculean effort required just to go to the grocery store for milk. The oppressive certainty that life is never *ever* going to be good again. I gained empathy.

Fortunately, therapy and support from friends and family helped immensely and my equilibrium was soon restored. But I never took it for granted again. And I saw the world—including the world of mental and emotional health—differently from that point forward.

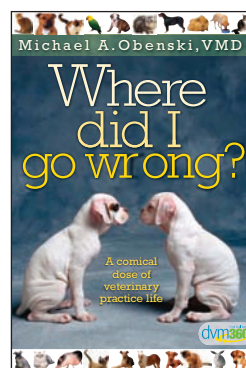
The veterinary profession has

been forced to grapple with these issues as research has emerged pointing to a higher-than-average risk and a number of tragic suicides have put faces on the statistics. We've pulled together some of the data, analysis and expert advice on the topic in this dvm360 Leadership Challenge, "The Burden of Care," with the hope that the conversations will continue and whatever systemic pathology exists will begin to heal.

Those of us who struggle—whether chronically or just occasionally—may not be able to "buck up," but we can all take steps toward wellness. I hope that for some of you, that journey will start here. **dvm360**



Missing Dr. Obenski's column already? We can help.

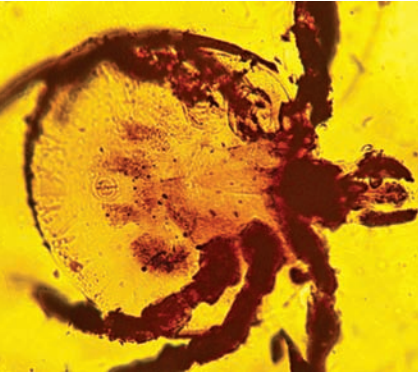


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Fossilized tick in amber indicates that Lyme disease is older than human species

Veterinary professionals are no strangers to the stealthy spirochete *Borrelia burgdorferi*—but the discovery of spirochete-like cells in a 15-million-year-old amber-encased tick reveals that the bacteria have been lurking around long before

humans walked the earth.

The discovery was made by George Poinar Jr., a paleontomologist, parasitologist and one of the world’s leading experts on plant and animal life forms found preserved in amber. In fact, you may remember the amber-encased

mosquito in the plot of the wildly popular Michael Crichton novel and movie *Jurassic Park*. Poinar’s early research is said to have inspired the story.

In a 2014 paper published in *Historical Biology*, Poinar and researchers from Oregon State University studied four *Amblyomma* tick larvae encased in 15- to 20-million-year-old amber from the Dominican Republic. Each larva was examined for the presence of internal microbes, and one specimen contained large numbers of spirochete-like cells, which most closely resemble those of the present-day *Borrelia* species, in the hemocoel and lumen of the alimentary tract. This is the oldest fossil evidence of ticks associated with such bacteria.

“Ticks and the bacteria they carry are very opportunistic,” Poinar says. “Ticks are a more important insect vector of disease than mosquitoes. It’s likely that many ailments in human history for which doctors had no explanation have been caused by tick-borne disease.”

Much like their modern-day counterparts, ancient ticks probably picked up spirochetes when they took blood meals from infected animals. And while there were many possible spirochete-harboring hosts in the area where this study’s juvenile tick probably lived, Poinar believes it’s more likely that the spirochetes were passed to the tick from its mother. Poinar points to the fact that the young tick didn’t appear to have any blood in its gut, so he and his researchers could not be certain it had indeed fed.

The bacterium was granted its own genus and named *Palaeoborrelia dominicana*. While it is impossible to know how closely the ancestral spirochetes relate to modern *Borrelia*, its location within the tick’s alimentary tract indicate clear ties.

Poinar is confident his discovery also has modern implications. “Paleontomology is a powerful tool to learn about early lineages of insect vectors and also early lineages of pathogens that the vectors carried going back to 100 million years. It shows that pathogens are very ancient and have co-evolved with their hosts over millions of years, which makes them so widespread and difficult to control today,” he says. **dvm360**



CHEWABLE TABLETS

Brief Summary: Before using PREVICOX, please consult the product insert, a summary of which follows:
Caution: Federal law restricts this drug to use by or on the order of a licensed veterinarian.

Indications: PREVICOX (firocoxib) Chewable Tablets are indicated for the control of pain and inflammation associated with osteoarthritis and for the control of postoperative pain and inflammation associated with soft-tissue and orthopedic surgery in dogs.

Contraindications: Dogs with known hypersensitivity to firocoxib should not receive PREVICOX.

Warnings: Not for use in humans. Keep this and all medications out of the reach of children. Consult a physician in case of accidental ingestion by humans.

For oral use in dogs only. Use of this product at doses above the recommended 2.27 mg/lb (5.0 mg/kg) in puppies less than seven months of age has been associated with serious adverse reactions, including death (see Animal Safety). Due to tablet sizes and scoring, dogs weighing less than 12.5 lb (5.7 kg) cannot be accurately dosed.

All dogs should undergo a thorough history and physical examination before the initiation of NSAID therapy. Appropriate laboratory testing to establish hematological and serum baseline data is recommended prior to and periodically during administration of any NSAID. **Owners should be advised to observe for signs of potential drug toxicity (see Adverse Reactions and Animal Safety) and be given a Client Information Sheet about PREVICOX Chewable Tablets.**

For technical assistance or to report suspected adverse events, call 1-877-217-3543.

Precautions: This product cannot be accurately dosed in dogs less than 12.5 pounds in body weight. Consider appropriate washout times when switching from one NSAID to another or when switching from corticosteroid use to NSAID use.

As a class, cyclooxygenase inhibitory NSAIDs may be associated with renal, gastrointestinal and hepatic toxicity. Sensitivity to drug-associated adverse events varies with the individual patient. Dogs that have experienced adverse reactions from one NSAID may experience adverse reactions from another NSAID. Patients at greatest risk for adverse events are those that are dehydrated, on concomitant diuretic therapy, or those with existing renal, cardiovascular, and/or hepatic dysfunction. Concurrent administration of potentially nephrotoxic drugs should be carefully approached and monitored. NSAIDs may inhibit the prostaglandins that maintain normal homeostatic function. Such anti-prostaglandin effects may result in clinically significant disease in patients with underlying or pre-existing disease that has not been previously diagnosed. Since NSAIDs possess the potential to produce gastrointestinal ulceration and/or gastrointestinal perforation, concomitant use of PREVICOX Chewable Tablets with other anti-inflammatory drugs, such as NSAIDs or corticosteroids, should be avoided. The concomitant use of protein-bound drugs with PREVICOX Chewable Tablets has not been studied in dogs. Commonly used protein-bound drugs include cardiac, anticonvulsant, and behavioral medications. The influence of concomitant drugs that may inhibit the metabolism of PREVICOX Chewable Tablets has not been evaluated. Drug compatibility should be monitored in patients requiring adjunctive therapy. If additional pain medication is needed after the daily dose of PREVICOX, a non-NSAID class of analgesic may be necessary. Appropriate monitoring procedures should be employed during all surgical procedures. Anesthetic drugs may affect renal perfusion, approach concomitant use of anesthetics and NSAIDs cautiously. The use of parenteral fluids during surgery should be considered to decrease potential renal complications when using NSAIDs perioperatively. The safe use of PREVICOX Chewable Tablets in pregnant, lactating or breeding dogs has not been evaluated.

Adverse Reactions:
Osteoarthritis: In controlled field studies, 128 dogs (ages 11 months to 15 years) were evaluated for safety when given PREVICOX Chewable Tablets at a dose of 2.27 mg/lb (5.0 mg/kg) orally once daily for 30 days. The following adverse reactions were observed. Dogs may have experienced more than one of the observed adverse reactions during the study.

| Adverse Reactions Seen in U. S. Field Studies | | |
|---|------------------|------------------------|
| Adverse Reactions | PREVICOX (n=128) | Active Control (n=121) |
| Vomiting | 5 | 8 |
| Diarrhea | 1 | 10 |
| Decreased Appetite or Anorexia | 3 | 3 |
| Lethargy | 1 | 3 |
| Pain | 2 | 1 |
| Somnolence | 1 | 1 |
| Hyperactivity | 1 | 0 |

PREVICOX (firocoxib) Chewable Tablets were safely used during field studies concomitantly with other therapies, including vaccines, anthelmintics, and antibiotics.

Soft-tissue Surgery: In controlled field studies evaluating soft-tissue postoperative pain and inflammation, 258 dogs (ages 10.5 weeks to 16 years) were evaluated for safety when given PREVICOX Chewable Tablets at a dose of 2.27 mg/lb (5.0 mg/kg) orally approximately 2 hours prior to surgery and once daily thereafter for up to two days. The following adverse reactions were observed. Dogs may have experienced more than one of the observed reactions during the study.

| Adverse Reactions Seen in the Soft-tissue Surgery Postoperative Pain Field Studies | | |
|--|-------------------------|------------------------|
| Adverse Reactions | Firocoxib Group (n=127) | Control Group* (n=131) |
| Vomiting | 5 | 6 |
| Diarrhea | 1 | 1 |
| Bruising at Surgery Site | 1 | 1 |
| Respiratory Arrest | 1 | 0 |
| SQ Crepitus in Rear Leg and Flank | 1 | 0 |
| Swollen Paw | 1 | 0 |

*Sham-dosed (pilled)

Orthopedic Surgery: In a controlled field study evaluating orthopedic postoperative pain and inflammation, 226 dogs of various breeds, ranging in age from 1 to 11.9 years in the PREVICOX-treated groups and 0.7 to 17 years in the control group were evaluated for safety. Of the 226 dogs, 118 were given PREVICOX Chewable Tablets at a dose of 2.27 mg/lb (5.0 mg/kg) orally approximately 2 hours prior to surgery and once daily thereafter for a total of three days. The following adverse reactions were observed. Dogs may have experienced more than one of the observed reactions during the study.

| Adverse Reactions Seen in the Orthopedic Surgery Postoperative Pain Field Study | | |
|---|-------------------------|------------------------|
| Adverse Reactions | Firocoxib Group (n=118) | Control Group* (n=108) |
| Vomiting | 1 | 0 |
| Diarrhea | 2** | 1 |
| Bruising at Surgery Site | 2 | 3 |
| Inappetence/ Decreased Appetite | 1 | 2 |
| Pyrexia | 0 | 1 |
| Incision Swelling, Redness | 9 | 5 |
| Oozing Incision | 2 | 0 |

A case may be represented in more than one category.

*Sham-dosed (pilled).

**One dog had hemorrhagic gastroenteritis.

Post-Approval Experience (Rev. 2009): The following adverse reactions are based on post-approval adverse drug event reporting. The categories are listed in decreasing order of frequency by body system:

Gastrointestinal: Vomiting, anorexia, diarrhea, melena, gastrointestinal perforation, hematemesis, hematachezia, weight loss, gastrointestinal ulceration, peritonitis, abdominal pain, hypersalivation, nausea

Urinary: Elevated BUN, elevated creatinine, polydipsia, polyuria, hematuria, urinary incontinence, proteinuria, kidney failure, azotemia, urinary tract infection

Neurological/Behavioral/Special Sense: Depression/lethargy, ataxia, seizures, nervousness, confusion, weakness, hyperactivity, tremor, paresis, head tilt, nystagmus, mydriasis, aggression, uveitis

Hepatic: Elevated ALP, elevated ALT, elevated bilirubin, decreased albumin, elevated AST, icterus, decreased or increased total protein and globulin, pancreatitis, ascites, liver failure, decreased BUN

Hematological: Anemia, neutrophilia, thrombocytopenia, neutropenia

Cardiovascular/Respiratory: Tachypnea, dyspnea, tachycardia

Dermatologic/Immunologic: Pruritis, fever, alopecia, moist dermatitis, autoimmune hemolytic anemia, facial/ muzzle edema, urticaria

In some situations, death has been reported as an outcome of the adverse events listed above.

For a complete listing of adverse reactions for firocoxib reported to the CVM see:

<http://www.fda.gov/AnimalVeterinary/SafetyHealth/ProductSafetyInformation/ucm055394.htm>

Information For Dog Owners: PREVICOX, like other drugs of its class, is not free from adverse reactions. Owners should be advised of the potential for adverse reactions and be informed of the clinical signs associated with drug intolerance. Adverse reactions may include vomiting, diarrhea, decreased appetite, dark or tarry stools, increased water consumption, increased urination, pale gums due to anemia, yellowing of gums, skin or white of the eye due to jaundice, lethargy, incoordination, seizure, or behavioral changes. **Serious adverse reactions associated with this drug class can occur without warning and in rare situations result in death (see Adverse Reactions). Owners should be advised to discontinue PREVICOX therapy and contact their veterinarian immediately if signs of intolerance are observed.** The vast majority of patients with drug-related adverse reactions have recovered when the signs are recognized, the drug is withdrawn, and veterinary care, if appropriate, is initiated. Owners should be advised of the importance of periodic follow up for all dogs during administration of any NSAID.

Effectiveness: Two hundred and forty-nine dogs of various breeds, ranging in age from 11 months to 20 years, and weighing 13 to 175 lbs, were randomly administered PREVICOX or an active control drug in two field studies. Dogs were assessed for lameness, pain on manipulation, range of motion, joint swelling, and overall improvement in a non-inferiority evaluation of PREVICOX compared with the active control. At the study’s end, 87% of the owners rated PREVICOX-treated dogs as improved. Eighty-eight percent of dogs treated with PREVICOX were also judged improved by the veterinarians. Dogs treated with PREVICOX showed a level of improvement in veterinarian-assessed lameness, pain on palpation, range of motion, and owner-assessed improvement that was comparable to the active control. The level of improvement in PREVICOX-treated dogs in limb weight bearing on the force plate gait analysis assessment was comparable to the active control. In a separate field study, two hundred fifty-eight client-owned dogs of various breeds, ranging in age from 10.5 weeks to 16 years and weighing from 7 to 168 lbs, were randomly administered PREVICOX or a control (sham-dosed-pilled) for the control of postoperative pain and inflammation associated with soft-tissue surgical procedures such as abdominal surgery (e.g., ovariohysterectomy, abdominal cryptorchidectomy, splenectomy, cystotomy) or major external surgeries (e.g., mastectomy, skin tumor removal <8 cm). The study demonstrated that PREVICOX-treated dogs had significantly lower need for rescue medication than the control (sham-dosed-pilled) in controlling postoperative pain and inflammation associated with soft-surgery. A multi-center field study with 226 client-owned dogs of various breeds, and ranging in age from 1 to 11.9 years in the PREVICOX-treated groups and 0.7 to 17 years in the control group was conducted. Dogs were randomly assigned to either the PREVICOX or the control (sham-dosed-pilled) group for the control of postoperative pain and inflammation associated with orthopedic surgery. Surgery to repair a ruptured cruciate ligament included the following stabilization procedures: fabellar suture and/or imbrication, fibular head transposition, tibial plateau leveling osteotomy (TPLO), and ‘over the top’ technique. The study (n = 220 for effectiveness) demonstrated that PREVICOX-treated dogs had significantly lower need for rescue medication than the control (sham-dosed-pilled) in controlling postoperative pain and inflammation associated with orthopedic surgery.

Animal Safety: In a targeted animal safety study, firocoxib was administered orally to healthy adult Beagle dogs (eight dogs per group) at 5, 15, and 25 mg/kg (1, 3, and 5 times the recommended total daily dose) for 180 days. At the indicated dose of 5 mg/kg, there were no treatment-related adverse events. Decreased appetite, vomiting, and diarrhea were seen in dogs in all dose groups, including unmedicated controls, although vomiting and diarrhea were seen more often in dogs in the 5X dose group. One dog in the 3X dose group was diagnosed with juvenile polyarthritis of unknown etiology after exhibiting recurrent episodes of vomiting and diarrhea, lethargy, pain, anorexia, ataxia, proprioceptive deficits, decreased albumin levels, decreased and then elevated platelet counts, increased bleeding times, and elevated liver enzymes. On histopathologic examination, a mild ileal ulcer was found in one 5X dog. This dog also had a decreased serum albumin which returned to normal by study completion. One control and three 5X dogs had focal areas of inflammation in the pylorus or small intestine. Vacuolization without inflammatory cell infiltrates was noted in the thalamic region of the brain in three control, one 3X, and three 5X dogs. Mean ALP was within the normal range for all groups but was greater in the 3X and 5X dose groups than in the control group. Transient decreases in serum albumin were seen in multiple animals in the 3X and 5X dose groups, and in one control animal. In a separate safety study, firocoxib was administered orally to healthy juvenile (10-13 weeks of age) Beagle dogs at 5, 15, and 25 mg/kg (1, 1, 3, and 5 times the recommended total daily dose) for 180 days. At the indicated (1X) dose of 5 mg/kg, on histopathologic examination, three out of six dogs had minimal periportal hepatic fatty change. On histopathologic examination, one control, one 1X, and two 5X dogs had diffuse slight hepatic fatty change. These animals showed no clinical signs and had no liver enzyme elevations. In the 3X dose group, one dog was euthanized because of poor clinical condition (Day 63). This dog also had a mildly decreased serum albumin. At study completion, out of five surviving and clinically normal 3X dogs, three had minimal periportal hepatic fatty change. Of twelve dogs in the 5X dose group, one died (Day 82) and three moribund dogs were euthanized (Days 38, 78, and 79) because of anorexia, poor weight gain, depression, and in one dog, vomiting. One of the euthanized dogs had ingested a rope toy. Two of these 5X dogs had mildly elevated liver enzymes. At necropsy all five of the dogs that died or were euthanized had moderate periportal or severe panzonal hepatic fatty change; two had duodenal ulceration; and two had pancreatic edema. Of two other clinically normal 5X dogs (out of four euthanized as comparators to the clinically affected dogs), one had slight and one had moderate periportal hepatic fatty change. Drug treatment was discontinued for four dogs in the 5X group. These dogs survived the remaining 14 weeks of the study. On average, the dogs in the 3X and 5X dose groups did not gain as much weight as control dogs. Rate of weight gain was measured (instead of weight loss) because these were young growing dogs. Thalamic vacuolation was seen in three of six dogs in the 3X dose group, five of twelve dogs in the 5X dose group, and to a lesser degree in two unmedicated controls. Diarrhea was seen in all dose groups, including unmedicated controls. In a separate dose tolerance safety study involving a total of six dogs (two control dogs and four treated dogs), firocoxib was administered to four healthy adult Beagle dogs at 50 mg/kg (ten times the recommended daily dose) for twenty-two days. All dogs survived to the end of the study. Three of the four treated dogs developed small intestinal erosion or ulceration. Treated dogs that developed small intestinal erosion or ulceration had a higher incidence of vomiting, diarrhea, and decreased food consumption than control dogs. One of these dogs had severe duodenal ulceration, with hepatic fatty change and associated vomiting, diarrhea, anorexia, weight loss, ketonuria, and mild elevations in AST and ALT. All four treated dogs exhibited progressively decreasing serum albumin that, with the exception of one dog that developed hypoalbuminemia, remained within normal range. Mild weight loss also occurred in the treated group. One of the two control dogs and three of the four treated dogs exhibited transient increases in ALP that remained within normal range.

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REFERENCES: 1. Pollmeier M, Toulemonde C, Fleishman C, Hanson PD. Clinical evaluation of firocoxib and carprofen for the treatment of dogs with osteoarthritis. *Vet Rec.* 2006;159(17):547-551. 2. Data on file at Merial.

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See brief summary on page 06

Appeals court upholds ruling against Internet vet

Finds that Texas practice act's physical exam requirement does not violate free speech; Dr. Ron Hines plans to petition Supreme Court. *By Julie Scheidegger*

Years of back and forth on whether the Texas Veterinary Practice Act violates the First Amendment rights of Ron Hines, DVM, by forbidding him to dispense veterinary "advice" via the Internet is now poised for possible review by the U.S. Supreme Court. On March 27, the U.S. Court of Appeals for the Fifth Circuit ruled that Hines' freedom of speech had not been suppressed by the state practice act, which requires veterinarians to physically examine a patient to establish a veterinary-client-patient relationship.

Hines' lawyer, Institute for Justice Senior Attorney Jeff Rowes, believes the appeals court got it wrong. He says Hines absolutely intends to seek review with the U.S. Supreme Court.

The appeals court takes the position 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. What's more, the court says 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.

"The Supreme Court has long held that the First Amendment does not prevent restrictions directed at

commerce or conduct from imposing incidental burdens on speech," the ruling states. "Pursuant to this principle, there is a robust line of doctrine concluding that state regulation of the practice of a profession, even though that regulation may have an incidental impact on speech, does not violate the Constitution."

Hines' legal team must petition the Supreme Court by June 29 to hear the case. "Dr. Hines gives advice for a living, and advice is speech protected by the First Amendment," Rowes says. "This case is ripe for review because the federal courts of appeal across the country disagree about the extent to which the First Amendment protects the speech of licensed professionals when they give individually tailored advice."

Rowes believes that if he and his team can demonstrate serious disagreement among federal courts of appeal on this issue, Hines' case is ideal for the high court to settle.

In addition to ruling on Hines' freedom of speech, the appeals court also upheld the dismissal of Hines' equal protection and due process claims, agreeing with the lower court's assessment of the role of a physical examina-



Dr. Ron Hines

tion. "The requirement that veterinary care be provided only after the veterinarian has seen the animal is, at a minimum, rational: it is reasonable to conclude that the quality of care will be higher, and the risk of misdiagnosis and improper treatment lower, if the veterinarian physi-

cally examines the animal in question before treating it," the decision reads.

As it stands, Hines may not return to dispensing veterinary advice on his website, 2ndchance.info. The Texas Board of Veterinary Medical Examiners executed a disciplinary order on March 25, 2013, ordering Hines to cease his veterinary correspondence. His license was also suspended with probation for one year. **dvm360**



Is advice just advice or is it veterinary medicine?

Go to **dvm360.com/internetvet** to learn more about Dr. Ron Hines' case.

MAF's Golden Retriever Lifetime Study completes enrollment with 3,000 dogs

A golden retriever named Chloe is the 3,000th dog to be enrolled in Morris Animal Foundation's Golden Retriever Lifetime Study, achieving researchers' goals for the study. Chloe and other golden retrievers participating in the study will help veterinarians better understand the role of environment, nutrition, exercise, behavior, genetics and other factors in the development of (or protection from)

canine diseases—particularly cancer, the leading cause of death in dogs.

While common in human research, longitudinal studies of this magnitude have not been done before in veterinary medicine, Morris representatives say. Such long-term studies can reveal health effects that evolve over many years, helping to unravel mysteries surrounding causes of disease.

"A study like this can only happen

through the active participation of an extended community of dog owners, dogs, veterinarians and study sponsors," says David Haworth, DVM, PhD, president of Morris Animal Foundation.

Though the study focuses on golden retrievers, Haworth says other dog breeds will benefit from what is learned. And some results will be released immediately to benefit canine health before the entire study is complete. **dvm360**



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NEWS | Medical update

A closer look at PAIN

Pain management guidelines apply evidence. *By Donna Loyle, MS*

The importance of administering both local and locoregional anesthetic blocks. The value of nonpharmacologic intervention. Recognizing and treating maladaptive pain. This is just a sampling of the new pain management guidelines recently introduced by the American Animal Hospital Association (AAHA) and the American Association of Feline Practitioners (AAFP).

The 2015 AAHA/AAFP Pain Management Guidelines for Dogs and Cats (available at aaha.org) consolidates the robust research that has been published on this topic in the past three years. The new guidelines update those released in 2007.

The role of the 2007 guidelines was to describe and define the broad principles of applied pain management in companion animals, a field in its infancy at the time, says Mark Epstein, DVM, DABVP (canine and feline), CVPP, co-chair of the 2015 guidelines committee. "There were few tools and astonishingly little scientific evidence regarding the assessment of pain, nor was there much on which to base specific treatment recommendations—a problem that has been greatly remedied over the intervening years but that will continue to evolve," says Epstein, medical director of TotalBond Veterinary Hospitals in Gastonia, North Carolina.

Also, in 2007 there was almost no information on pain management in cats, he continues, but that's changed. "Modern day, for both dogs and cats, we have an increasingly strong handle on the recognition and assessment of pain; the best, highest, wisest use of opioids, NSAIDs, local anesthetics and other pain-modifying analgesic drugs; and, critically, nonpharmacologic modalities to prevent and treat pain."

The new guidelines provide evidence-based recommendations for the most common reasons companion animals experience pain, including acute postsurgical pain and, in the area of chronic pain, degenerative joint disease (DJD).

"There is increased awareness of how common DJD is in cats," says Ilona Rodan, DVM, DABVP (feline), co-chair of the guidelines committee. The new guidelines contain two sections, one each for canine and feline, to help clinicians diagnose and treat joint disease, which the authors called one of the most significant and underdiagnosed diseases of companion animals.

The 2007 guidelines stated that every patient should be assigned a pain score. "The clinician might say, 'Fine, but how does one assign a pain score?'" notes guidelines co-chair Dr. Mark Epstein.

A team-based approach

Emphasized in the new guidelines is the critical importance of all members of a pet-care team, including owners. "For example, in cats, where the signs of pain are subtle, owner input is critical," says Rodan, a feline specialty behavior consultant and founder of Cat Care Clinic in Madison, Wisconsin. "Does the cat have a decline in its normal behaviors, such as appetite or grooming; a start of new behaviors, such as being more clingy or withdrawn; or behavior problems? A cat that

stops using the litter box may have a painful bladder condition or a condition that makes it difficult to jump into and out of the box."

Such behaviors, when noticed and then reported by the owner, can help direct the veterinary team's attention to pain as a possible cause.

Moreover, the new guidelines note that every healthcare team member should have a defined role in pain management. "Medical rounds and staff meetings are effective tools in making sure that all staff members are aware of the individualized pain management needs of every hospitalized animal," note the guidelines authors. "Each healthcare team member should be able to recognize pain-associated behavior in animals ... and how to respond appropriately."

The authors offer a list of suggested pain management responsibilities for each team member, including veterinarians, technicians and patient-care personnel.

Continuum of care

An ideal pain management plan, the authors note, should include anticipation, early intervention and evaluation of response, the latter of which should be considered a credible pain assessment tool. For example, if a cat with joint disease begins receiving medication and the owner provides a litter box with a low lip, "the cat must be rechecked and reassessed to see if it's still painful," Rodan says. "Once comfortable, the cat should be brought for periodic visits to ensure it remains pain-free."

The 2015 guidelines give nonpharmacologic modalities a prominent place. Cold compression, weight management and exercise therapy all can play a role in effective pain management. And treatment options such as acupuncture, physical rehabilitation, myofascial trigger point therapy, therapeutic laser and other modalities are gain-

ing acceptance among veterinarians.

How an animal is handled also plays a role. “Gentle handling versus heavy restraint can greatly impact the comfort of the pet,” says Rodan. “Having ramps or pet steps to allow the pet to get to its favorite spots greatly improves its quality of life as well as comfort.”

Multimodal medications

When discussing pharmacologic options, the new guidelines call for a multimodal strategy. For example, they state that local and locoregional anesthetic blocks should be performed with every surgical procedure when possible.

The 2007 guidelines gave a brief description of various drugs and drug classes, while the new guidelines summarize current best evidence. For example, “with regards to NSAIDs, the clinician is given straightforward guidance on how to maximize safe use of this important drug class,” Epstein says.

The new guidelines also summarize the latest research on opioids, local anesthetics, alpha-2 adrenergic agonists, and individual drugs such as ketamine, gabapentin and tramadol.

Regarding perioperative pain management, the authors point to an evidence-based approach that guides clinicians to shape their own protocols. “The choice of medication should be based on anticipated pain levels and individualized patient needs,” the authors state. “Anticipatory analgesia provided prior to pain onset is more effective than analgesia provided once pain has occurred, contributing to both a dose- and anesthetic-sparing effect.”

Pain scores

The 2007 guidelines stated that pain should be considered the fourth vital sign after temperature, pulse and respiration and directed that every patient be assigned a pain score. “The clinician might say, ‘Fine, but how does one assign a pain score?’” notes Epstein.

While there still is no gold standard for assessing animal pain, the authors point to several online resources for scoring acute postoperative pain, including those offered by Colorado State University and the University of Glasgow.

A table also directs clinicians to several measurement instruments for assessing chronic pain—including the Helsinki Chronic Pain Index, Canine Brief Pain Inventory and Cincinnati Orthopedic Disability Index—that utilize primarily pet owner observations.

“The use of pain scoring tools can decrease subjectivity and bias by

observers, resulting in more effective pain management, which ultimately leads to better patient care,” the authors say.

Takeaways

Epstein calls the new guidelines “a force-multiplier for the busy practitioner” in that they:

- > Promote a pain-aware culture in practice, in which the entire team (including the pet owner) is involved.
- > Provide a quick reference on pain assess-

ment, as well as a toolbox of pharmacologic and nonpharmacologic interventions.

> Provide guidance on an evidence-based approach to prevention and treatment of surgical and joint-disease-related pain.

Says Rodan, “Continued updates in canine and feline pain management provide veterinarians with the tools to improve patient care, job satisfaction, the quality of the life of their patients, and the relationship they have with their people.” **dvm360**

Donna Loyle, MS, is a freelance writer in the Philadelphia area and the former primary editor of the North American Veterinary Licensing Examination.



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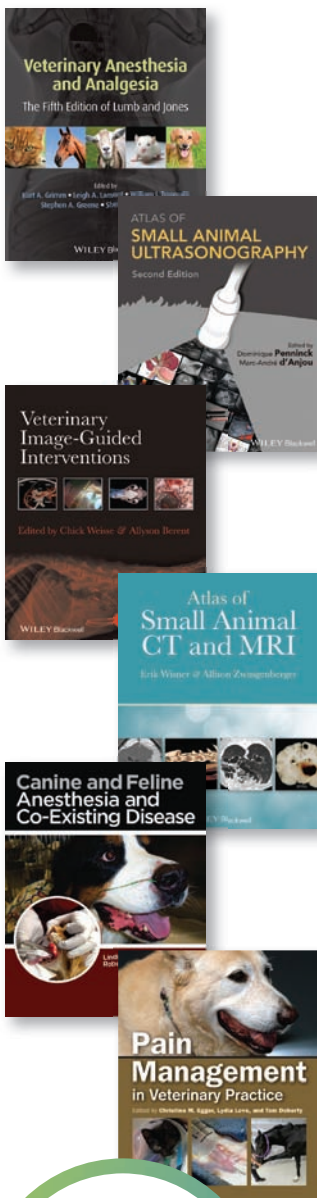
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Bridging the gender gap

Karen Bradley, president of WVLDI, encourages more women to take on leadership roles in the veterinary profession. *By Donna Loyle, MS*

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In 1960, the U.S. Census Bureau reported that 98 percent of veterinarians were men. In 2013, of the nation's 99,720 practicing veterinarians, 55 percent were women, according to the American Veterinary Medical Association (AVMA).

One would assume that such a seismic gender shift in a profession would translate into an increasing number of women in leadership positions within that field. But that has not been the case in many industries and professions, including veterinary medicine.

The reasons are varied, often nuanced and complex. Bridging the gender gap usually requires concerted effort on the part of both men and women within a profession, including acknowledgment of the issue as well as funded programs and initiatives to address it.

And that's where the Women's Veterinary Leadership Development Initiative (WVLDI—rhymes with “Vivaldi”) comes in. WVLDI is a grassroots volunteer organization that has quickly gained momentum since it was established in 2013. According to its website, WVLDI is dedicated to helping develop leaders in organized veterinary medicine, practice ownership, academia and corporate environments and achieving “a stronger, more effective and personally rewarding profession.”

The AVMA Board of Directors agreed to provide foundational support to WVLDI in 2014. The support included financial and business management services and sponsorship and co-branded promotions for WVLDI speaker presentations at four veterinary conferences. In December 2014, the AVMA board agreed to continue that support into 2015, and last year Ceva Animal Health signed on as a corporate sponsor.



Dr. Karen Bradley, WVLDI president

Dr. Karen Bradley

Karen Bradley, DVM, is one of the founders of WVLDI and currently serves as its president. She started the Facebook group that eventually led to WVLDI's creation and has gathered a close network of veterinarians to serve on its advisory board.

Plus, Bradley herself is no stranger to leadership. Co-owner of Onion River Animal Hospital, a small animal clinic in Montpelier, Vermont, she also served as chair and vice chair of the AVMA's House Advisory Committee. Since 2011, she has been the Vermont delegate for the AVMA's House of Delegates (HOD), and she was an alternate delegate from 2008 to 2011.

dvm360: What need did you see in veterinary leadership circles that prompted the creation of WVLDI?

Karen Bradley: I think it was the realization that I was three-quarters of the way through with my terms of service in the AVMA HOD, and I had not done enough to reach out and encourage more female and early-career veterinarians to get involved in organized veterinary medicine—especially in leadership roles. At the AVMA level, I was in the minority as a female

early- to mid-career veterinarian, which surprised me.

As I discussed this with other leaders, I found they also were noting the low numbers of women veterinarians in academic leadership and corporate veterinary boards. We had conversations and exchanged emails and ultimately had conference calls to fundamentally ask ourselves, “What can we do together?” We formed our initiative as a way to start the conversation about the gap: many women in the profession, a majority even, and few in leadership roles.

dvm360: What is the initiative's mission?

Bradley: To support women in seeking and achieving leadership, policy and decision-making positions within all areas of professional veterinary activity.

dvm360: What programs have been completed so far, and what's planned for the future?

Bradley: Future plans are continually evolving. We would like to have toolkits and how-to resources for things such as becoming a practice owner—after we've convinced a female veterinarian to want to be an owner—and getting involved in organized veterinary medicine. We're also developing mentorship networks to help those who are interested get advice and help from those who've already achieved a measure of success. We've already created a community for idea- and article-sharing through our social media.

Awareness of gender tendencies in work and business help us to strive toward gender parity—men and women together. Much like the “HeforShe” campaign, our initiative would like to see men and women veterinarians working together for a more diverse leadership and more gender equality



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overall. Our most high-profile programs so far have been presentations at the AVMA Convention, Western Veterinary Conference (WVC), AVMA's Veterinary Leadership Conference and the North American Veterinary Community (NAVC) Conference on topics such as practice ownership, new and creative models for doing it, career transitions, work-life balance, building leadership and communication skills, and highlighting leadership opportunities.

dvm360: What do you hope to change within the industry?

Bradley: One of the biggest changes I would hope for is the development of more open, accessible pathways to leadership. In many of the areas we focus on—corporate, academic and organized veterinary medicine—there are systemic barriers that are hard to overcome for women. I'd love to see some of the etched-in-stone aspects of rising through the academic ranks shift and some of the patriarchal pay-your-dues aspects of organized veterinary medicine change. And I'd like to see more role models for women who have succeeded in corporate veterinary medicine. It will take male leaders to champion these changes to make it possible.

dvm360: Was there a defining moment in your veterinary career when you knew you wanted to take on leadership roles?

Bradley: There was no singular moment. I got involved slowly, starting with interest in my state veterinary association's animal welfare committee. I can credit being involved in organized veterinary leadership to one fundamental thing: being asked. I was invited to the leadership table and encouraged to take on a more active role in my state veterinary association and AVMA leadership.

When you look at data on volunteers in associations, in particular younger-generation and female members, the tendency is that we have to be asked—and more than once. I once read that, on average, people are asked three times before they accept.

I've also tended to be more comfortable not feeling completely ready for a new role, figuring that I'll learn as I go. Many women are uncomfortable taking on a role or position unless they feel 100 percent qualified. What I have tended to do is the "fake it until you make it" strategy—or fake it until you learn it.

dvm360: Ideally, what would tomorrow's veterinary leadership look like?

Bradley: In an ideal world, it will reflect the diversity of our society. That's a tough goal to achieve when there's so little diversity, both ethnic and cultural, in our profession today.

Today's and tomorrow's veterinary leadership should continue to prioritize the task of increas-

ing all diversity in our profession—for the good of the profession and the health and well-being of humans and animals alike. There's gender diversity in veterinary medicine for now; approximately 55 percent of all U.S. veterinarians are female. So a balanced gender leadership is achievable now, and that will benefit the profession.

Ultimately, the founding members of WV-LDI care very much about the diversity of the profession and foresee that our mission will likely evolve to be our vision, which is to develop leaders for the benefit of the profession and to deliver on the promise of veterinary medicine to society.

dvm360: Within your work, what message do you hope will resonate with veterinary students and new veterinarians?

Bradley: In some ways, I believe our initiative has two audiences: the newer generation of veterinarians, who happen to be predominantly female, and the comfortable, seasoned veterinarians who may be getting closer to retirement. Therefore, my message for the seasoned veterinarians is to be open-minded, to think outside the box. Newer veterinarians have stressors and concerns that cannot be fully comprehended if you're not experiencing them personally. Recognize that these veterinarians need support, mentorship and encouragement to succeed. And if they say "no" the first time you ask them to take a leadership role, ask again! It very well may take a second or third try.

For practice transitions, there's a huge need to develop creative ways to be a part-time owner or one of a group of owners. The idea of a solo practitioner shouldering all of the burdens of a practice is just not desirable to most new veterinarians and financially not feasible for many. Very few early-career veterinarians are willing or able to do it the way some older veterinarians did: working 60 to 80 hours a week and shouldering all the burdens themselves.

For the younger veterinary audience, my main message is actually similar: Be open-minded. There are many ways to utilize your veterinary credentials, so find the right fit—and you may have to try on a couple of options to find the right one. Seek out those who will support and sponsor you so you can succeed. Go for leadership roles, even if you're unsure whether you have the skills or time. You can learn as you go, and you can always decline to continue if the fit is not right.

Last, consider practice ownership at some level. It may be the best way you can have autonomy and control of your life with the greatest financial gains. **dvm360**

Donna Loyle, MS, is a freelance writer in the Philadelphia area and the former primary editor of the North American Veterinary Licensing Examination.



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

IMPORTANT SAFETY INFORMATION: The most common adverse reactions recorded in clinical trials were vomiting, decreased appetite, diarrhea, lethargy, polydipsia, and flatulence. Bravecto has not been shown to be effective for 12-weeks' duration in puppies less than 6 months of age. Bravecto is not effective against lone star ticks beyond 8 weeks after dosing.

Reference: 1. Bravecto [prescribing Information]. Summit, NJ: Merck Animal Health; 2014.

Available by veterinary prescription only.

Please see Brief Summary on following page.

www.BravectoVets.com

NADA 141-426, Approved by FDA



BRIEF SUMMARY (For full Prescribing Information, see package insert)

Caution:

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

Indications:

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

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

Contraindications:

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

Warnings:

Not for human use. Keep this and all drugs out of the reach of children. Keep the product in the original packaging until use, in order to prevent children from getting direct access to the product. Do not eat, drink or smoke while handling the product. Wash hands thoroughly with soap and water immediately after use of the product.

Precautions:

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

Adverse Reactions:

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

Percentage of Dogs with Adverse Reactions in the Field Study

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

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

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

How Supplied:

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

Distributed by:

Intervet Inc (d/b/a Merck Animal Health)
Summit, NJ 07901

Made in Austria

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141487 R2



UC Davis veterinary student killed in suspected murder-suicide

Victim's missing pets found after community rallies through Facebook group. *By Matthew Kenwright*

A female veterinary medicine student at the University of California, Davis, was shot and killed March 26 in an alleged murder-suicide in her home.

The City of Davis Police found 27-year-old Whitney Joypauline Engler and her roommate, 23-year-old Joseph Andrew Hein, dead of gunshot wounds at approximately 2 a.m. March 27 in the duplex they shared on Glacier Drive in West Davis, California, according to *The Davis Enterprise*.

Police "strongly suspect" Whitney Joypauline Engler was killed by Joseph Andrew Hein before Hein killed himself, Lt. Paul Doroshov tells *dvm360*. Autopsies reveal Engler was shot in the chest and head, and Hein shot himself in the head. At press time, police were still investigating the incident.

A handgun was located near Hein's body, police told the newspaper, and the bodies were found in separate rooms. Hein is believed to be the

shooter, but gunshot residue and fingerprints need to be examined.

The scene was discovered seven hours after a man called 911 and said two people were dead in the home, according to the *Enterprise*. The caller hung up without providing details.

Responding to the call was difficult because of concerns that officers could be shot from the windows, according to the newspaper.

Assembling a SWAT team, mobilizing two Mine-Resistant-Ambush-Protected (MRAP) vehicles, flying a helicopter with infrared cameras to scan the area and using a robot to enter the home delayed reaching the crime scene.

"It's very unfortunate that the situation turned out like it did," Darren Pytel, assistant police chief, told the *Enterprise*. "We could have gone in much earlier, but that wouldn't have been the safe or prudent thing to do, based on the

information we were getting."

Virginia Bigler, Engler's mother, told the *Enterprise* that UC Davis was her daughter's "dream school," and she was expected to graduate in May.

Lois Hall, Hein's mother, told the *Enterprise* that Hein owned guns. She wasn't aware he had a semi-automatic assault rifle that he uploaded a photo of to Facebook.

Following the incident, it was discovered that three of Engler's pets had escaped. A Facebook group, Rosie & Friends, was created to help the effort. Rosie, an Australian shepherd, Indiana, a Siamese cat, and another cat, Chique, were found safe by March 30.

Michael D. Lairmore, DVM, PhD, dean of the UC Davis School of Veterinary Medicine, spoke at the March 28 candlelight vigil, according to a UC Davis press release.

"While we will never understand the senseless tragedy that took Whitney's life, she is engrained in the collective soul of those that knew her best," he said. "Our profound sympathies go out to Whitney's family, friends and classmates."

Find it all here
dvm360
com

In memoriam

To read more about Engler's life, visit dvm360.com/Engler.

State board rules against Dr. Pol

Michigan orders fine and CE. *By Julie Scheidegger*

The disciplinary subcommittee of the Michigan Board of Veterinary Medicine took action against Jan Pol, DVM, in regard to the charges of negligence and incompetence brought against him last year. The charges stem from a veterinary case featured on Nat Geo Wild's reality television series "The Incredible Dr. Pol," of which Pol is the star.

Pol, who owns Pol Veterinary Services in Weidman, Michigan, was ordered by the board to pay a \$500 fine that must be paid within 90 days of the ruling and one year probation in which he must complete continuing education in IV fluids, anesthesia and emergency and critical care.

While on probation, Pol can have no violations of the state health code. This is consistent with the board's previous disciplinary action against Pol, who in

2012 was ordered to pay a \$500 fine and complete continuing education in the areas of documentation and record keeping, small animal reproduction, and ultrasound techniques and interpretation as a result of a complaint regarding a 2010 incident.

The board discussed the recommendation of the administrative law judge who heard testimony in January. While the judge's decision has not been made public, it was safe to assume prior to the board's ruling that the opinion did not fall in Pol's favor. Pol released a statement defending his practice philosophy and treatment decisions.

The owners of the dog at the center of the case also went public with their support of Pol—even posing for a photo with him and Mr. Pigglesworth.

From here, Pol can appeal. To read more, visit dvm360.com/DrPol.



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“The lens they see the world through is gray. They don’t want to die. They just want to escape from the pain.”
—Dr. Laurie Fonken

THE BURDEN: IN YOUR WORDS

- | | | | | |
|---|--|--|---|--|
| I just never thought my career would let me down like this. | I sometimes wish I'd never become a vet. I wish I could change careers at least once a week. | When it's good, it's great. When it's bad, it's sad. | Even though the clients can be difficult and the job can be stressful, at the end of each day I know I'm helping animals. I would not be satisfied doing anything else. | The best and brightest sooner or later will quit applying to veterinary schools. |
|---|--|--|---|--|

Carprieve® Injection

(carprofen)

Available In
20 mL and
**Exclusive
50 mL
Bottles**



Carprieve® (Carprofen) Injection

The Industry's First FDA-Approved Generic
Equivalent To Rimadyl® (Carprofen) Injectable

Carprieve Injection Dosing Chart

| Dog Weight (lbs.) | Dose Rate (mL of Solution) |
|----------------------|-------------------------------|
| 5 lbs. | 0.2 mL |
| 10 lbs. | 0.4 mL |
| 15 lbs. | 0.6 mL |
| 20 lbs. | 0.8 mL |
| 25 lbs. | 1.0 mL |
| 30 lbs. | 1.2 mL |
| 35 lbs. | 1.4 mL |
| 40 lbs. | 1.6 mL |
| 45 lbs. | 1.8 mL |
| 50 lbs. | 2.0 mL |

- Same active ingredient, formulation and dosing regimen as Rimadyl® (carprofen) Injectable
- For relief of pain and inflammation associated with osteoarthritis (OA)
- For control of postoperative pain associated with soft tissue and orthopedic surgeries in dogs
- Each mL of injectable solution contains 50 mg of carprofen

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- Carprieve® Injection** is available in both 20 mL and exclusive 50 mL bottles
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Carprieve®
Caplets Also
Available



Observe label directions. For subcutaneous use in dogs only. Do not use in cats. As with other NSAIDs, rare but serious side effects involving the digestive system, kidneys or liver may occur. Such signs may be serious, resulting in hospitalization or even death. Regular monitoring is required for pets on medication. Pet owners should be advised to discontinue use if side effects occur and contact their veterinarian. See product labeling for full product information.

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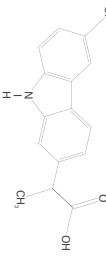
ANADA 200-520, Approved by FDA

Carprive® Injection
Sterile Injectable Solution
50 mg/mL

Non-steroidal anti-inflammatory drug
For subcutaneous use in dogs only

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

DESCRIPTION: Carprive® Injection is a sterile solution containing Carprive, a non-steroidal anti-inflammatory drug (NSAID) of the propionic acid class, that has been shown to possess analgesic, antipyretic, and antinflammatory properties. Carprive is the non-propionery and designation for a substituted carbazole, 6-ethoxy-*o*-methyl-9H-carbazole-2-acetic acid. The empirical formula is C₂₁H₁₉ClN₂O₃ and the molecular weight is 373.72. The chemical structure of carprive is:



Each mL of Carprive Injection contains 50.0 mg carprive, 30.0 mg arginine, 88.5 mg glycolic acid, 189.0 mg leucine, 10.0 mg benzyl alcohol, 8.0 mg benzyl alcohol, 0.5 mg benzyl alcohol, 0.5 mg hydrochloric acid as needed to adjust pH, and water for injection.

CLINICAL PHARMACOLOGY: Carprive is a non-steroidal anti-inflammatory drug (NSAID) with analgesic, antipyretic, and antinflammatory activity. It is not an anesthetic agent with characteristic anesthetic and anesthetic activity approximately equivalent to indomethacin in animal models.¹

The mechanism of action of carprive, like that of other NSAIDs, is believed to be associated with the inhibition of cyclooxygenase activity. Two distinct cyclooxygenases have been described in mammals: the constitutive cyclooxygenase, COX-1, synthesizes prostaglandins necessary for normal physiological functions; and the inducible cyclooxygenase, COX-2, generates prostaglandins involved in inflammation. Inhibition of COX-1 is thought to be associated with gastrointestinal and renal toxicity while inhibition of COX-2 provides anti-inflammatory activity. The COX-1 may vary from species to species. In *in vitro* study using canine cell cultures, carprive demonstrated selective inhibition of COX-2 versus COX-1. Clinical relevance of these data has not been shown. Carprive has also been shown to inhibit the release of several prostaglandins from polymorphonuclear leukocytes (PMN) and human rheumatoid synovial cells, indicating inhibition of acute (PMN system) and chronic (lysoval cell system) inflammatory reactions.¹

Several studies have demonstrated that carprive has modulatory effects on both humoral and cellular immune responses. ² Data also indicate that carprive inhibits the production of interleukin-1 (IL-1) and interleukin-6 (IL-6), by its inhibitory effects on proinflammatory cytokines. Based upon comparison with data obtained from intravenous administration, carprive is approximately 10% bioavailable when administered orally. Peak blood plasma concentrations are achieved in 1-3 hours after oral administration of 1, 5, and 25 mg/kg to dogs. The mean terminal half-life of carprive is approximately 8 hours (range 4.9-9.8 hours) after oral administration. Carprive is excreted primarily in the urine. After a 100 mg/kg intravenous bolus dose, the mean elimination half-life was approximately 11.7 hours in the dog. Carprive is more than 95% bound to plasma protein and exhibits a very small volume of distribution.

Comparison of a single 25 mg dose in Beagle dogs after subcutaneous and oral administration demonstrated that the dog administration

subcutaneous administration results in a slower rate of drug input as reflected by mean peak observed concentrations that are comparable total area under the curve (AUC) and similar terminal half-life (t_{1/2}) values. The curve from hours zero to 12 post-dose.

Carprive is eliminated in the dog primarily by biotransformation in the liver followed by rapid excretion of the resulting metabolites, the ester glucuronides of 2 phenolic metabolites, 7-hydroxy carprive and 8-hydroxy carprive in the feces (70-80%) and urine (10-20%). Some intracellular oxidation of the drug is observed.

INDICATIONS: Carprive Injection is indicated for the relief of pain and inflammation associated with osteoarthritis and for the control of pain and inflammation in dogs with soft tissue and orthopedic surgeries in dogs.

CONTRAINDICATIONS: Carprive should not be used in dogs exhibiting nephritis hypersensitivity to carprive.

WARNINGS:

Keep out of reach of children. Not for human use. Consult a physician in case of accidental human exposure. **For use in dogs only.** Do not use in cats. All dogs should undergo a thorough history and physical examination prior to administration of Carprive. Administration of Carprive to establish hematology and serum biochemical baseline data prior to, and periodically during, administration of any NSAID should be considered. Owners should be advised to observe for signs of potential drug toxicity. **Adverse Effects in Animal Study and Post-approval Experience:**

PRECAUTIONS: As a class, cyclooxygenase inhibitory NSAIDs may be associated with effects may result from decreased prostaglandin production and inhibition of the enzyme cyclooxygenase which is responsible for the formation of prostaglandins from an arachidonic acid. ³⁻⁵ When NSAIDs inhibit prostaglandins that cause inflammation they may also inhibit those effects may result in clinically significant disease in patients with underlying or pre-existing disease more often than in healthy patients. ³⁻⁵ NSAID therapy could unmask occult disease which has previously been undiagnosed due to the absence of underlying inflammation.

There are no serious adverse events reported during clinical field studies with once daily oral administration of Carprive. In a study of dogs with underlying renal disease for example, they experience exacerbation or decompensation of their renal disease while on NSAID therapy. ¹¹⁻¹⁴ The use of parenteral fluids during surgery should be considered to reduce the potential risk of renal complications when using NSAIDs perioperatively. Carprive is an NSAID, and as with others in that class, adverse reactions may occur with its use. These reactions may include gastrointestinal, renal, hematological, neurologic, dermatologic, and hepatic effects have also been reported. Patients at greatest risk for renal toxicity are those that are dehydrated, on concomitant diuretic therapy, or those with renal, cardiovascular, and/or hepatic disease. NSAIDs should be used with caution in dogs with underlying renal disease, and/or hepatic disease. NSAIDs should be used with caution in dogs with underlying renal disease, and/or hepatic disease. NSAIDs should be used with caution in dogs with underlying renal disease, and/or hepatic disease.

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Carprive Injection is not recommended for use in

| Percentage of Dogs with Adverse Health Observations Reported in Clinical Field Studies with the Injectable | | | |
|--|------------------|-----------------|--|
| Observation* | carprive (n=168) | placebo (n=163) | |
| Vomiting | 10.1 | 9.2 | |
| Diarrhea/Soft stool | 2.4 | 3.7 | |
| Dermatitis | 0.6 | 1.2 | |
| Dysuria/Hematuria | 0.6 | 0.6 | |
| Swelling | 1.2 | 1.2 | |
| Weight decrease | 1.2 | 6.7 | |

*A single dog may have experienced more than one occurrence of an event.

Post-Approval Experience:

Although not all adverse reactions are reported, the following adverse reactions are based on voluntary post-approval adverse drug experience reporting. The categories of adverse reactions are listed by body system.

Gastrointestinal: Vomiting, diarrhea, constipation, anorexia, inappetence, flatulence, gas, regurgitation, regurgitation, gastroesophageal bleeding, pancreatitis, ulceration, gastritis, gastroenteritis, hemorrhage, hematemesis, melena, hematochezia, hematuria, polyuria, polydipsia, urinary incontinence, urinary tract infections, azotemia, acute renal failure, tubular epithelial necrosis, acute tubular necrosis, renal tubular acidosis, glucosuria, behavioral, sedation, lethargy, hyperactivity, vestibular signs, discoloration.

Urinary: Hematuria, polyuria, polydipsia, urinary incontinence, urinary tract infections, azotemia, acute renal failure, tubular epithelial necrosis, acute tubular necrosis, renal tubular acidosis, glucosuria, behavioral, sedation, lethargy, hyperactivity, vestibular signs, discoloration.

Hematologic: Immune-mediated hemolytic anemia, anemia, aplastic, disseminated intravascular coagulation, thrombocytopenia, blood loss, anemia, apendicitis.

Dermatologic: Pruritus, increased shedding, alopecia, pruritic, maculopapular dermatitis (hot spots), necrotizing paronychia, vasculitis, ventral ecchymosis. In rare situations, injection site reactions, including necrosis, abscess and seroma formation, and granulomas have been reported with the injectable formulation.

Immunologic or hypersensitivity: Facial swelling, hives, erythema.

In rare situations, death has been associated with some of the adverse reactions listed above. To report a suspected adverse reaction call Norbrook at 1-866-591-5177.

DOSEAGE AND ADMINISTRATION: Carefully consider the potential benefits and risks of carprive and other treatment options before deciding to use Carprive Injection. Use the lowest effective dose for the condition being treated. The recommended dosage for subcutaneous administration to dogs is 2 mg/kg (44 mg/kg) of body weight daily. The body weight dose may be administered either 1 mg/kg of body weight once daily or divided into two equal doses of 0.5 mg/kg (11 mg/kg) twice daily, for a maximum of 2 mg/kg (44 mg/kg) twice daily.

| Percentage of Dogs with Adverse Health Observations Reported in Clinical Field Study (2 mg once daily) | | |
|--|------------------|-----------------|
| Observation | carprive (n=129) | Placebo (n=122) |
| Inappetence | 1.6 | 1.5 |
| Diarrhea/Soft stool | 3.1 | 4.5 |
| Behavior change | 0.8 | 0.8 |
| Dermatitis | 0.8 | 0.8 |
| PUAP | 2.8 | -- |
| ALT increase | 0.8 | 8.3 |
| AST increase | 2.3 | 0.8 |
| BUN increase | 2.3 | 1.5 |
| Bilirubinuria | 16.3 | 12.1 |
| Ketohuria | 14.7 | 9.1 |

Clinical pathology parameters listed represent reports of increases from pre-treatment values; the use of clinical judgment is necessary to determine clinical relevance (refer also to table below).

There were no serious adverse events reported during clinical field studies for the injectable Carprive Injection. Following categorization of adverse health observations, a reported. Saline served as placebo control.

effectiveness for osteoarthritis after dose-capable subcutaneous and oral administration should be considered. The following adverse reactions are based on voluntary post-approval adverse drug experience reporting. The categories of adverse reactions are listed by body system.

Gastrointestinal: Vomiting, diarrhea, constipation, anorexia, inappetence, flatulence, gas, regurgitation, regurgitation, gastroesophageal bleeding, pancreatitis, ulceration, gastritis, gastroenteritis, hemorrhage, hematemesis, melena, hematochezia, hematuria, polyuria, polydipsia, urinary incontinence, urinary tract infections, azotemia, acute renal failure, tubular epithelial necrosis, acute tubular necrosis, renal tubular acidosis, glucosuria, behavioral, sedation, lethargy, hyperactivity, vestibular signs, discoloration.

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The burden of care

Mental health isn't an issue that affects just a few isolated individuals. It's something the entire veterinary profession needs to be aware of—that is, if it wants to protect its members from depression and a staggeringly high risk for suicide. *By Julie Scheidegger*

Veterinarians rely on evidence-based methodology. It's rational. It reveals the problem. It points to the solution.

When it comes to mental health, the evidence is that veterinarians are at a higher risk for depression and suicide than the general population and even other healthcare professionals. This was painfully illustrated in two high-profile suicides this past year, which have prompted the profession to begin to acknowledge and address its own problems with mental and emotional health.

But many veterinarians—whether they're experiencing burnout, compassion fatigue, depression or even suicidal ideation—still have a similar reaction: inaction. The evidence may reveal the problem, but the culture of the veterinary profession, for many, obscures the solution.

A house built on sand

There are plenty of factors that can erode well-being in the veterinary profession. Isolation, financial burdens, difficult client interactions, business-related challenges, stigmas associated with seeking help, and a high exposure to death may all contribute to emotional and mental instability among those in the profession.

Steve Noonan, DVM, a certified career coach who has experienced depression, says a veterinarian's job is extremely challenging. "The bond can be stressful. The economy can be stressful. The demand for performance can be stressful. Terminating life and being bummed out about that is stressful," Noonan says. "Life has put us on a treadmill. Because of technology, we're available 24/7 and access to information is expanding at an exponential rate. We're expected to know everything and expected to be available always."

Jennifer Brandt, PhD, LISW, veterinary social worker at the College of Veterinary Medicine at Ohio State University, says mental health problems act as a foundation of sand underneath the weight of the veterinary profession's demands. "It will hold up until put under pressure," she says. "It's like many professions that require a low margin for error and are very demanding."

Past research indicates that veterinarians in the United Kingdom are four times more likely to commit suicide than the general population and two times more likely than other healthcare professionals.¹ Australian research has also found that the suicide rate among veterinarians is four times that of adults in other professions.²



Dr. Steve Noonan



Dr. Jennifer Brandt



Dr. Laurie Fonken

The U.S. Centers for Disease Control and Prevention (CDC) published the most recent study on veterinary mental health in February.³ It received survey responses from about 10 percent of all employed U.S. veterinarians and found that nearly one in 10 were currently experiencing psychological distress and more than one in six have experienced suicidal ideation since veterinary school graduation—results that are much higher than those of the general population (see Table 1, page 20). "The responses that they got are alarming," says Laurie Fonken, PhD, veterinary student psychological counselor at the Colorado State University



Verbatim responses from the 2015 dvm360 Job Satisfaction Survey

My kids want to be vets and I say absolutely not. My husband is a dentist, works Monday to Thursday, and makes more than 10 times what I make. Never works weekends.

I am the practice owner and am burned out by the business aspect. I still love taking care of my patients and clients. It is the only thing that makes it possible to get up and go into work every day.

If I were pursuing veterinary medicine today, the amount schooling now costs would not deter me. It was all I ever wanted to do.

TABLE 1

| | Male veterinarians | Female veterinarians | Men, general U.S. population | Women, general U.S. population |
|---|--------------------|----------------------|------------------------------|--------------------------------|
| Currently experiencing serious psychological distress | 6.8% | 10.9% | 3.5% | 4.4% |
| Have experienced depressive episodes | 24.5%* | 36.7%* | 15.1%** | 22.9%** |
| Have experienced suicidal ideation | 14.4%* | 19.1%* | 5.1%** | 7.1%** |
| Have attempted suicide | 1.1% | 1.4% | 1.6% | 3.0% |

*Since veterinary school graduation **Lifetime prevalence

Source: Nett RJ, Witte TK, Holzbauer SM, et al. Notes from the field: prevalence of risk factors for suicide among veterinarians—United States, 2014. Morb Mortal Wkly Rep 2015;64(6):159.

College of Veterinary Medicine and Biomedical Sciences. “The numbers get people’s attention, but the underlying issues are where we need to focus.”

High risk

Factors and opinions on who in the veterinary profession is most at risk for depression—and specifically suicide—vary. One study suggests that veterinarians are most likely to first experience suicidal thoughts during their transition from training to practice.¹

“The pressure to perform increases once they’re out in practice,” Fonken says. Young veterinarians are dealing with things that aren’t always addressed in school—staff relations, finances. And the safety net of the academic environment is gone.

Fonken says these new graduates don’t feel like doctors yet. They are worried about hurting patients and consumed by performance anxiety. Plus, they may be discovering that veterinary medicine isn’t the career they expected. “They have this vision of what their life is going to be like,” she says. “But they feel like they can’t let anyone down. They feel trapped, like there’s no way out.”

Another high-risk group may be veterinarians practicing in low socioeconomic areas. One Australian study

found that veterinarians practicing in these communities experienced a suicide risk almost double that of veterinarians practicing in average-income areas and nearly four times that of those practicing in high socioeconomic neighborhoods.⁴

The same study concluded that objectionable euthanasia was not related to mental health concerns. But Noonan doesn’t quite buy it. He says veterinarians struggle with horrendous guilt over the euthanasia of healthy or treatable animals, not to mention the emotions that often follow euthanasia of terminal or chronically ill patients as well. “I’ve had days when I’ve euthanized 10 animals—it’s extremely stressful,” he says.

Culture of silence

One piece of data that may trump all others is from a U.K. study. In that investigation, of veterinarians with a history of suicidal thoughts or behavior, half had not talked with anyone about their problems because they felt guilty or ashamed.¹

“Veterinarians are lone wolves. They like to go into a corner and lick their wounds,” Noonan says. “Companionship and community lead to positivity and happiness, but veterinarians are introverts and soloists.”

Fonken says veterinarians are highly

driven perfectionists and high achievers. “It’s hard for them to ask for help,” she says. The stigma is that a veterinarian who admits a need for help is weak or vulnerable. So they tell themselves, “I’m just going to power through this and not let anybody know,” Fonken says.

Brandt says the people who are most at risk are those that are isolated. “If you’re in your truck working solo every day, it’s hard to recognize changes until you find yourself at rock bottom,” she says.

Fonken says veterinarians often believe they’re the only one experiencing these feelings and that they should handle it on their own. “Work harder, try harder, and no one will know” is often the mantra, she says.

Emotional and physical isolation, especially in solo practice, can also be dangerous because of the doctor’s easy access to medications. One study found that deliberate self-poisoning (most often from barbituates) accounted for 76 to 89 percent of suicides in male and female veterinarians compared with 20 to 46 percent in men and women in the general population.¹

Veterinarians’ silence may also be attributed to a fear that reaching out will affect their job—or that they simply don’t have time. “If you have a 20 hour workday and that’s what’s expected of you, how do we get to you?” Brandt says. “If you had pneumonia, you would go to the doctor. If you had a broken leg, you would go to the doctor. Is there adequate time off to see a mental health professional? We need to create meaningful life balance to create those opportunities.”

Make the time

“We always want to think we’re doing better than we are,” Fonken says. “We don’t always realize how many down days we’re having.” And the excuses come easily: I don’t have time. It’s not that bad. It will get better.

After all, sometimes it does. Taking a new job at another clinic, practicing better self-care habits such as exercising and getting more sleep, or talking to a trusted friend or family member can all help the malaise remain manageable.

Text continues on page 24>

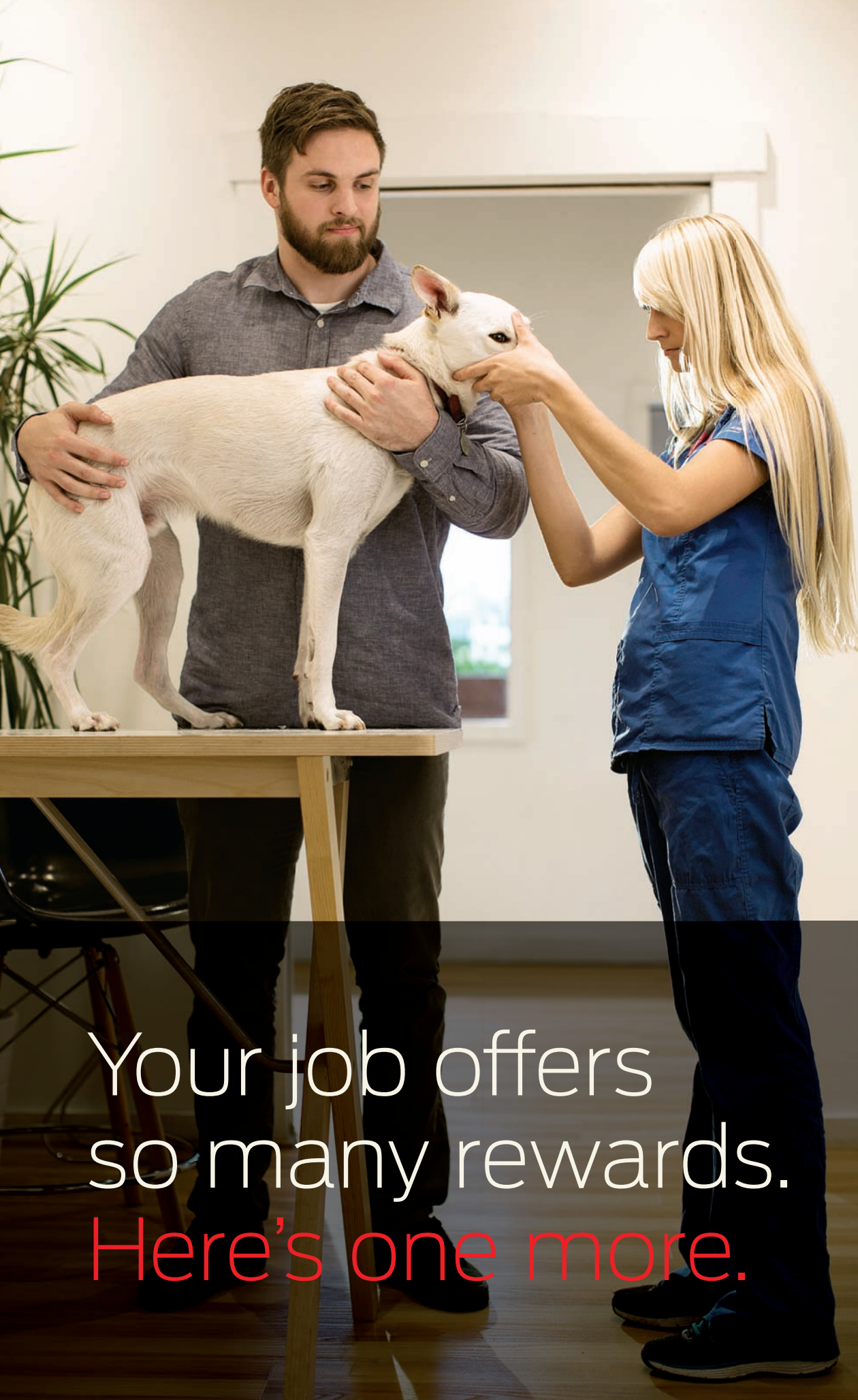
THE BURDEN: IN YOUR WORDS

Not working Saturdays or Sundays really helps.

Our profession needs to look at itself honestly for it to survive and regain what it once was.

There’s a lot of emotional abuse of associates in veterinary medicine. I really believe that many veterinarians from previous generations have serious psychological problems.

My middle daughter wants to be a veterinarian. It’s the best job in the world. I love mentoring kids who want to pursue this career.



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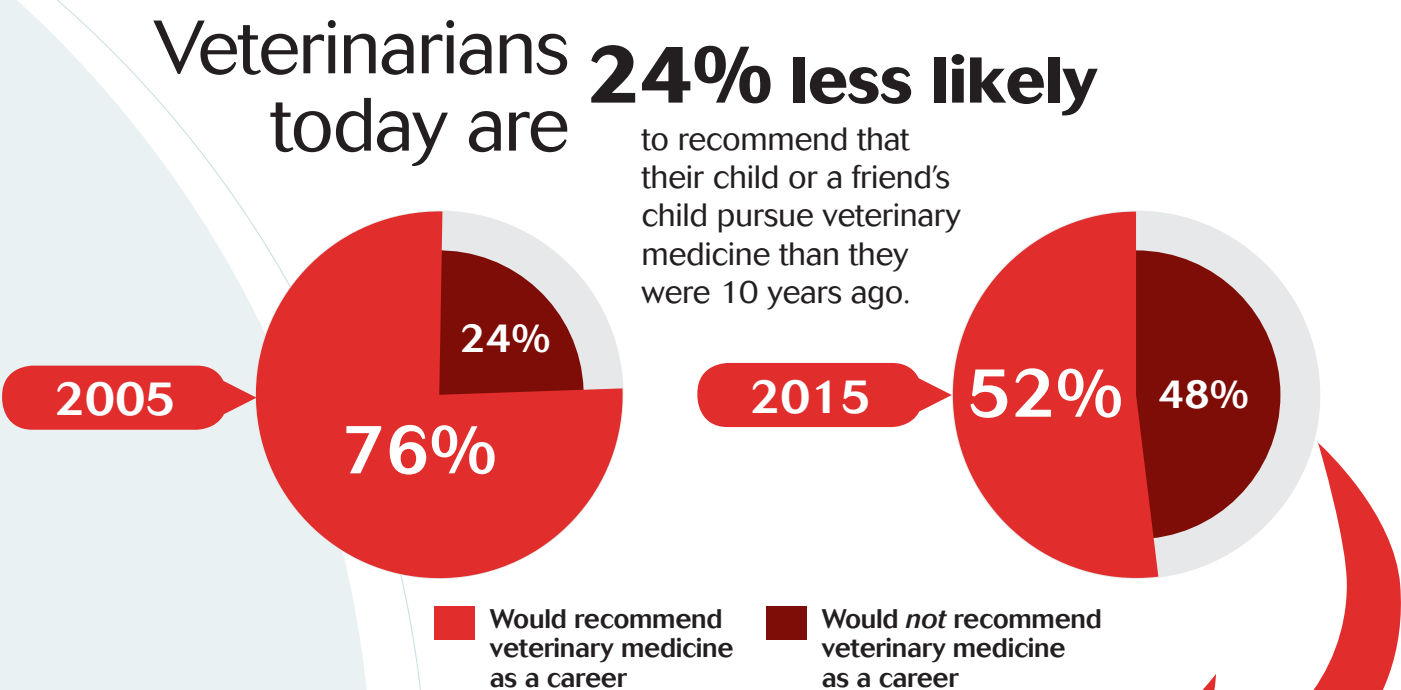
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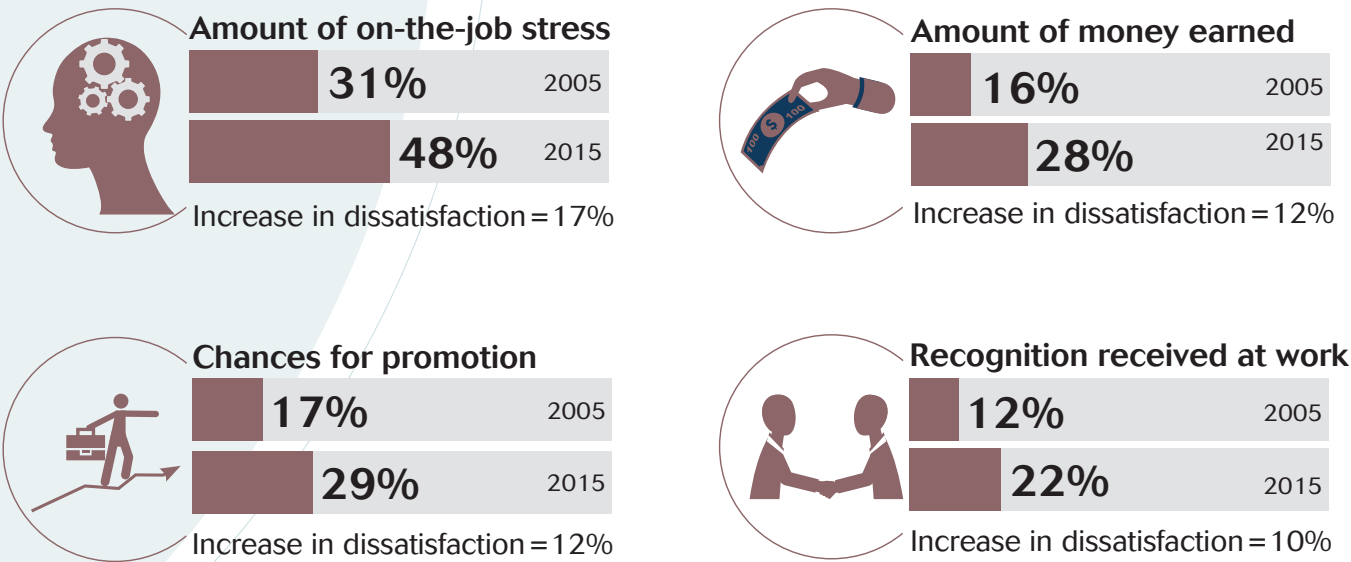
The *current state* of job satisfaction

Exclusive research from the dvm360 team shows what looks like a crisis of confidence, with veterinarians reporting more complaints and fewer joys. Still, it's clearly not all bad. Source: 2015 dvm360 Job Satisfaction Survey



Why? What changed?

These charts show the percentage of respondents who said they were “totally dissatisfied” with this part of their work. In other words, job satisfaction is down in these key areas.



THE BURDEN: IN YOUR WORDS

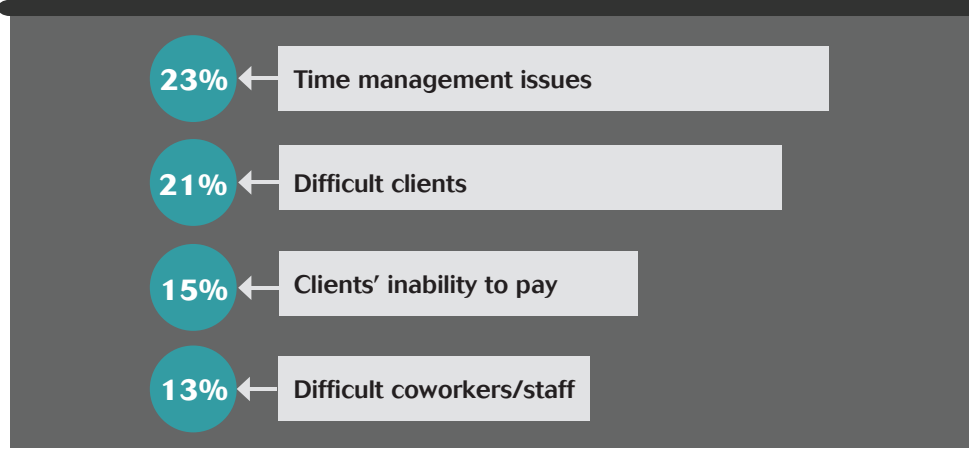
The compensation received in this profession isn't worth the stress and the debt incurred preparing for it.

I would never want my child to experience the complete imbalance of life, work, student debt and income potential that veterinary medicine currently has. Add that to the ever-increasing negativity awarded our profession by our clients and I wish I had never pursued this career myself.

I love knowing that I am helping—the animals, the owners and even the community.

So, stress is an issue

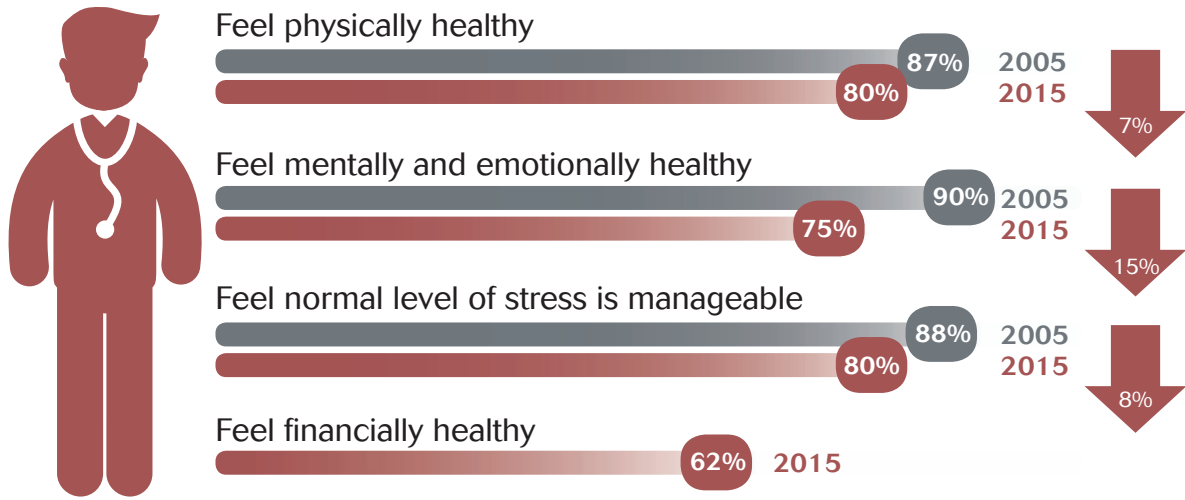
And these are the top stressors that veterinarians report.



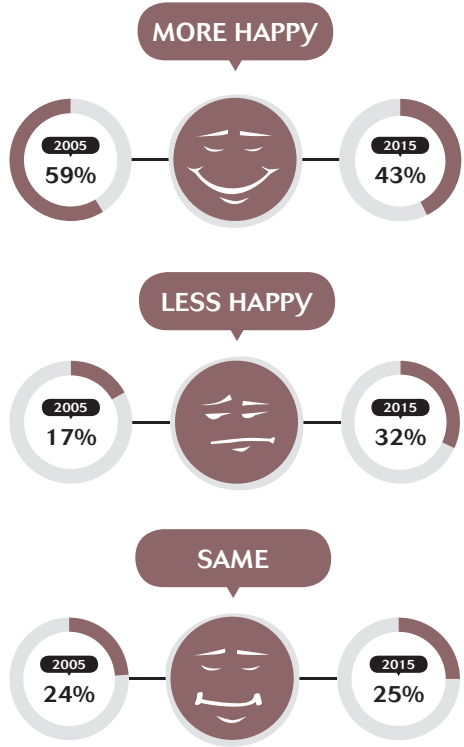
In general, veterinarians seem to be experiencing a lower sense of well-being.

Assessing Health & Happiness

We asked veterinarians to assess their physical and emotional health and compared their responses 10 years ago. The general findings: **They're feeling less good.**



Then we asked how their happiness compared to five years ago. They say: **They're less happy.**



Closing thoughts from veterinarians:

25% say

"I am very happy with my job."

+

20% say

"This is what I always wanted to do."

The infiltration of veterinary medicine by corporations is our profession's downfall.

I give hope to people by saving a family member's life. Love it when people appreciate all that we do for them.

I used to be much more of a perfectionist. Now I am learning after many years of therapy and hard work on myself that perfection is not healthy and cannot be achieved.

This is a fun and exciting job—if you can hack it.

But often it doesn’t get better. And that’s when emotional imbalance can become a deeper mental health concern. “If you hit that burnout and can’t get out of it, that’s a danger sign,” Fonken says. “It can easily slip from situational to prolonged depression requiring therapy and medication.”

In most cases, time is what severe depression needs to take hold. And severe depression, over time and without treatment, allows suicidal ideation to creep in.

Suicide

It’s often a combination of time and suffering without relief—the same problems recurring—that causes the system to overload, Brandt says. The kind of depression that leads someone to consider suicide involves feelings of ceaseless despair, hopelessness that things will never change, and fears of being a burden on others.

But it’s hard to know definitively what drives veterinarians specifi- cally toward suicide more than other groups. Some have suggested that vet- erinarians’ attitude toward euthanasia alters their perspective. In veterinary medicine, euthanasia is often seen as a gift. Fonken says she spoke with a veterinarian dealing with a parent’s ter- minal illness who found herself wishing she could create a peaceful end like she could in her own practice: “[She was] wishing euthanasia in humans was more accepted. It’s an end to suffering.”

Fonken says deep depression creates a dull numbness those suffering from it can’t think or act their way out of. Sui- cide is seen as the only way out. “The lens they see the world through is gray,” Fonken says. “They don’t want to die. They just want to escape from the pain.”

Conversation peaked on the topic of suicide after the deaths of Shirley Ko- shi, DVM, and Sophia Yin, DVM, MS, this past year. Koshi’s death in Febru- ary 2014 occurred after an ownership dispute involving a cat that resulted in a lawsuit and intense negative online campaigns against her.

Yin was a well-known pet-behavior expert and a leader in the profes- sion when she took her own life last September. She published her work in a number of journals, wrote three books, produced training videos and worked in private practice. “The loss of her really resonated,” Brandt says. “It definitely raised awareness.”

Brandt says Yin’s death was a horrible event that spurred needed conversa-

Veterinarians are
four
times
more likely to die
by suicide than the
general poulation and
two times more likely
than other healthcare
professionals.¹

tions. Many people found themselves asking how such a visible, active and influential member of the veterinary profession could be at risk for suicide. Those closer to Yin, who knew her as a driven perfectionist, say she struggled with developing personal relationships outside the profession and with feelings of inadequacy. Still, none of them could have predicted the outcome.

Noonan says those in despair are often good at hiding it. At the bottom of his own depression, hiding became part of his routine. “You have to be a really good actor, but at the end of the day, you hate yourself even more,” Noonan says. “You feel worse because you weren’t true to yourself.”

Offer help

Both Brandt and Fonken encourage veterinarians to reach out to cowork- ers they think may be depressed. “You don’t have to diagnose,” Brandt says. She suggests starting out this way: “I’ve noticed that you ... appear tired, have been wearing the same outfit for three days, are tearful ... ” Then say, “I’m concerned about you. How can I help?”

Fonken agrees, saying this may just help the person reach the point where he or she is ready to ask for help.

But help may be a tricky concept for the veterinary mind. “Very high achiev- ers will come in saying, ‘I’m juggling 17

Heartgard®
(ivermectin/pyrantel) Plus

CHEWABLES

CAUTION: Federal (U.S.A.) law restricts this drug to use by or on the order of a licensed veterinarian.
INDICATIONS: For use in dogs to prevent canine heartworm disease by eliminating the tissue stage of heartworm larvae (*Dirofilaria immitis*) for a month (30 days) after infection and for the treatment and control of ascarids (*Toxocara canis*, *Toxascaris leonina*) and hookworms (*Ancylostoma caninum*, *Uncinaria stenocephala*, *Ancylostoma braziliense*).
DOSAGE: HEARTGARD® Plus (ivermectin/pyrantel) should be administered orally at monthly intervals at the recommended minimum dose level of 6 mcg of ivermectin per kilogram (2.72 mcg/lb) and 5 mg of pyrantel (as pamoate salt) per kg (2.27 mg/lb) of body weight. The recommended dosing schedule for prevention of canine heartworm disease and for the treatment and control of ascarids and hookworms is as follows:

| Dog Weight | Chewables Per Month | Ivermectin Content | Pyrantel Content | Color Coding On Foil Backing and Carton |
|--------------|---------------------|--------------------|------------------|---|
| Up to 25 lb | 1 | 68 mcg | 57 mg | Blue |
| 26 to 50 lb | 1 | 136 mcg | 114 mg | Green |
| 51 to 100 lb | 1 | 272 mcg | 227 mg | Brown |

HEARTGARD Plus is recommended for dogs 6 weeks of age and older. For dogs over 100 lb use the appropriate combination of these chewables.
ADMINISTRATION: Remove only one chewable at a time from the foil-backed blister card. Return the card with the remaining chewables to its box to protect the product from light. Because most dogs find HEARTGARD Plus palatable, the product can be offered to the dog by hand. Alternatively, it may be added intact to a small amount of dog food. The chewable should be administered in a manner that encourages the dog to chew, rather than to swallow without chewing. Chewables may be broken into pieces and fed to dogs that normally swallow treats whole.
Care should be taken that the dog consumes the complete dose, and treated animals should be observed for a few minutes after administration to ensure that part of the dose is not lost or rejected. If it is suspected that any of the dose has been lost, redosing is recommended.
HEARTGARD Plus should be given at monthly intervals during the period of the year when mosquitoes (vectors), potentially carrying infective heartworm larvae, are active. The initial dose must be given within a month (30 days) after the dog’s first exposure to mosquitoes. The final dose must be given within a month (30 days) after the dog’s last exposure to mosquitoes.
When replacing another heartworm preventive product in a heartworm disease preventive program, the first dose of HEARTGARD Plus must be given within a month (30 days) of the last dose of the former medication.
If the interval between doses exceeds a month (30 days), the efficacy of ivermectin can be reduced. Therefore, for optimal performance, the chewable must be given once a month on or about the same day of the month. If treatment is delayed, whether by a few days or many, immediate treatment with HEARTGARD Plus and resumption of the recommended dosing regimen will minimize the opportunity for the development of adult heartworms.
Monthly treatment with HEARTGARD Plus also provides effective treatment and control of ascarids (*T. canis*, *T. leonina*) and hookworms (*A. caninum*, *U. stenocephala*, *A. braziliense*). Clients should be advised of measures to be taken to prevent reinfection with intestinal parasites.
EFFICACY: HEARTGARD Plus Chewables, given orally using the recommended dose and regimen, are effective against the tissue larval stage of *D. immitis* for a month (30 days) after infection and, as a result, prevent the development of the adult stage. HEARTGARD Plus Chewables are also effective against canine ascarids (*T. canis*, *T. leonina*) and hookworms (*A. caninum*, *U. stenocephala*, *A. braziliense*).
ACCEPTABILITY: In acceptability and field trials, HEARTGARD Plus was shown to be an acceptable oral dosage form that was consumed at first offering by the majority of dogs.
PRECAUTIONS: All dogs should be tested for existing heartworm infection before starting treatment with HEARTGARD Plus which is not effective against adult *D. immitis*. Infected dogs must be treated to remove adult heartworms and microfilariae before initiating a program with HEARTGARD Plus.
While some microfilariae may be killed by the ivermectin in HEARTGARD Plus at the recommended dose level, HEARTGARD Plus is not effective for microfilariae clearance. A mild hypersensitivity-type reaction, presumably due to dead or dying microfilariae and particularly involving a transient diarrhea, has been observed in clinical trials with ivermectin alone after treatment of some dogs that have circulating microfilariae.
Keep this and all drugs out of the reach of children.
In case of ingestion by humans, clients should be advised to contact a physician immediately. Physicians may contact a Poison Control Center for advice concerning cases of ingestion by humans.
Store between 68°F - 77°F (20°C - 25°C). Excursions between 59°F - 86°F (15°C - 30°C) are permitted. Protect product from light.
ADVERSE REACTIONS: In clinical field trials with HEARTGARD Plus, vomiting or diarrhea within 24 hours of dosing was rarely observed (1.1% of administered doses). The following adverse reactions have been reported following the use of HEARTGARD: Depression/lethargy, vomiting, anorexia, diarrhea, mydriasis, ataxia, staggering, convulsions and hypersalivation.
SAFETY: HEARTGARD Plus has been shown to be bioequivalent to HEARTGARD, with respect to the bioavailability of ivermectin. The dose regimens of HEARTGARD Plus and HEARTGARD are the same with regard to ivermectin (6 mcg/kg). Studies with ivermectin indicate that certain dogs of the Collie breed are more sensitive to the effects of ivermectin administered at elevated dose levels (more than 16 times the target use level) than dogs of other breeds. At elevated doses, sensitive dogs showed adverse reactions which included mydriasis, depression, ataxia, tremors, drooling, paresis, recumbency, excitability, stupor, coma and death. HEARTGARD demonstrated no signs of toxicity at 10 times the recommended dose (60 mcg/kg) in sensitive Collies. Results of these trials and bioequivalency studies, support the safety of HEARTGARD products in dogs, including Collies, when used as recommended.
HEARTGARD Plus has shown a wide margin of safety at the recommended dose level in dogs, including pregnant or breeding bitches, stud dogs and puppies aged 6 or more weeks. In clinical trials, many commonly used flea collars, dips, shampoos, anthelmintics, antibiotics, vaccines and steroid preparations have been administered with HEARTGARD Plus in a heartworm disease prevention program.
In one trial, where some pups had parvovirus, there was a marginal reduction in efficacy against intestinal nematodes, possibly due to a change in intestinal transit time.
HOW SUPPLIED: HEARTGARD Plus is available in three dosage strengths (See DOSAGE section) for dogs of different weights. Each strength comes in convenient cartons of 6 and 12 chewables.
For customer service, please contact Merial at 1-888-637-4251.



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THE BURDEN: IN YOUR WORDS

Veterinary general practice is a complete joke. I don’t practice medicine; all I do is find ways to help one idiot after another devise the best way to spend as little money as they can on their animals without feeling guilty.

I can’t think of a job I’d rather be doing.

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NO TO HOOKWORMS.

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SATISFACTION
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IMPORTANT RISK INFORMATION: HEARTGARD® Plus (ivermectin/pyrantel) is well tolerated. All dogs should be tested for heartworm infection before starting a preventive program. Following the use of HEARTGARD Plus, digestive and neurological side effects have rarely been reported. For more information, please visit www.HEARTGARD.com.



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¹ Of dogs showing a preference in two studies, all dogs preferred HEARTGARD Plus Chewables to TRIFEXIS® (spinosad + milbemycin oxime) beef-flavored chewable tablets; Executive Summary VS-USA-37807 and VS-USA-37808.
² Of dogs showing a preference in two studies conducted, all dogs preferred HEARTGARD Plus Chewables to SENTINEL® (milbemycin oxime-lufenuron) chewable tablets; Executive Summary VS-USA-37809 and VS-USA-37810.
³ Of dogs showing a preference in two studies conducted, all dogs preferred HEARTGARD Plus Chewables to IVERHART PLUS® (ivermectin/pyrantel) beef-flavored tablets; Executive Summary VS-USA-37811 and VS-USA-37812.
⁴ Of dogs showing a preference in two studies conducted, all dogs preferred HEARTGARD Plus Chewables to IVERHART MAX® (ivermectin/pyrantel/praziquantel) beef-flavored tablets; Executive Summary VS-USA-37813 and VS-USA-37814.
⁵ Of dogs showing a preference in one study conducted, all dogs preferred HEARTGARD Plus Chewables to SENTINEL® SPECTRUM (milbemycin oxime/praziquantel/lufenuron) beef-flavored tablet; Executive Summary VS-USA-37801.
⁶ Opinion Research Corporation, Heartworm Prevention Medication Study, 2012. Data on file at Merial.
⁷ Data on file at Merial.

balls and an 18th has come along. How do I juggle 18 balls?” Brandt says. But juggling 18 balls is not the answer—maybe they need to get down to 10.

“We make the load more manageable so if another stressor comes along we have room to manage,” Brandt says. “This is a give, give, give profession, so sometimes being told to put one of

those balls down isn’t failing anybody. It really does feel like a relief.”

Noonan says the highly driven veterinary mind can also be an asset when it comes to understanding your own mental illness. The desire to learn, know and understand can be an ally. “I’ve learned everything I can about my condition,” he says.

Noonan says, of anyone, veterinarians are capable of pulling themselves from the depths of mental illness. “The veterinarian lands the 747 when the pilot has a heart attack. Vets can do everything,” he says. “You either help yourself or get help from a medical professional or both. People are amazingly resourceful. It can be done.”



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Burnout, compassion fatigue, depression—what’s the difference?

It might be tempting to dismiss feelings of stress, fatigue, alienation, dissatisfaction, negative self-esteem and numbness as just another bad day, but these feelings can be signs of a serious problem. Issues that begin as manageable, if left unaddressed, can develop into emotional and mental strain.

Burnout

Burnout results from the stresses in the work environment, says Jennifer Brandt, PhD, LISW, veterinary social worker at the College of Veterinary Medicine at Ohio State University. If you’re experiencing problems with coworkers, loss of economic security or position or diminished control, burnout can start to set in. Here are three primary characteristics:

> **Emotional exhaustion.** You may feel drained, exhausted, overloaded, tired, low and lacking adequate energy. Physical problems include stomach pains and digestion problems.

> **Alienation from job-related activities.** You may find your job increasingly negative and frustrating and develop a cynical attitude toward your work and your colleagues. At the same time, you may distance yourself emotionally from your work.

> **Reduced performance.** Burnout mainly affects everyday tasks at work, at home or when caring for family members. People with burnout tend to be negative about their activities, find it hard to concentrate, are listless and lack creativity.¹

Brandt says situational burnout may often be “treated” by changing your

environment—solving a persistent problem or getting a fresh start in a new work environment.

Compassion fatigue

Compassion fatigue is an emotional and physical burden created by the trauma of helping others in distress, which leads to a reduced capacity for empathy toward suffering in the future.² It evolves from the relationship between veterinarians and their patients or clients, Brandt says.

What distinguishes compassion fatigue from burnout is that while burnout springs from where you work, compassion fatigue is associated with the work you do. “Compassion fatigue is going to go where you are—a job switch is not going to fix that,” Brandt says.

That long overdue vacation isn’t going to fix it either. The symptoms—intrusive negative thoughts, physical problems (gastrointestinal issues, headaches and lethargy), loss of hope, questioning one’s contribution, skepticism and guilt—will follow you and be waiting for you when you return.

Depression

Experts agree that burnout and compassion fatigue are not forms of depression, but they can lead to and coexist with it. Here are the characteristics of true major depression, according to the Mayo Clinic:

- > Feelings of sadness or emptiness
- > Angry outbursts, irritability or frustration, even over small matters
- > Loss of interest or pleasure in normal activities

THE BURDEN: IN YOUR WORDS

Veterinarians need to work together to support one another and find their own niche in their field. Trying to be an expert at everything isn’t possible.

The profession is full of jackass owners who don’t care about their employees.

The old model

Fonken says the CSU veterinary program is focusing on equipping students with the skills and resources they'll need for mental and emotional health when they graduate. But her students often tell her they have no role models exercising self-care and they have no time to do it.

"A lot of the change needs to change with the institution—the profession. We have to practice what we preach," Fonken says. "Students walk out of my office and they see the faculty doing what I tell them not to do. We're hypocrites."

But self-care is hard to achieve in a profession of workaholics, Fonken says. "They work so hard and under

so much pressure—it's hard to leave the office," she says. "It's hard to say, 'I have to go home.'" This becomes a vicious cycle. But if you don't care for yourself, at some point you won't be able to care for others.

Of course, there's a common opinion—reflected by some in the 2015 dvm360 Job Satisfaction Survey—that

- > Sleep disturbances, including insomnia or sleeping too much
- > Tiredness and lack of energy; even small tasks require extra effort
- > Changes in appetite—often reduced but increased in some people
- > Anxiety, agitation or restlessness—for example, excessive worrying or an inability to sit still
- > Slowed thinking, speaking or body movements
- > Feelings of worthlessness or guilt, fixating on past failures or blaming yourself for things that are not your responsibility
- > Trouble thinking, concentrating, making decisions and remembering
- > Frequent thoughts of death, suicidal thoughts, suicide attempts or suicide.

Laurie Fonken, PhD, psychological counselor at the Colorado State University College of Veterinary Medicine and Biomedical Sciences, says compassion fatigue is more accepted within the veterinary profession than depression because it can be externalized. "If I have depression, that's an internal thing—that's a stigma," Fonken says. "If I say I have depression, there's something wrong with me," Fonken says. **dvm360**

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We are caregivers and need to learn how to recharge regularly, or we will teeter constantly on the edge of burnout.



2

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¹ Reference on file, Bayer HealthCare, Animal Health.

² Reference on file, Bayer HealthCare, Animal Health.

³ Mueller RS, Bergvall K, Bensignor E, et al. (2012). A review of topical therapy for skin infections with bacteria and yeast. *Vet Dermatology*, 23:330–341.

* Studies were performed using Malaseb® Concentrate Rinse (0.2% Miconazole and 0.2% Chlorhexidine); *Staphylococcus pseudintermedius* (also known as *Staphylococcus intermedius*), *Pseudomonas aeruginosa*, *Malassezia pachydermatis*; The clinical significance of *in vitro* data has not been determined.

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those with problems should just “put on your doctor coat and buck up.”

“That used to be the model—get over it,” Fonken says. The new model—at least at CSU and other veterinary schools—is quite different. It’s about awareness, education and normalizing common struggles.

Brandt says veterinary students exposed to mental health education and wellness techniques have a greater confidence level in coming forward with their own problems. “Seeking help becomes a priority,” she says. “It really has been a significant shift. It’s been touching to my heart.”

Hope for change

Colleges of veterinary medicine like those at Ohio State and Colorado State have been proactive when it comes to providing mental health resources and education for students. “We are doing so much more,” Brandt says. “At the veterinary school level, most or all offer personal development classes that cover suicide prevention. That wasn’t done before. Now it’s part of the curriculum.”

But Fonken wishes that veterinary professionals outside academia received more education on mental illness, self-care and how to seek help. “Once our students graduate, they’re on their own and that’s when they need somebody,” she says. “They lose all their support.”

Still, she hopes that infusing more wellness education into the veterinary school curriculum will normalize self-care and lead to a healthier model for the veterinary profession.

“Statistically, there will always be a percentage that have mental health issues,” Brandt says. “My hope is that we will detect issues earlier and provide intervention earlier so it won’t lead to suicide and [veterinarians will have] more satisfaction in life.”

The mental health data collected 10 years from now may show improvement with the focus on wellness and education in veterinary schools today, but those on the front lines know building a stronger foundation for mental wellness in the veterinary profession is a daunting but important mission. “My goal is to graduate healthy human beings to be solid veterinarians,” Fonken says. “It’s going to be a long-term change.” **dvm360**

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THE BURDEN: IN YOUR WORDS

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|-------------------------------------|--|---|

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Make it work

Four veterinarians share how they faced burnout and made veterinary medicine work for them. *By Matthew Kenwright*

Burnout's perfect storm

Confronted by such challenges as severe winters hurting business, practicing alone, the economic downturn and growing competition, Wanda Sisum, DVM, owner of Cape Cod Cat Hospital in Forestdale, Massachusetts, says she faces a “perfect storm” at her cat hospital.

“You just feel burned out constantly—like a hamster on a wheel, spinning around and not getting anywhere,” she tells *dvm360*.



Sisum's passion for veterinary medicine has become a burden.

“Suddenly you turn around, and your dream has become a ball and chain,” she says.

It helps to attend local veterinary meetings and national conferences and know she isn't alone in her experiences, she says. Although she would still become a veterinarian if she could do it over again, she says she would warn aspiring veterinarians to research the profession and recognize its challenges.

Big city life to country practice

Paula Fitzpatrick, co-owner of AnimalFitness, and her husband, Carlton R. “Jack” Kibbee, DVM, moved from San Diego, California, to Hinsdale, New Hampshire, in 2008 to return to their roots—and to balance their work life with what they loved. The change



enabled them to tend to their farm and crops between veterinary appointments, choose their clients and mentor veterinary students.

“In our industry, so often the practice can run your life versus you running the practice. We wanted to concentrate on the things we loved, and although we're very passionate about animals—that's our primary focus—we can't satisfy all their humans,” Fitzpatrick says. “We've gotten much better about selecting our clients based on who we can truly satisfy. Because if you try to satisfy everybody, you'll burn yourself out.”

Find the right fit

Cherie Buisson, DVM, owner of Veterinary Relief and Support Services LLC,



in Largo, Florida, speaks nationally about compassion fatigue and hospice care at conferences, shelters and private practices. She explains how unhappy veterinar-

ians can get out of their rut.

“Typically, what I teach is that the biggest factor is what you're looking at in the mirror. It's all about how you react to the stress,” Buisson says. “Certainly, clients can be stressful, coworkers can be stressful, pets can be stress-

ful, but it's all in how you handle it.”

After eight years in private practice, she recognized she needed to make changes. She now does a mix of hospice care, public speaking and veterinary relief work.

“I basically decided to put myself in situations where I felt positive most of the time, and that pretty much fixed it,” she says.

The profession can help reduce compassion fatigue by telling veterinary students they can pursue other routes than private practice, she says.

“I just found that private practice wasn't for me, and they don't teach us in school that that's a possibility,” she says. “It's just kind of assumed that most everybody is going to go into that, and it took me about eight years to figure out that I just didn't enjoy private practice.”

Starting over

Cheryl Sackler, DVM, owner of Beacon Falls Animal Hospital, in Beacon Falls, Connecticut, says she sold her practice



to a corporation and continued to work there, but she struggled with serving two masters—the client and the corporation—because they sometimes had

conflicting interests. She experienced depression, suicidal thoughts and anger before she was fired.

She says she hasn't experienced problems maintaining compassion for pets and clients, but it was easier outside of corporate practice.

“I found working for a corporation was soul-sucking and I couldn't muster up the compassion that I can when I'm working for myself,” she says.

Sackler says she is happier since opening up a new practice and hiring back her old team members. *dvm360*



“So often the practice can run your life versus you running the practice. We wanted concentrate on the things we loved.”

—Paula Fitzpatrick, co-owner, AnimalFitness, Hinsdale, New Hampshire

THE BURDEN: IN YOUR WORDS

I will never pay off my student loan, ever. Other parents at my daughter's school respect me but also pity me as the poor single mother who works every weekend.

I am 80 years old, so I don't have to worry about bills, but it would be nice if the new veterinarians could earn what they are entitled to.

I still love my clients and patients and most of my staff.

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Tips and tools to be a happier veterinarian

Your advice from the 2015 dvm360 Job Satisfaction Survey

“I have designed my practice so that 30 hours is considered full-time for pay and benefits. This way my employees can experience life balance.”



“I heard Louis C.K. say of his comedy one day: **‘This can be anything you want.’ And realized: it could.** I became determined to be happy at work and fired problem employees, laid out my vision, and tried to solve problems differently. I asked for help and found it. Sometimes we forget we are ultimately in charge of our own lives, and fully responsible for our own happiness.”

“Maintain your boundaries and fight for your work-life balance!”

“Utilize veterinary technicians to the fullest extent of their education. This lowers stress because it frees you up to do what you went to school for—**be a DVM.**”


“If you need help, ask for it. Whether it’s from your spouse, friend, co-worker or God.”

“Take time off. Find a boss that has at least a trace of concern for your welfare. If you work for a prick like I do, stop and find another job.”

THE BURDEN: IN YOUR WORDS

The people who euthanize their “best friend” and then come back one week to five years later with another pet—THIS is why I go to work every day. These people are my soulmates.

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Build a **strong foundation**

It may seem simple, but experts say wellness—physical and emotional—begins with basic fundamentals to protect you when times get tough. *By Julie Scheidegger*



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Basic wellness isn't a new concept. Everyone knows—especially in medical professions—to drink water, eat nutritionally, exercise regularly and get good quality sleep to be healthy. The problem is in the execution.



WATER

But what if simply choosing water instead of another energy drink, an apple instead of another bag of chips, a regular walk before or after work or turning off the tablet earlier for a better night's rest



helped you feel, well, better?

This provides a foundation for well-being, says Jennifer Brandt, PhD,

NUTRITION

LISW, veterinary social worker at the College of Veterinary Medicine at Ohio State University. Simple steps like drinking water and eating better, exercising and getting good sleep is not stigmatizing. "No one is going to be embarrassed to say I'm working on my fluid intake," Brandt says.

Once a foundation of physical health is established, Steve Noonan, DVM, certified career



EXERCISE

coach, says positive psychology can arm you further. "We can redirect the increase of mental illness when we use strategies from positive psychology to stay healthy.

"I know what it's like when you're so busy you don't pee until 9 o'clock at

night," Noonan says. "I get that, but there is room."

He also gets that practitioners may not have time for a 30-minute yoga



QUALITY SLEEP

THE BURDEN

I have been depressed for 15 years. The job is a cause, not a help. Plus I am totally fed up with the salary gap and lack of respect by male colleagues.

session at lunch—it may be difficult to squeeze in lunch at all some days—but taking time for yourself throughout the day should be a priority. “There are so many little things you can do to fit into the model,” Noonan says referring to the demanding business model of today’s veterinary practice.

He says 15 seconds is a break. “Take 15 seconds to take deep breaths before you walk into the exam room,” Noonan says. “It becomes a juggernaut. The self care starts propelling itself.”

Noonan subscribes to a long list of activities that positive psychology offers as a path to wellness, such as companionship, meditation, gratitude, kindness, compassion, finding something that engages you and understanding your strengths. And he offers five ways to be mindful of positive self-care at work:

> **Slow your breathing.** Before entering an exam room to see a client and patient, stop and take five slow breaths.

> **Do a little stretching.** With closed eyes, reach slowly to the sky while breathing in for five seconds, then slowly return your arms to your side and exhale. Repeat five times.

> **Feed your focus.** Try eating your lunch as slowly as you can.

> **Study the simple.** Choose a random object such as a pen, a flower or your stethoscope and observe it very carefully for 60 seconds. See what you can observe that you may never have seen before.

> **Walk the walk.** Take a slow 10-minute walk and synchronize your inspirations and expirations with your footsteps. He says this can be amazingly relaxing.

Better self-care leads to better efficiency, he says. You might even get caught up enough to take that seemingly unattainable 10-minute walk. “You cannot discount the value of these ultra mini-vacations that bosses can’t take from you—like going pee,” Noonan says. “Take those breaths before going to the exam room. No one can take that.”

For more on positive psychology, go to dvm360.com/noonan. **dvm360**


Tips for better sleep

> **Keep a consistent bedtime.**

> **Avoid marathon sleep-in days.** (obviously this is a challenge with shift work)

> **Black out the room.**

> **Avoid blue light exposure—computers, smart phones, television—for three hours before bed.** “It is affecting the wiring in our brain and our quality of sleep,” says Jennifer Brandt, PhD, LISW, veterinary social worker at the College of Veterinary Medicine at Ohio State University. If you can’t put down the iPad, she suggests wearing amber sunglasses.



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More resources from the dvm360 team

Visit dvm360.com/burdenofcare for more coverage and resources on the emotional burdens associated with a veterinary career.

Resources for seeking help

If you or someone you know is considering suicide—or even if you’re just struggling with some of the issues discussed in this issue of *dvm360*—get help now. This list provides both general and veterinary-specific resources for help dealing with burnout, depression, compassion fatigue and suicidal thoughts.

Job Satisfaction Study

Complete results from the 2015 dvm360 Job Satisfaction Survey, including a comparison to where veterinarians stood 10 years ago and how practice owners’ survey responses differ from associate veterinarians’ answers.

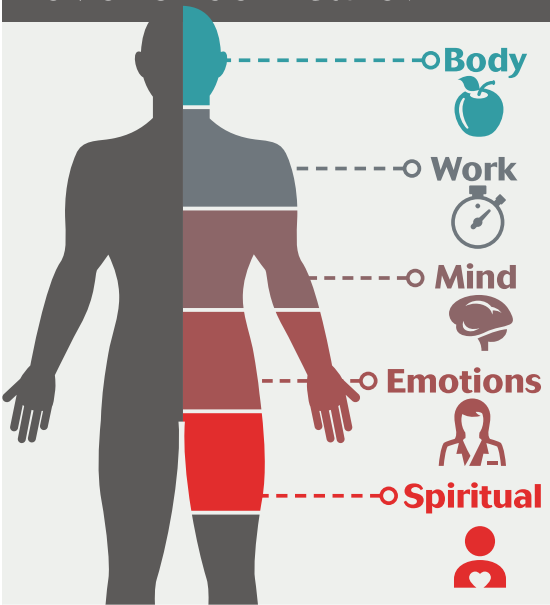
Veterinarians’ secrets revealed

In the spirit of the popular website postsecret.com, New Zealand veterinarian Hilal Dogan has created the Veterinary Confessionals Project. Read your colleagues’ anonymously posted thoughts—and then share your own. [dvm360](http://dvm360.com)

CE for mental health


CVC Kansas City will feature sessions focused on the unique challenges veterinarians face when it comes to mental and emotional health. To register, visit thevcv.com.

Are you aware of your level of self-care?



Sometimes you have to ask yourself tough questions to understand if you’re really doing enough to protect yourself from burnout, compassion fatigue and depression. We’ve created a tool for you to quickly assess your level of self-care at dvm360.com/burdenofcare.

On deck in *dvm360*’s sister publications

Veterinary economics

The veterinary family. A new *Veterinary Economics* survey shows the makeup of veterinarians’ families today and what that might mean for the profession and for personal choices.

Managing regret. Veterinarians told us their biggest regrets, and Steve Noonan, DVM, talks about why it’s better to tackle money trouble and personal problems with a positive outlook.

firstline

The veterinary team’s emotional health. How can veterinary team members stay engaged in the profession—and stave off burnout and compassion fatigue? *Firstline*’s coverage will include:

- > Exclusive data on veterinary team members’ job satisfaction from our 2015 study
- > True stories of burnout and compassion fatigue in veterinary practice
- > Advice and insight on how veterinary team members have adapted their careers to stay happy at work
- > A quick guide about moods—and how to develop emotional intelligence

Veterinary medicine

Better mental health = better medicine. If you are struggling with your own personal issues, it can be difficult to concentrate on caring for the patients that come into your hospital. *Veterinary Medicine*’s coverage will include:

- > A personal account of one veterinarian’s struggle with extreme depression and suicidal thoughts
- > Exclusive data on veterinarians’ physical, emotional and financial health
- > Suicide and euthanasia: Is there a link?

THE BURDEN: IN YOUR WORDS

- If I take enough time to work up cases properly, I can’t see enough patients in a day to be economically viable unless I charge prices too high for 80% of my clients.
- It’s a challenge to get a week off for vacation, ever.
- No other eight-year medical degree is compensated so poorly, whether you measure in salary, time off, benefits or retirement potential.
- I am so disappointed in veterinary medicine at this stage of my career it saddens me.

Interpreting feline vocalization patterns

Nonverbal communication is fascinating to most people, especially to animal lovers, says Jeanine Berger, DVM, DACAW, DACVB, who's with the San Francisco SPCA. Humans rely heavily on verbal communication, she told her veterinary audience at CVC Washington, D.C., in April but misunderstandings do happen. And if we're at times unsure about our own species' body language, how much more difficult is it to understand the body language of a different species—such as cats?

Berger offered veterinarians a “feline dictionary” for translating vocalization patterns. Compared to dogs, she said, cats are not as obviously vocal. However, certain cats are more vocal than others and cats can learn to use vocalization to communicate with people. Failure to read the “dictionary” correctly, she warned, can lead to human injury, a fracture in the human-animal bond and a decrease in animal welfare. Here's a sampling of Berger's feline vocalization dictionary.

Murmur. A soft, rhythmical pulse given on exhalation. Interpretation: Request or greeting.

Meow. Characteristic feline call—“mee-ah-oo.” Interpretation: An all-purpose greeting.

Purr. Soft, buzzing, rapid contractions of the muscle of the larynx. Interpretation: Sign of contentment; however, a cat may also purr when it's anxious or sick.

Growl, hiss and spit. Harsh, low-pitched, open-mouth sound; can be explosive. Interpretation: Cat is feeling defensive, frightened, stressed or aggressive. Leave this cat alone!

Squeak. High-pitched, raspy cry. Interpretation: Used in play or feeding; heard in females after copulation.

Shriek. Loud, harsh, high-pitched sound. Interpretation: Cat is feeling intensively aggressive or painful. Stop what you are doing; it is not working for the cat.

Chatter. Teeth chatter together. Interpretation: Cat is hunting or is being restrained from hunting.

Estrus call. Long-lasting, variable-pitch sound; cat starts with open mouth then gradually closes it. Interpretation: Female in estrus.

Howl and yowl. Loud, harsh, drawn-out calls. Interpretation: Cat

is feeling aggressive or in distress. Elderly cats with cognitive disorder make this sound.

Mowl or caterwaul. Variable-pitch call. Interpretation: Male sexual call.

Mew. High-pitched, medium-amplitude, long “eee.” Interpretation:

Mother interacting with kittens.

Moan. Low-frequency, long-duration “oo” or “uu.” Interpretation: Used in epimeletic situations or before a cat coughs up a hairball.

For more on this topic, see **dvm360.com/felinedictionary**. **dvm360**



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U.S. News releases veterinary school rankings

UC Davis claims top spot.

By Matthew Kenwright

The School of Veterinary Medicine at the University of California, Davis, ranked first in *U.S. News and World Report's* 2015 edition of "Best Graduate Schools." Peer assessment surveys were sent to deans, administrators and faculty members at schools accredited by the American Veterinary Medical Association (AVMA), according to *U.S. News*. Here are the picks for the top 10 U.S. veterinary programs:

1. University of California, Davis. The veterinary school has more than 500 students and residents, according to a university release. UC Davis cares for more than 48,000 animals per year at a teaching hospital in Davis and satellite clinics in Tulare and San Diego. The school is a member of the One Health initiative.

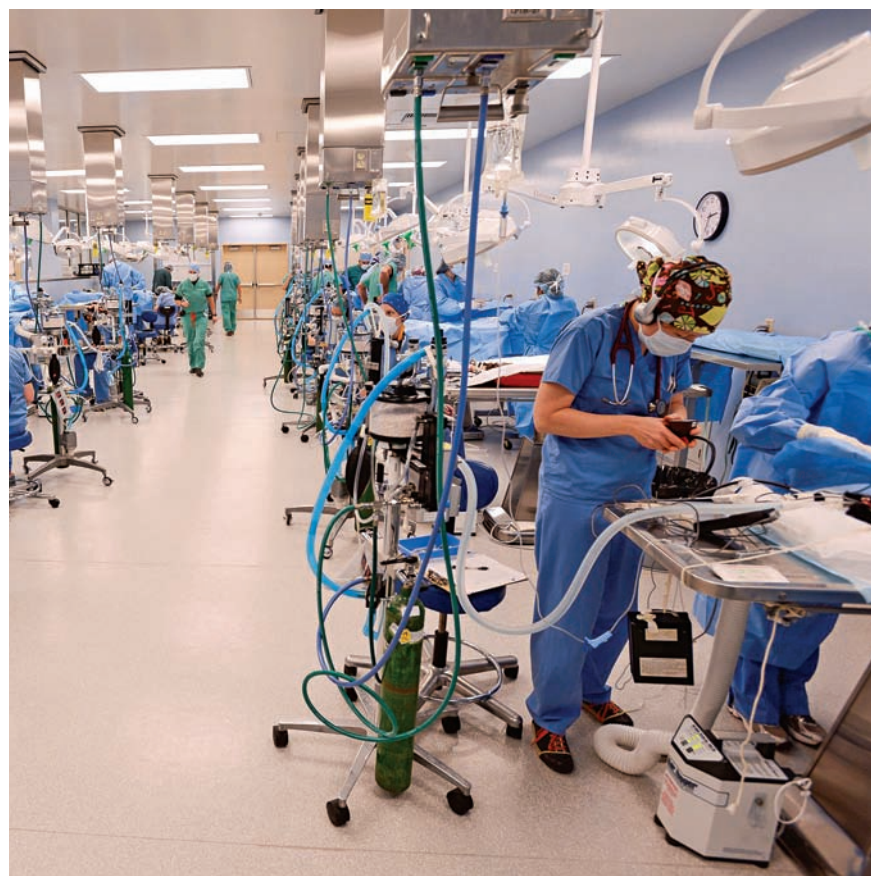
2. Cornell University. The College of Veterinary Medicine at Cornell University has 382 DVM students and 129 graduate students. It features the Cornell University Hospital for Animals, Cornell University Veterinary Specialists in Stamford, Cornell Ruffian Equine Specialists, and the Animal Health Diagnostic Center.

3. Colorado State University (tied with NC State). CSU's College of Veterinary Medicine and Biomedical Sciences accepts approximately 130 students in each class. It has an equine orthopedic research center, one of the world's largest animal cancer centers and a diagnostic medicine program.

3. North Carolina State University (tied with CSU). The North Carolina State University College of Veterinary Medicine has 358 DVM students, 65 graduate students and 76 interns and residents. The 180-acre campus includes 20 buildings and a working farm that serves as a teaching animal unit.

5. Ohio State University (tied with UW-Madison). The Ohio State University College of Veterinary Medicine admits up to 162 students in each class. The program's Veterinary Medical Center receives 35,000 visits every year.

5. University of Wisconsin



>>> A clinical veterinary course at the University of California, Davis, School of Veterinary Medicine, which was ranked top veterinary school by *U.S. News & World Report*.

(tied with OSU). The University of Wisconsin School of Veterinary Medicine accepts approximately 90 students every year. It features the UW Veterinary Care teaching hospital and offers a wide variety of experiences in food animal medicine, shelter medicine, zoological medicine and other specialties.

7. Texas A&M University (tied with UPenn). The Texas A&M College of Veterinary Medicine and Biomedical Sciences consists of approximately 530 DVM students. The school features the Michael E. DeBakey Institute for Comparative Cardiovascular Science and Biomedical Devices and the Schubot Exotic Bird Health Center.

7. University of Pennsylvania (tied with Texas A&M). The University of Pennsylvania School of Veterinary Medicine accepts 125 students per class to study at two campuses featuring diagnostic and research laboratories. The New Bolton Center cares for 4,000 horses and farm ani-

mals each year, school officials say.

9. University of Minnesota. The University of Minnesota College of Veterinary Medicine admits 102 veterinary students per year. The school's facilities include a diagnostic laboratory and equine and raptor centers. The program has the Center for Animal Health and Food Safety, National Center for Food Protection and Defense, and Global Initiative for Food Systems Leadership.

10. Tufts University (tied with UGA). The Cummings School of Veterinary Medicine at Tufts features three teaching hospitals that treat 28,000 patients per year, according to its website. Students gain experience at seven sites.

10. University of Georgia (tied with Tufts). The University of Georgia College of Veterinary Medicine has 426 DVM students and 67 PhD candidates, according to its website. Postgraduate offerings for DVMs include avian medicine and food animal medicine. [dvm360](#)

From Eureka to Action

Why and How to Create a Fear-Free Practice

Dr. Marty Becker is on a mission to make Fear-Free veterinary visits a reality for pets. He's outspoken about the need, and his message is eye-opening. In this symposium, you'll learn how to use Fear-Free concepts to:

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K9s for Warriors: Saving the lives of veterans with PTSD

Program pairs service dogs with combat-scarred soldiers who are battling to return to normal life as civilians. *By Ed Kane, PhD*

To the veterans who participate in the K9s for Warriors program, a dog is more than a companion. A dog a lifesaver. Many recent veterans who served in combat in Iraq and Afghanistan are coming home to emotional turmoil in the form of severe post-traumatic stress disorder (PTSD). With the strife of PTSD, 22 veterans are dying by suicide every day, according to the Department of Veterans Affairs (VA). But K9s for Warriors dogs are turning those lives around.

In the early 1980s, Leo K. Bustad, DVM, dean of the Washington State

University College of Veterinary Medicine, founded the Delta Society, an organization that promotes the benefits of the human-animal bond. A pioneer in the field and the Delta Society's first chairman, Bustad helped the concept to flourish across the country. Not just dogs but animals of various species have provided therapy to homebound elderly people, brightened the days of kids in hospitals, and provided assistance as fully trained service dogs to men, women and children with diseases ranging from blindness to multiple sclerosis. With their "sixth sense," dogs are now assisting Iraq and Afghanistan war veterans with combat-related PTSD.

What is PTSD?

PTSD expert Tina Jaeckle, PhD, LCSW, BCETS, FNCCM, an associate professor of sociology and criminology at Flagler College in St. Augustine, Florida, found herself drawn to K9s for Warriors when she realized that she could assist the organization's veterans by using her trauma and crisis expertise to help train K9s staff members. First she was a volunteer, then she served on the board of directors, and now Jaeckle sits on the organization's advisory board.

"Veterans from Iraq and Afghanistan struggle quite a bit before they ever come to K9s for Warriors," Jaeckle says. "PTSD is a debilitating mental illness that is very misunderstood in our society." In 2013, the mental health community redefined its criteria for PTSD, helping to establish its current diagnosis (see "PTSD defined," page 41).

"While the awareness has increased for individuals living with PTSD, there is a great deal of work that needs to be done in terms of public education," Jaeckle says. "I talk to many groups about what these veterans are going through. I let them know that they've gone through a terrible trauma, through numerous deployments and

"Simon would only come out of his shell when he would come to his mom's home and be around the dogs. The dogs changed Simon's whole personality."

*—Todd Galley,
K9s for Warriors*

intense guerilla warfare. All of these facts have produced mental anguish, which makes the PTSD they're suffering much more serious."

K9s for Warriors' beginnings

K9s for Warriors, based in Ponte Vedra Beach, Florida, is a 501(c)3 organization that opened its doors in January 2011 and had its first graduate complete the program in September of that year, says Todd Galley, the organization's chief financial officer. Galley's mother-in-law, Shari Duval, founded K9s for Warriors and is now its president.

Galley's brother-in-law, Bret Simon, is a 13-year veteran of the Cincinnati Police Department K-9 unit and spent two tours in Iraq as an independent bomb-dog handler. Though as an independent government contractor he was never diagnosed by military doctors, Simon seemed to suffer from severe PTSD after returning to the States, becoming isolated and depressed, his family members say.

"At that time his mother, Duval, had two dogs of her own," Galley says. "Duval noticed that Simon would only come out of his shell when he would come to his mom's home and be around the dogs. The dogs changed Simon's whole personality."

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Duval, who had been involved with various philanthropic organizations for years, founded K9s for Warriors as a result. At first her goal was to assist Simon, who later also became invested in the organization. Eventually K9s for Warriors became a three-week training program for groups of veterans who had come home from combat with severe PTSD. During the three-week period, the veteran stays with Duval and other family members and in turn is supplied with a PTSD service dog.

"K9s for Warriors has maintained their very personal family atmosphere with the veterans," says Roxanne Cheek, DVM, another advisory board member who provides her veterinary services to the organization. Initially Cheek was involved in fundraising but then came on board as one of two veterinarians, mainly doing surgery.

Most K9s dogs are from shelters or surrendered by owners, and many come to the organization intact sexually. Every month Cheek visits the facility to examine the dogs, possibly spay or neuter a dog or two, and take care of any other veterinary needs they have. As a mobile veterinarian with a van, she can easily pull up onto the property, run the dogs into her portable veterinary clinic, and treat them on site.

"I've met some of the warriors and know a lot of their dogs," Cheek says. "I just love hearing all the stories, that with their companion service dogs, the [veterans] reduce taking medications for anxiety. Their wives will report that they're just a new person; their marriage relationships improve."

Cheek says a lot of the healing process is the veterans' interaction with their service dogs, but they also experience camaraderie with their fellow veterans at the facility and receive unconditional love from the family and the team. Plus, since K9s for Warriors gets a lot of its dogs from shelters, the organization is providing homes for the dogs. "It's a 'win-win' for both the dogs and for the soldiers," she says.

Training regimen

A dog is fully trained—a six-month process, on average—as a service dog before it becomes involved with a veteran through the organization, Galley says. The training regimen first instills obedience, teaching the dogs to sit, stay and heel as well as to block and cover. "The blocking procedure is

to combat the veteran's space issues," he says. The dog will put itself between the veteran and an approaching person, protecting the veteran and helping him feel comfortable with the "intruder" in his space, serving as a barrier. The dog will actually step toward the person if he or she approaches the veteran too closely or quickly.

When covering, the dog faces any person coming up to the veteran from behind, as when a veteran might be using an ATM. The dog may pull, moving the veteran away from the intruding person, or simply alert the veteran to another person's presence.

The dog is also trained as a brace, whereby the veteran can put her hands on the dog to "brace" herself and steady herself from falling. Certain dogs, depending on the veteran's needs, can also turn on light switches and even pick up fallen credit cards or walking canes. Other than food-preparation spaces and surgical operating areas, K9s for Warriors dogs may go anywhere with their veteran partner, as per the American Disabilities Act.

The dogs used in the K9s for Warriors program are primarily "friendly public-perception" breeds—Labradors, golden retrievers, Labradoodles, goldendoodles, German shepherds and mixed breeds. Chows, Rottweilers, Dobermans and pit bulls are not used since they can be negatively perceived by the public.

"When the veteran is out with the dog, it's important for the dog to give off 'people-friendly' vibes," Galley says. "The veteran, as a PTSD patient, is already feeling in a hostile situation, and therefore the dog must portray calmness. A dog that is not already publicly accepted would tend to further isolate the veteran, making them feel stand-offish and heightening their PTSD." A friendly Lab provides that duty.

Jaekle says dogs have an inherent sense when someone is anxious—they're even able to sense that anxiety before a human being will. "The veterans not only bond with their dog, but also receive a partner who unconditionally loves them," she says. "When they're having a panic attack or a nightmare or are fearful, the dogs are always going to be there. We've taken the bond between dog and man that has existed forever and fine-tuned it, to make it specific to the warrior soldiers themselves and what they need."

PTSD defined

The official criteria for post-traumatic stress disorder (PTSD) were updated in 2013 by the American Psychiatric Association in the DSM-5 (Diagnostic and Statistical Manual of Mental Disorders, fifth edition). According to its current definition, PTSD involves a history of exposure to a traumatic event, along with symptoms from each of four symptom clusters: intrusion, avoidance, negative alterations in cognitions and mood, and alterations in arousal and activity. Clinicians also look at duration of symptoms, the individual's level of functioning, and whether symptoms can be attributed to a substance or medical condition when making the diagnosis.

Veteran meets dog

Once a veteran becomes associated with K9s for Warriors, he or she begins the training process. The veterans spend three weeks at the facility, going through a one-day orientation before being presented with their dog, Galley says. Prior to that time they have no

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Real-life dog-veteran stories

Jason and Axel

Jason, an Iraq veteran who served with the U.S. Marines, returned home with severe post-traumatic stress disorder (PTSD). Agoraphobic, he'd stay trapped in house for months at a time. He would not take his wife and three children out to eat or go to his kids' soccer games. He was taking massive amounts of medication for depression and anxiety.

After obtaining Axel, a 5-year-old German shepard, his life turned around. He became fully involved with his family again and significantly reduced his intake of medications. Today, with Axel, Jason tours the country speaking about K9s for Warriors and the plight of Iraq and Afghanistan veterans who struggle with the challenge of severe PTSD. Jason has passed the third anniversary of his involvement with K9s for Warriors and has promoted a golf tournament to benefit the cause.

These are all things that would not have been possible without Axel's assistance. The dog takes the onus off him as the public shifts its attention from Jason and his PTSD disability to Axel, a certain ice-breaker. "I'd be dead if it weren't for Axel," Jason said recently in a TV interview.

Todd Galley, chief financial officer of K9s for Warriors, says Jason's story resonates among the 154 graduates of K9s for Warriors. "Ninety percent of them would tell you that exact same thing," he says.

Melissa and Chauncey

Melissa also had severe PTSD after numerous deployments in Iraq. When she entered the K9s for Warriors program, she had low self-esteem and was not doing well mentally or emotionally. She tended to isolate herself, not taking part in her children's activities.

Now with her dog Chauncey, Melissa has turned her life around. She is the chairwoman of the Toastmaster chapter of K9s for Warriors in Tennessee. After being unwilling to talk or be involved in any activity, she's now part of an organization known for public speaking. Chauncey



Jason, a Marine Corps veteran, and his assistance dog Axel.



Melissa and Chauncey, graduates of the K9s for Warriors program.

has brought her out of her shell. "There are brothers, sons, mothers, fathers that are getting back involved in society and family," Galley says. "Whether it's coaching their son's softball game, going to holiday functions with family, things they did not do before they're doing now, with the help of their K9s for Warriors dogs.

"You see numerous cases, over and over again, of veterans literally coming back to life," Galley continues. "They're going back to college, getting jobs, being fully involved across the board. That's the key—that's why we do what we do." For more information about the K9s for Warriors program, visit K9sforWarriors.org. [dvm360](#)

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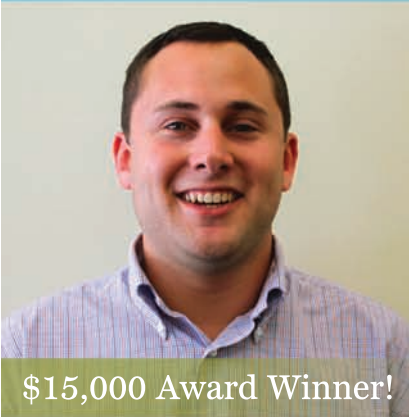
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idea which dog they will unite with.

“Once they receive their dog, our four staff trainers work with the veterans to help them get the bond initiated—the most important thing during that first 24 hours,” Galley says. “On that first day, though the veterans want to begin their work in earnest, they do not go through any training—not even sit, stay. It’s solely orientation.”

As the weeks proceed, the veterans and the dogs become more comfortable with each other. “At first, the veteran warriors learn what the dog is going to do for them (block, cover,

difficulties with transition, the epidemic of PTSD, and other issues with integrating into civilian life,” Stivers says.

Stivers’ bill would create a pilot program to set up five VA facilities in contract with local therapeutic dog organizations, such as K9s for Warriors. This would provide veterans with PTSD and other serious injuries the opportunity to obtain canine therapy. The organizations would work with the VA to ultimately help train the dogs to become service dogs.

“There are studies that show that canine therapy really works,” Stivers

have yet to see anything as powerful as what K9s for Warriors is doing for the veterans they serve.” **dvm360**

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

“One study showed that when veterans used a therapy dog, they had fewer symptoms of PTSD, less depression, better interpersonal relationships, a lower risk of substance abuse, and better overall health and mental health.

—Congressman Steve Stivers

brace), then everything changes; situational training begins,” Galley says.

During the training period the program puts the veterans and dogs in a variety of situations. “When they leave after their three-week training, we want them to know that they’re going to be able to build rapport with their dog and the dogs will do the necessary things to assist them,” Galley says. The veterans go to stores with their dogs, run errands that reflect their normal everyday chores and routines, eat out at restaurants.

“We are trying to get them in normal everyday situations, trying to get them reintegrated into society,” Galley says. “When they go back to these places, in their mind they’re going to say, ‘It’s OK if I need to go to Walmart’; ‘It’s OK if I’m going to be taking my family out for a meal.’”

At the end of the three-week period, the veterans are given identification cards to acknowledge that they’ve received certification, completed their training, and that they and their dog are a recognized training team.

Looking ahead

Recently, Congressman Steve Stivers (R-Ohio) introduced legislation that would establish a dog training program for veterans with PTSD. “As a service member myself, I know that there are

says. “Kaiser-Permanente did a study that showed that when veterans used a therapy dog, they had fewer symptoms of PTSD, less depression, better interpersonal relationships, a lower risk of substance abuse, and better overall health and mental health.”

Anyone who has ever had a dog and had a rough day can attest to the fact, Stivers says. “Once you spend a few minutes petting your dog, it puts everything in perspective,” he says. “Dogs improve people’s mental health, their perspective, and their ability to relate not just to animals but to people. For the veterans, it’s just great for their mental health.”

Stivers plans to try to get the legislation rolled into this year’s National Defense Authorization Act or another appropriations bill. “I’m going to work my tail off to make sure it happens,” he says—perhaps relying on his own dog to keep his spirits up during the process. “They say if you want a friend in Washington, get a dog,” Stivers says.

In addition, Jaeckle has started a research program to take a look at the effectiveness of K9s for Warriors over time. “There has been some data collected, but we need to do it right,” Jaeckle says. “To bring some validity to what they’re doing is the study’s goal.

“I’ve been in this field for more than 25 years,” Jaeckle continues, “and I

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Clients understand what a declaw entails

I am writing in regard to the letter written by Dr. Jennifer Doll in the February issue: “Low-cost clinics aren’t inadequate.” I too have been following some of the news articles concerning nonprofit/low-profit clinics and their relationships to full-service clinics in their area. Why the dvm360 editors allowed a response on this topic to morph into another anti-declawing tirade is beyond me. I also practice in Iowa. I have cats dumped

at my clinic that are strays, and—if warranted—they receive medical care, are spayed and neutered, and we find homes for them.

When we discuss declawing with potential owners or adopters, they certainly know that the claws are going to be surgically removed. In what world would a client not realize that? What wording on the invoice is going to change that? In regard to the declawed strays that get beat up on

the street: The vast majority of cats with abscesses all have claws, not the other way around. I can’t remember the last time I treated a declawed cat with an abscess. I know it happens but not commonly. I also give plenty of services away, some by choice and some not. And you know, my bottom line is the dollar. And I don’t feel one bit guilty about that.

*David L. Connell, DVM
Guttenberg, Iowa*

Dependence on discretionary spending will cause the profession woes

When a purveyor of any kind of goods or services is dependent on the discretionary spending of its clientele for its economic survival, it remains at the mercy of the marketplace. Our profession must compete with all the other businesses for its share of the consumer dollar. During the Great Recession of 2008, the veterinary practitioner served as the canary in the coal mine. The first items struck from most budgets were trips to the veterinarian. Veterinary medicine is a high-tech provider of healthcare services for pets. For at least half of the pet-owning public, however, it has become a luxury they feel they can no longer afford.

The problems facing our profession today are manifold. Two of the problems, in my opinion, are salient. First of all, much as we would prefer otherwise, veterinary medicine is not a vital service. Other than mandatory rabies vaccinations, many pets live their entire lives without any kind of veterinary care. Being forced to depend on the discretionary spending of a relatively small percentage of clients is a thin reed to support

the economic well-being of an entire profession.

The second problem is a self-serving attitude on the part of veterinary schools. In spite of the fact that the supply of veterinarians already outstrips the demand, existing schools are expanding class size and new schools continue to be built. These schools thrive on increased class size and higher tuition. The fact that many of their graduates cannot find meaningful employment does not seem to enter into their equation.

Sadly, the American Veterinary Medical Association has been complicit in this by failing to take a stand on an oversupply of veterinary graduates or by ignoring the problem altogether. All the high-flown rhetoric about a “strategic management process” and the creation of even more focus groups and committees while outsourcing the problem to high-priced consultants is, in my opinion, an exercise in futility. I have a gut feeling that this group of “experts” will accomplish very little of substance or change any economic facts on the ground.

*Richard H. McCormick, DVM
Miami, Florida*

SOCIAL MEDIA Roundup

Dr. Pol back in front of state board

dvm360 readers respond on Facebook to the latest in Dr. Pol’s licensing issues.

Kris Tajchman
He does a disservice to veterinary medicine.

John Gaudion
I have worked in veterinary hospitals and clinics for 45 years ... still do. Many of the Doctors I worked for were “old school”. However, as new technologies and new pharmaceuticals were developed, they upgraded the way they practiced medicine.

Dr. Pol makes the profession look bad, in my opinion, and giving him a reality show adds fuel to the fire.

Roxanne Baker Williams
I couldn’t stand to watch the show for more than 10 minutes. The medicine was so awful it seriously gave me anxiety!

Kristi Moore Hauta
I find his lack of pain medication appalling.

Bev Blake
I think we should drop this. He’s old school ... big deal. I worked for a 33-year-old vet who was frankly a jerk to work for. Some of us are blessed to work with great doctors ... let’s just be thankful.



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Inappropriate client interactions should be managed, not sugar-coated

I was amused to read Dr. Marc Rosenberg's column in March regarding crazy clients and snappy patients. It amazes me that our profession is still following such a sniveling, ingratiating attitude toward rude and impossible people who have idolatrous relationships with their pets!

Have we no self-respect? Sooner or later our profession needs to deal with pathology in the human-animal bond. Unhealthy, codependent relationships between people and their pets as they try to turn them into spouses or children are not good for the person or the animal. Half the time the animal looks at me like "Please, doc, get this nutcase away from me. She's totally tweaking my head."

After being in practice for 37 years, I have adopted the following practices: Client records are marked with something to warn the staff when truly needed, and if we ever copy those records to give to a client or another veterinary clinic, a black magic marker works really well to remove the small warning symbol on the front of a record. Passing those symbols along to someone as ridiculous as Mrs. Potts



is nothing short of stupid.

Secondly, we follow the "three strikes and you're out" rule. Unreasonable clients have a letter sent to them explaining the boundaries of appropriate behavior. They are told that we will do everything we can to take good care of them and bend over backward to treat their pet as if it were our own. However, we will not put up with shenanigans or tirades toward our doctors or staff. This warning goes out after the third time that their interactions with hospital staff have been inappropriate. They are told that we will refer them elsewhere if the behavior pattern

manifests itself again. Appropriate boundaries such as this should be common sense to anyone who's ever raised children or trained animals. It's time to stop kissing butt and enabling bad behavior and start training these clients to act appropriately.

Dr. Rosenberg says, "Dr. Sims learned a lesson the hard way." I do not agree. I think Dr. Sims was blessed by losing a person who would make the staff and the entire hospital miserable on a regular basis. I fire these bad clients just as soon as I see that they are not willing to learn appropriate behavior and stay within appropriate boundaries. It is well-known that 5 percent of your clientele will cause 95 percent of your problems.

It is not worth kowtowing to these people. Define what is appropriate, warn them if necessary and get rid of them if you have to. Your clinic will be happier, your staff will respect you for it and you will sleep much better at night. As veterinarians, we are supposed to know the basics of behavioral modification and training, right?

*Gregg A. Townsley, DVM
Phoenix, Arizona*

All veterinarians need to practice good recordkeeping

I read Dr. Christopher Allen's March column, "Relief veterinarians: Rules to live by," and was startled and concerned about the message presented to relief veterinarians. The sentence "When a veterinarian decides to go part time, she no longer has the luxury of indulging in poor practice habits" implies that it is OK for full-time veterinarians to have poor practice

habits. That belittles our profession, associate veterinarians and practice owners. All veterinarians must keep legible, logical and reasonable records. It's the age of computers; it's no longer necessary to struggle to decipher handwritten records.

Imagine what the relief veterinarian must struggle through when reviewing a written medical record when a long-term client comes in for

an appointment or on an emergency basis. There must not be different standards of medical recordkeeping for relief veterinarians compared to other veterinarians. We must all be held to the same standards. All doctors must keep legible, logical and complete medical records.

*Emily S. Southward,
DVM, MS, DACVECC
Hermosa Beach, California*



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See brief summary on page 48



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Internships: *A tax* on new veterinarians?

Data suggest that new graduates steer clear of high opportunity cost.

In the last decade and a half, the veterinary profession has seen some interesting trends in employment patterns, especially in the popularity of internships.

In 2001, more than 70 percent of graduating seniors entered full-time employment in private practice. That declined to a low of approximately 40 percent in 2012, then returned to 56 percent in 2014 (see Table 1). During that same time period, the percentage of students completing an internship increased to mirror the decline in full-time employment. Internship selection increased from approximately 20 percent in 2001 to a high of 50 percent in 2012, then declined to 37 percent in 2014.

This trend of shifting from full-time employment to internships seemed unremarkable at the time because year-to-year comparisons identified only marginal changes.

The increasing percentage of students choosing internships was thought to be related to students' increased desire to be board-certified in a specialty. However, the American Veterinary Medical Association (AVMA) Veterinary

Economics Division has uncovered a number of findings that cast a new light on these internships.

Four key findings

In our examination of unemployment and underemployment in the veterinary profession, we uncovered four pieces of information that fuel new questions about internships.

1. Internships are associated with lower perceptions of self-competence. When we evaluated veterinarians' perceptions of their own competence in the nine core veterinary competencies identified by the AVMA Council on Education (COE), we identified no significant differences among veterinarians based on the school from which they graduated.

However, we did find that veterinarians' perceptions of self-competence were significantly lower in many areas for those who had chosen internships versus those who had chosen full-time employment in a clinical practice.

2. Internships are associated with unemployment. We discovered that veterinarians who participated in internships were statistically

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Dosage and Administration: NEXGARD is given orally once a month, at the minimum dosage of 1.14 mg/lb (2.5 mg/kg).

Dosing Schedule:

| Body Weight | Afoxolaner Per Chewable (mg) | Chewables Administered |
|--------------------|---|------------------------|
| 4.0 to 10.0 lbs. | 11.3 | One |
| 10.1 to 24.0 lbs. | 28.3 | One |
| 24.1 to 60.0 lbs. | 68 | One |
| 60.1 to 121.0 lbs. | 136 | One |
| Over 121.0 lbs. | Administer the appropriate combination of chewables | |

NEXGARD can be administered with or without food. Care should be taken that the dog consumes the complete dose, and treated animals should be observed for a few minutes to ensure that part of the dose is not lost or refused. If it is suspected that any of the dose has been lost or if vomiting occurs within two hours of administration, redose with another full dose. If a dose is missed, administer NEXGARD and resume a monthly dosing schedule.

Flea Treatment and Prevention:

Treatment with NEXGARD may begin at any time of the year. In areas where fleas are common year-round, monthly treatment with NEXGARD should continue the entire year without interruption.

To minimize the likelihood of flea reinfestation, it is important to treat all animals within a household with an approved flea control product.

Tick Treatment and Control:

Treatment with NEXGARD may begin at any time of the year (see **Effectiveness**).

Contraindications:

There are no known contraindications for the use of NEXGARD.

Warnings:

Not for use in humans. Keep this and all drugs out of the reach of children. In case of accidental ingestion, contact a physician immediately.

Precautions:

The safe use of NEXGARD in breeding, pregnant or lactating dogs has not been evaluated. Use with caution in dogs with a history of seizures (see **Adverse Reactions**).

Adverse Reactions:

In a well-controlled US field study, which included a total of 333 households and 615 treated dogs (415 administered afoxolaner; 200 administered active control), no serious adverse reactions were observed with NEXGARD.

Over the 90-day study period, all observations of potential adverse reactions were recorded. The most frequent reactions reported at an incidence of > 1% within any of the three months of observations are presented in the following table. The most frequently reported adverse reaction was vomiting. The occurrence of vomiting was generally self-limiting and of short duration and tended to decrease with subsequent doses in both groups. Five treated dogs experienced anorexia during the study, and two of those dogs experienced anorexia with the first dose but not subsequent doses.

Table 1: Dogs With Adverse Reactions.

| | Treatment Group | | | |
|-----------------------------------|-----------------|-----------|---------------------|-----------|
| | Afoxolaner | | Oral active control | |
| | N ¹ | % (n=415) | N ² | % (n=200) |
| Vomiting (with and without blood) | 17 | 4.1 | 25 | 12.5 |
| Dry/Flaky Skin | 13 | 3.1 | 2 | 1.0 |
| Diarrhea (with and without blood) | 13 | 3.1 | 7 | 3.5 |
| Lethargy | 7 | 1.7 | 4 | 2.0 |
| Anorexia | 5 | 1.2 | 9 | 4.5 |

¹Number of dogs in the afoxolaner treatment group with the identified abnormality.

²Number of dogs in the control group with the identified abnormality.

In the US field study, one dog with a history of seizures experienced a seizure on the same day after receiving the first dose and on the same day after receiving the second dose of NEXGARD. This dog experienced a third seizure one week after receiving the third dose. The dog remained enrolled and completed the study. Another dog with a history of seizures had a seizure 19 days after the third dose of NEXGARD. The dog remained enrolled and completed the study. A third dog with a history of seizures received NEXGARD and experienced no seizures throughout the study.

To report suspected adverse events, for technical assistance or to obtain a copy of the MSDS, contact Merial at 1-888-637-4251 or www.merial.com/nexgard. For additional information about adverse drug experience reporting for animal drugs, contact FDA at 1-888-FDA-VETS or online at <http://www.fda.gov/AnimalVeterinary/SafetyHealth>.

Mode of Action:

Afoxolaner is a member of the isoxazoline family, shown to bind at a binding site to inhibit insect and acarine ligand-gated chloride channels, in particular those gated by the neurotransmitter gamma-aminobutyric acid (GABA), thereby blocking pre- and post-synaptic transfer of chloride ions across cell membranes. Prolonged afoxolaner-induced hyperexcitation results in uncontrolled activity of the central nervous system and death of insects and acarines. The selective toxicity of afoxolaner between insects and acarines and mammals may be inferred by the differential sensitivity of the insects and acarines' GABA receptors versus mammalian GABA receptors.

Effectiveness:

In a well-controlled laboratory study, NEXGARD began to kill fleas four hours after initial administration and demonstrated >99% effectiveness at eight hours. In a separate well-controlled laboratory study, NEXGARD demonstrated 100% effectiveness against adult fleas 24 hours post-infestation for 35 days, and was ≥ 93% effective at 12 hours post-infestation through Day 21, and on Day 35. On Day 28, NEXGARD was 81.1% effective 12 hours post-infestation. Dogs in both the treated and control groups that were infested with fleas on Day -1 generated flea eggs at 12- and 24-hours post-treatment (0-11 eggs and 1-17 eggs in the NEXGARD treated dogs, and 4-90 eggs and 0-118 eggs in the control dogs, at 12- and 24-hours, respectively). At subsequent evaluations post-infestation, fleas from dogs in the treated group were essentially unable to produce any eggs (0-1 eggs) while fleas from dogs in the control group continued to produce eggs (1-141 eggs).

In a 90-day US field study conducted in households with existing flea infestations of varying severity, the effectiveness of NEXGARD against fleas on the Day 30, 60 and 90 visits compared with baseline was 98.0%, 99.7%, and 99.9%, respectively.

Collectively, the data from the three studies (two laboratory and one field) demonstrate that NEXGARD kills fleas before they can lay eggs, thus preventing subsequent flea infestations after the start of treatment of existing flea infestations.

In well-controlled laboratory studies, NEXGARD demonstrated >94% effectiveness against *Dermacentor variabilis* and *Ixodes scapularis*, 48 hours post-infestation, and against *Amblyomma americanum* 72 hours post-infestation, for 30 days.

Animal Safety:

In a margin of safety study, NEXGARD was administered orally to 8- to 9-week-old Beagle puppies at 1, 3, and 5 times the maximum exposure dose (6.3 mg/kg) for three treatments every 28 days, followed by three treatments every 14 days, for a total of six treatments. Dogs in the control group were sham-dosed. There were no clinically-relevant effects related to treatment on physical examination, body weight, food consumption, clinical pathology (hematology, clinical chemistries, or coagulation tests), gross pathology, histopathology or organ weights. Vomiting occurred throughout the study, with a similar incidence in the treated and control groups, including one dog in the 5x group that vomited four hours after treatment.

In a well-controlled field study, NEXGARD was used concomitantly with other medications, such as vaccines, anthelmintics, antibiotics (including topicals), steroids, NSAIDs, anesthetics, and antihistamines. No adverse reactions were observed from the concomitant use of NEXGARD with other medications.

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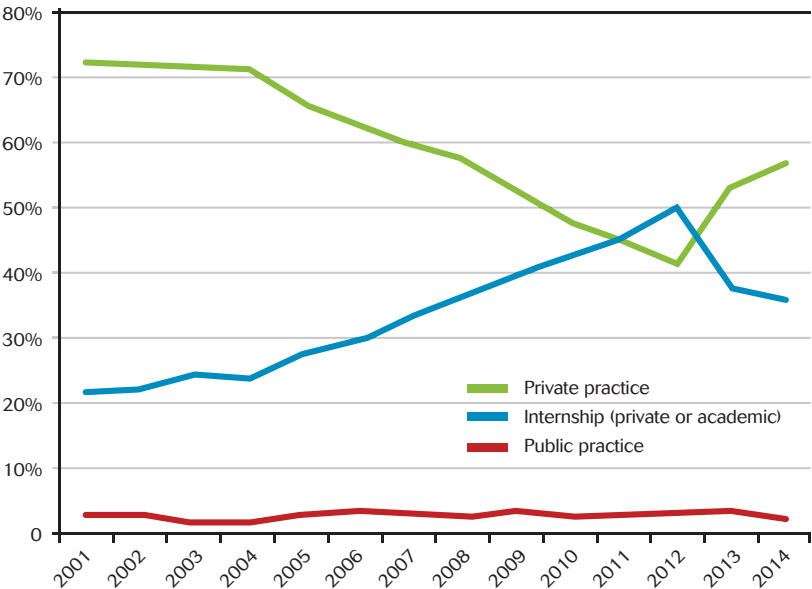
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TABLE 1

Allocation of graduates with employment



Source: AVMA Economics Division

more likely to be unemployed when compared to those who didn't.

3. Certain schools send more students into internships. There is a significant difference among veterinary colleges in the percentage of their graduating seniors who select internships over full-time employment (see Table 2).

4. Internships cost graduates tens of thousands of dollars. The opportunity cost of an internship exceeds \$40,000 when you compare the mean starting salary for full-time clinical practice with the mean starting salary for an internship. The opportunity cost includes not only the income that's given up (the difference between full-time pay and internship pay) but any added interest from student loans plus the reduced income stream caused by delaying the starting salary from a full-time position.

Internships: Cheap labor for practice owners?

In a recent study of veterinary internships, researchers noted that "although individuals who participated in internships after graduation worked more hours and earned less during their first year of employment, compared with individuals who entered clinical practice, most individuals [85 percent] who participated in internships were satisfied with their internship overall."¹

However, this study found significant differences in satisfaction between internship settings. Those who completed their internships in an academic or university setting expressed a higher level of satisfaction than those in private practice.¹

TABLE 2

Top 5 internship schools

| School | Did internship |
|--------------|----------------|
| Western | 57% |
| Tufts | 48% |
| Cornell | 38% |
| Pennsylvania | 38% |
| UC Davis | 32% |

Bottom 5 internship schools

| | |
|------------------|-----|
| Missouri | 17% |
| Purdue | 16% |
| Oklahoma State | 15% |
| Washington State | 12% |
| Iowa State | 12% |

Source: AVMA Economics Division

Considering that the study used observations from veterinarians who participated in internships between 1995 and 2010, we can assume that the majority of these veterinarians completed their internships before 2005. This was when the percentage of new veterinarians choosing internships was rapidly increasing.

And with the decrease in the percentage of new veterinarians choosing internships during the past two years, there's reason to believe that the surge of internships after 2008 may have been concentrated in private practices because owners wanted to maintain profits during the sharp decline in business.

Conclusions

The facts are self-evident:

- > Selecting an internship is associated with a higher probability of unemployment.
- > Veterinarians' perception of their competence in specific clinical areas is significantly different between those who select an internship and those who select private practice.
- > The percentage of students who select the internship option differs significantly among veterinary colleges.
- > The number of new graduates selecting internships and residencies at universities and referral practices has remained constant since 2009; the number selecting internships in private practice has increased.
- > The opportunity cost of selecting an internship is greater than \$40,000 per year in a profession where the mean debt-to-income ratio is 2.05-to-1.

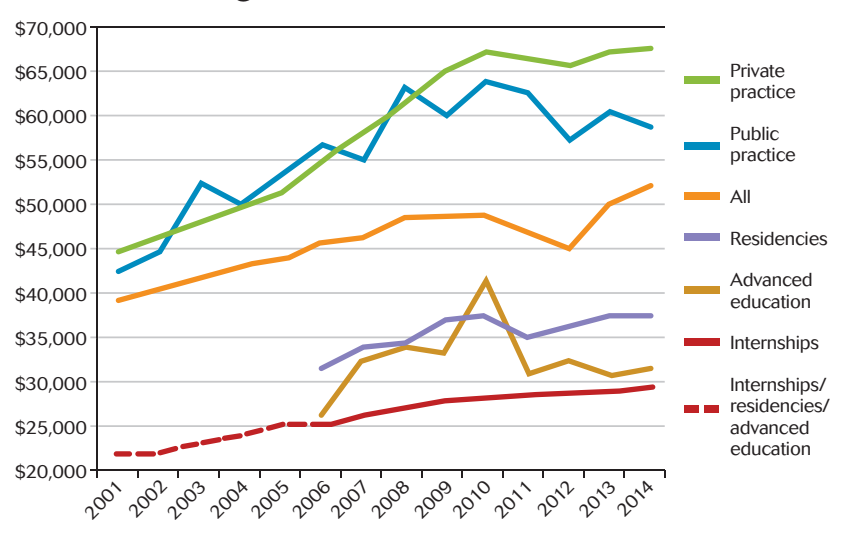
Don't get me wrong—this article isn't meant to be an indictment of all internships. It's an expression of concern about what appears to be the substitution of internships for full-time private practice employment and the transfer of income from those who can least afford it (new veterinarians) to those who may least need it (practice owners).

More importantly, if the value of an internship is the mentoring the new veterinarian receives, why does it cost \$40,000? Isn't mentoring (on-the-job training) a professional obligation?

For this expensive mentoring to be worth it to new veterinarians, those who complete an internship should expect to gain at least \$40,000 in increased lifetime earnings when compared to those who do not, with all other things being equal.

TABLE 3

Mean starting salaries of new veterinarians



Source: AVMA Economics Division

Based on the available data, new veterinarians should steer clear of internships for now unless there's clear evidence that the selection of a specific internship provides a clear path to advancement. The best employment opportunity for new veterinarians will be with an employer who's willing to provide quality mentoring while at the same time investing in the future of the profession and paying a fair wage. Perhaps it's time for graduates to vote with their feet against this enormous tax on entering the profession. **dvm360**

Reference

1. Shepherd AJ, Granstrom DE, Boland LA, et al. Veterinary internship survey, 2012. JAVMA 2013; 243(7):976-980.



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.

Correction

Because of an editing error, the charts were mislabeled in the March article "Debt to income ratios: Truth or Trash?" by Dr. Mike Dicks. See the corrected charts at **dvm360.com/DebtRatios**.

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Permission denied

Client education goes astray when a veterinarian lacks approval on video.

Dr. Susan Drew owned a progressive, successful suburban hospital with two veterinarians and a support team of seven. Dr. Drew believed that the secret to 21st-century veterinary success was taking a proactive approach to veterinary medicine. She had a blog, a Facebook presence and a Twitter account.

However, she felt she needed to assist her clients more when they were actually at her facility. So she decided to play videos in the waiting room that showed her staff at work caring for patients. This would give her clients a behind-the-scenes peek at their veterinary caretakers.

Several veterinary drug vendors gave Dr. Drew a diverse group of educational videos, and she placed two flat-screen monitors in her waiting room so clients could watch while waiting.

In addition, she made a video of a 3-year-old Maltese named Heidi having her spay procedure performed. Dr. Drew played the “Heidi’s Day at the Vet” video in the lobby, and it was received well by her waiting room viewers.

Everyone, that is, except Mrs. Smith, Heidi’s owner, who received an angry call from the breeder who sold

her the dog. Mrs. Smith and the breeder had agreed that Heidi wouldn’t be spayed before 4 years of age in case they chose to breed her. The breeder wanted monetary compensation because Mrs. Smith broke their agreement.

Mrs. Smith called Dr. Drew and accused her of using Heidi’s name and image without her permission, which she said violated her confidentiality rights. Dr. Drew said her intentions were honorable and she just wanted to educate her clients. She didn’t feel she needed a signed release simply to have one of her patients assist with this education, but she agreed to stop running Heidi’s spay video in her clinic.

She did, however, refuse Mrs. Smith’s request that she reimburse the breeder the requested amount for violating the breeder-owner contract. Dr. Drew maintained that she didn’t order the pet to be spayed at age 3—it was the owner’s decision. And, she said, Mrs. Smith knew of the agreement with the breeder while Dr. Drew did not.

Dr. Drew lost a very good client. Mrs. Smith also filed a grievance with the state board of veterinary medicine. She claimed that Dr. Drew displayed unprofessional conduct by violating her privacy and using her dog’s name and image in a self-serving manner.

The state board agreed that Dr. Drew violated her confidentiality mandate by publicly using the name and image of a client’s pet without permission. They did not, however, conclude that this action rose to the level of unprofessional conduct. They issued Dr. Drew a letter of admonishment and advised her to obtain owner permission for release of any personal

or pet information in the future.

Do you agree with the ruling that Dr. Drew breached the client-veterinary confidentiality mandate—or was she just made the scapegoat for an irresponsible pet owner?

Rosenberg’s response

Client and patient confidentiality rules are designed to protect individuals from potentially serious exploitation. In the wrong hands client information could lead to invasion of privacy as well as the theft of money and identity. It would have been very easy for Dr. Drew to simply contact this pet owner and ask for permission to use Heidi in her educational video.

The bottom line is that 21st-century veterinary medicine has more rules and guidelines than ever before. As the profession grows in stature and impact, so do regulations that in the past were simply understood as ethical veterinary practice. My opinion is that Dr. Drew’s intentions were honorable and ethical, and the owner became angry not because her pet was used without her say-so but because she got caught violating an agreement she had made with the breeder. For Dr. Drew, a lesson learned. For the owner—shame on her. And for Heidi, well, she got to enjoy five minutes of fame. **dvm360**

Dr. Marc Rosenberg is director of the Voorhees Veterinary Center in Voorhees, N.J. He is a member of the New Jersey Board of Veterinary Medical Examiners. Although many of his scenarios in “The Dilemma” are based on real-life events, the veterinary practices, doctors and employees described are fictional.



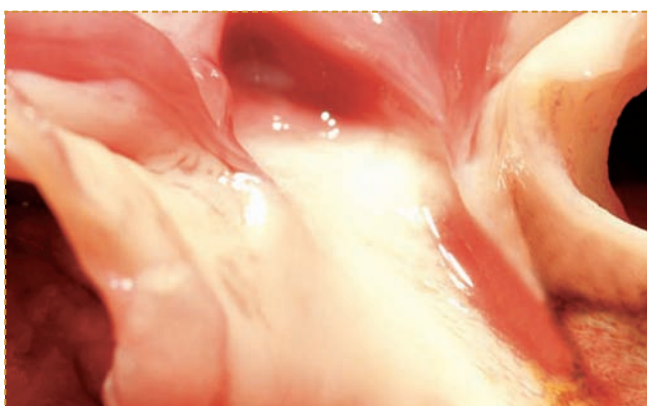
MEDICINE | Parasitology

Pictorial evidence: Heartworm disease and its damage

Even if heartworm infection is treated, we all know it does serious, permanent damage to the body. This in-depth look at that damage will renew your commitment to consistent prevention recommendations for your patients. *By Stephen Jones, DVM*

Hearthworms 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 devel-

opment of permanent disease real. The following images are from a variety of canine cases and represent the various types of gross pathology heartworms can cause.

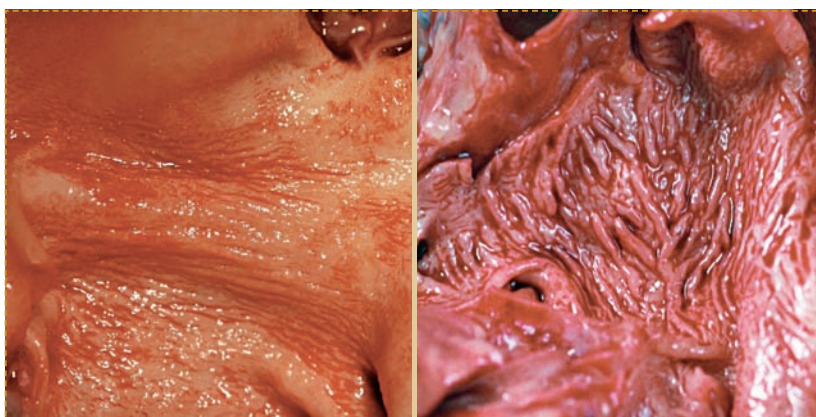
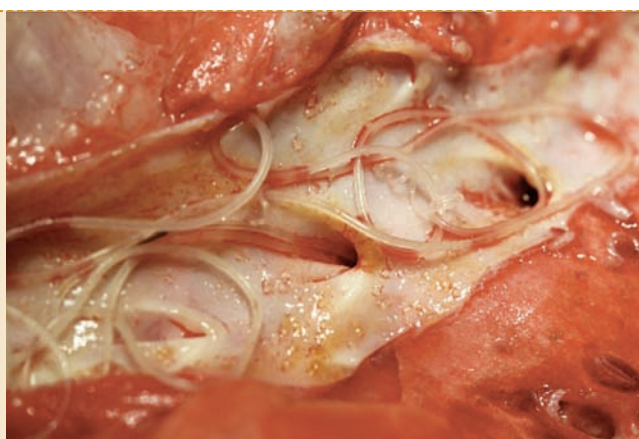


Normal pulmonary artery

The damage caused by heartworm disease is progressive, and changes become increasingly evident as heartworm infection persists. Just for comparison, here is an image of a normal pulmonary artery with an exceptionally smooth endothelial surface.

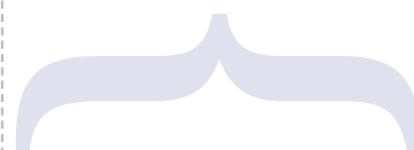
Beginnings of infection

The adult heartworm spends most of its life within the lumen of the pulmonary arteries. With the forceful flow of each heartbeat, worms are agitated back and forth, causing trauma to the delicate endothelial lining. The trauma caused by even a small number of heartworms can lead to rapid and often permanent change within the pulmonary arteries.



Arterial inflammation

Arterial inflammation leads to thickening of the endothelial surface, villous hyperplasia and, ultimately, rugous endarteritis. On the left, we see an example of mild change within the main pulmonary artery while in the more advanced case on the right, we see extensive rugous endarteritis and dilatation. This type of change is often irreversible.



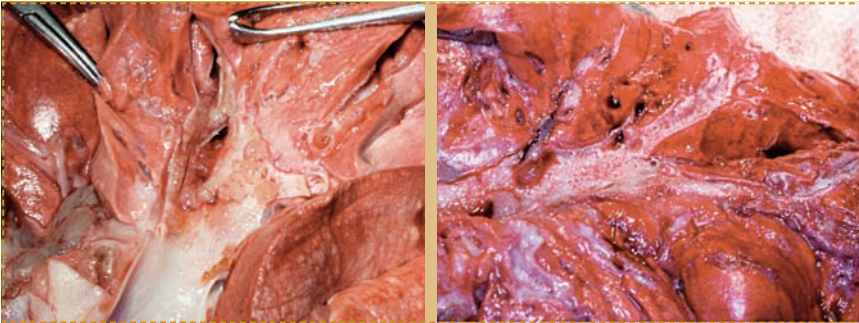
DENTISTRY

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Dental extractions: Leave 'em, take 'em, hold 'em or fold 'em?

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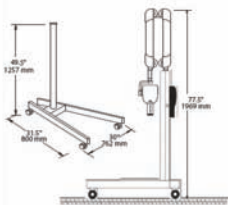
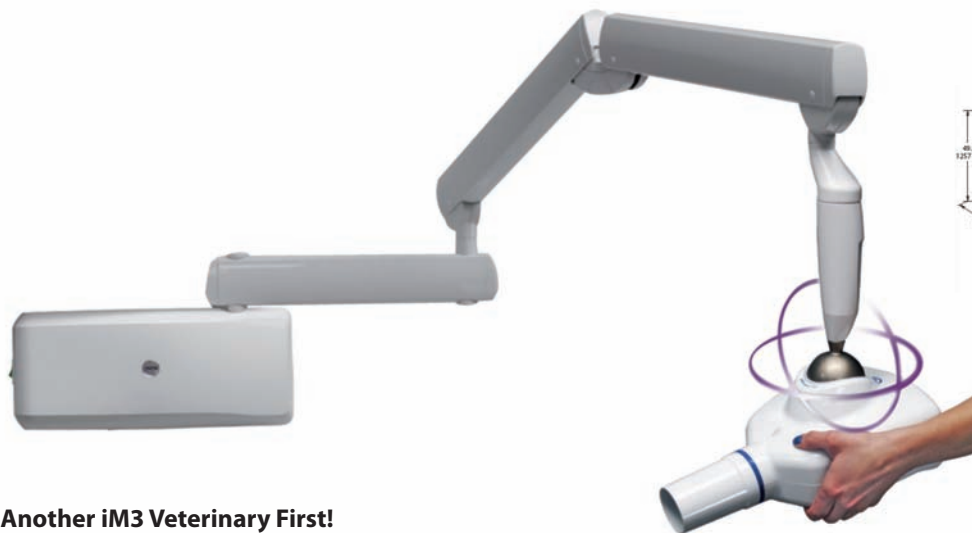
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Disease of the lobar pulmonary arteries

These images depict changes commonly seen in the lobar pulmonary arteries of dogs infected with heartworms. On the left, the proximal aspect of the artery appears relatively normal, but the distal artery has severe proliferation of the endothelial lining, which can lead to restricted and turbulent blood flow. On the right, the entire right caudal lobar artery and its branches reveal an irregular and thickened endothelial surface. Several proliferative lesions are present at the bifurcation of several smaller arterial branches. One of these branches is distinctly occluded by fibrosis.

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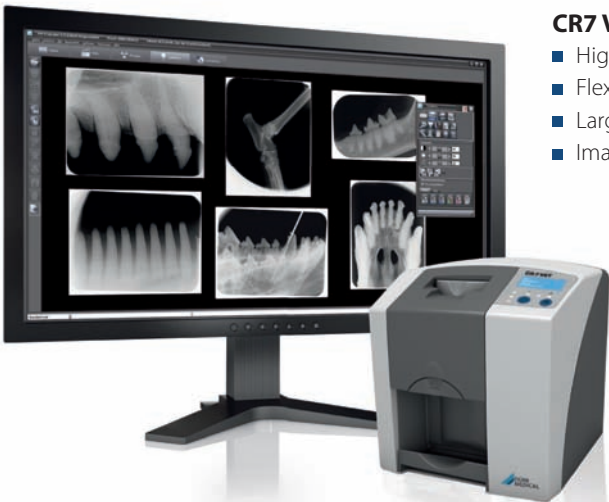
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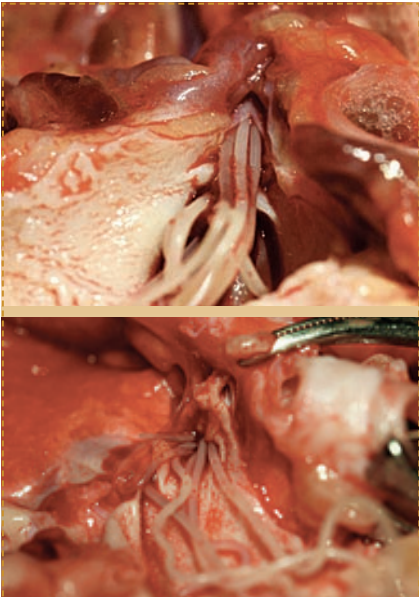
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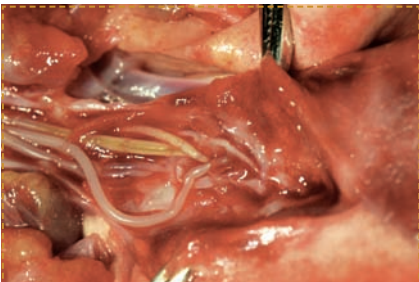
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Obstructive disease

Microscopic changes often reflect fibrosis of the smaller capillaries and arterioles, but much of the clinical disease that results from heartworm infection is the consequence of obstructive disease within the larger arteries. These images show how high worm numbers appear to nearly occlude smaller arteries, potentially leading to physical obstruction and decreased blood flow.



Emboolic obstruction

Although heartworms can live up to seven years, most die much earlier. As heartworms die naturally, they collapse into the distal vasculature and incite thrombus formation. When this occurs, blood flow is either partially or completely obstructed, and a strong inflammatory response ensues. Exercise intolerance, coughing, labored breathing and, ultimately, congestive heart failure can result.



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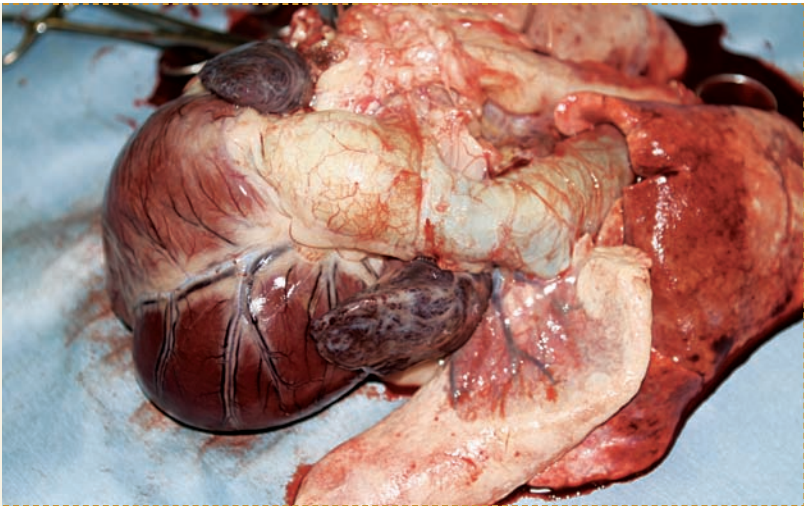
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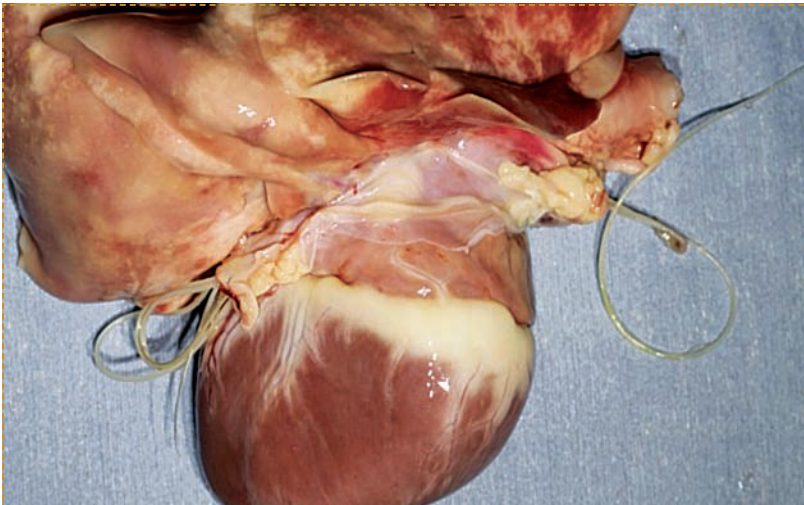
Congestive heart failure

As obstructive disease progresses, involving additional arteries, blood flow becomes dramatically impeded. This leads to increased pressure and dilatation of the pulmonary arteries and the right side of the heart. In severe cases, cardiac output decreases and congestive heart failure ensues.



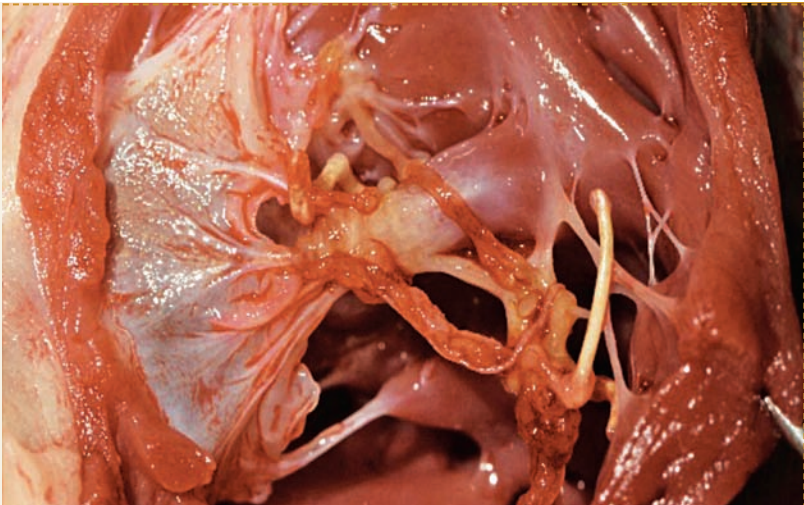
Caval syndrome

When heavy heartworm infections occur, multiple worms can be displaced to the right heart and the vena cava. Worms often become tangled or knotted and interfere with the function of the tricuspid valve. This image represents a heart and great vessels from a pet with caval syndrome, a difficult and life-threatening illness. Heartworms can be seen protruding from the transected cranial and caudal vena cava.



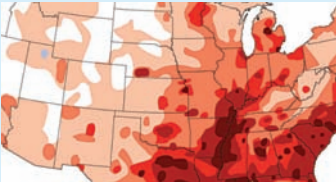
Tricuspid insufficiency

Because heartworms are mobile, an individual worm can venture into the right heart and become entangled in the chordae tendineae of the tricuspid valve. This finding often results in valvular insufficiency and right-sided congestive heart failure. Interestingly, this has been observed even in patients infected with a low number of worms.



Get the whole picture

See an extended version of this article at dvm360.com/heartwormdamage, including a heartworm incidence map.



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Conclusion

The clinical appearance of heartworm disease can vary significantly. Some patients present with overt clinical signs, while others do not. Nevertheless, heartworm damage is insidious and real. Pets infected by heartworm develop pathology, even when only a few worms are present. And while treatment can eliminate an infection, it cannot necessarily reverse the resultant damage. Routine, persistent prevention represents the only approach to avoiding the disease caused by heartworms. **dvm360**

Stephen Jones, DVM, practices at Lakeside Animal Hospital in Moncks Corner, South Carolina. He will be president of the American Heartworm Society through September 2017.

Dental extractions: Leave 'em, take 'em, hold 'em or fold 'em?

When is dental extraction the treatment of choice? Find out in this first installment of a multipart series on what to do to when faced with dental pathology. *By Jan Bellows, DVM, DAVDC, DABVP, FAVD*

The foremost dental decision made daily is whether to leave teeth with suspected pathology to follow up in the future, treat the teeth or extract them. For some teeth the decision is easy, especially if they are mobile. In other situations, having a goal of creating a pain-free mouth that is functional will help you make correct choices. This is the first installment of a series to help you decide how to deliver the best in dental care by extracting teeth. The next installment will cover how to treat what you see, and after that we'll discuss when it's best to do nothing and follow up in the future.

We need to be our patients' advocates when extraction is indicated. Most

clients will not realize their pets are in pain because that pain is masked. In essence, we are doing harm when we do not urge our clients to let us care for painful dental problems. When a client asks, "How will my dog eat after its teeth are extracted?" it's best to respond, "Better than before because we are removing the oral pain." Most clients see a great improvement in their pets' lives within weeks of extractions.

Is the patient's bite functional or poorly functional?

A scissors bite where the maxillary incisors lie just in front of the mandibular incisors and the premolars

interdigitate allows the teeth to work in an efficient, or a functional, manner. When teeth are in abnormal locations due to inherited defects or previous trauma, often an inefficient, or a poorly functional, bite results.

Generally, any time there is a problem with a deciduous tooth, it should be extracted. This includes retention next to the adult tooth, malposition and fracture exposing the pulp (Figures 1A and 1B).

When the adult mandibular canines and incisors impinge or penetrate the maxillary gingiva, extraction or crown reduction and restoration relieves discomfort and creates a functional bite (Figures 2A and 2B).

Conversely, when the maxillary incisors impinge or penetrate the



>>>Figure 1A. A malpositioned deciduous canine tooth impinging the maxillary gingiva.

>>>Figure 1B. Fractured mandibular deciduous canine teeth penetrating the maxillary gingiva.

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>>>Figure 2A. Mandibular distoclusion resulting in impingement and penetration by the mandibular canines and incisors on the maxillary gingiva.

>>>**Figure 2B.** Extraction of the mandibular canines and incisors, resulting in a functional, pain-free bite.

>>>**Figure 3A.** Retained deciduous canines and mandibular mesiocclusion where the maxillary incisors are impinging on the mandibular gingiva.

>>>Figure 3B. One week after surgical extraction of the deciduous canines and maxillary incisors, the impingement has been eliminated.

>>>**Figure 4A.** Malpositioned maxillary and mandibular incisors resulting in crowded teeth prone to periodontal disease.

>>>**Figure 4B.** Resolution of crowding after multiple incisors were extracted.

>>>Figure 5A. A complicated crown fracture of the maxillary fourth premolar (green arrow) and swelling above the mucogingival line (yellow arrows).



mandibular gingiva, extraction of the maxillary incisors creates a comfortable occlusion (Figures 3A and 3B).

When teeth are too close together or extra teeth are present, creating crowding, extraction will often relieve or prevent periodontal inflammation and pain (Figures 4A and 4B).

Should I extract or leave fractured teeth and teeth affected by advanced periodontal disease?

Visible signs. How do you decide if you do not have intraoral radiography? Look for obvious signs of pathology caused by endodontic disease, including pulpal exposure with clinical focal swelling of the face or the alveolar mucosa above the mucogingival line. If the client will not accept referral to a veterinary dentist for advanced endodontic care, extraction is indicated (Figures 5A and 5B).

Probing abnormalities. The dental probe is a valuable instrument that can be used in every oral assessment performed under anesthesia. Small dogs and cats should not have probing depths greater than 2 mm, while larger dogs normally display 4-mm depths around the canines and 1- to 2-mm depths around the incisors, premolars and molars. When the probing depths are greater than 5 mm, surgery is indicated in the form of either open root planing or extraction (Figure 6).

Tooth mobility. Fractured teeth that are significantly mobile due to advanced periodontal disease or root fracture need to be extracted. But these extractions may be a challenge without intraoral radiographs.

How do intraoral radiographs help?

Intraoral radiographs aid the decision-making process whether to leave, treat or extract an endodontically affected tooth. When referral to a veterinary dentist is not in the cards, those teeth affected by internal resorption where the root canal is not only enlarged but nonuniform compared with the contralateral tooth should be extracted along with those teeth that have marked periapical lucency (Figure 7).

When should I extract resorbing teeth?

In cats and dogs, resorbing teeth with pathology extending into the oral cavity should be extracted together with those with marked loss of dental hard tissue. When the tooth resorption extends into the oral cavity, bacteria will gain access into the tooth, causing inflammation necessitating extraction (Figures 8A and 8B).

When should all the teeth be extracted?

Marked chronic stomatitis is thought to be caused by a hyperimmune response to plaque. Full-mouth extraction

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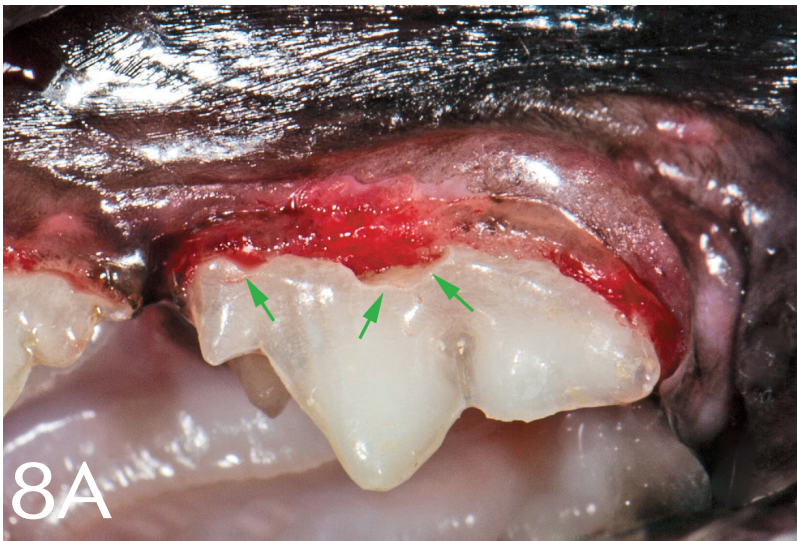
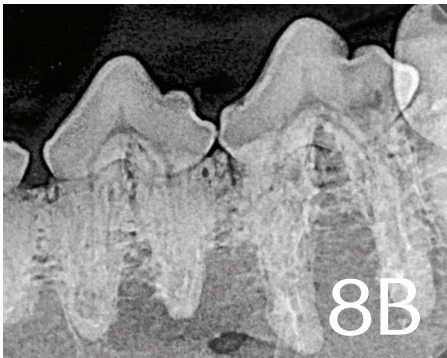
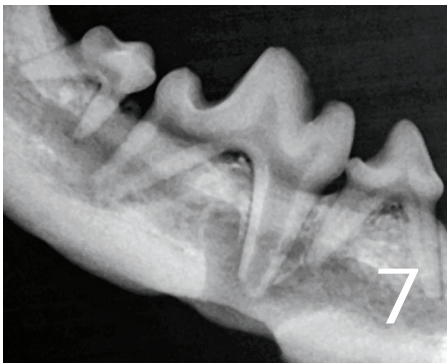
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>>>Figure 5B. A draining fistula apical to the left maxillary first molar secondary to a complicated crown fracture.
>>>Figure 6. A palatal 12-mm probing depth in a dachshund, necessitating extraction.
>>>Figure 7. An intraoral radiograph of the right mandibular fourth premolar and first and second molars affected by endodontic and advanced periodontal disease. Extraction of all three teeth is indicated.
>>>Figure 8A. Tooth resorption of a cat's maxillary fourth premolar (arrows) necessitating extraction.
>>>Figure 8B. An intraoral radiograph of marked root resorption in a dog's third and fourth mandibular premolars with extension into the oral cavity. Extraction is indicated.

eliminates the dental plaque-retentive surfaces, eliminating or at least decreasing inflammation (Figures 9A and 9B).

Comfort vs. pain

Fortunately, the dogs and cats we see in companion animal practice do not need their teeth to survive. They do not have to depend on their teeth to kill prey. For them kibbled, canned or soft human food is delivered to a bowl once or twice a day. Our dental goal is to provide a healthy, functional and pain-free mouth. Often and for good reasons extraction is the treatment of choice. **dvm360**

Dr. Jan Bellows owns All Pets Dental in Weston, Florida. He is a diplomate of the American Veterinary Dental College and the American Board of Veterinary Practitioners. He can be reached at (954) 349-5800; e-mail: dentalvet@aol.com.



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

Indications
SENTINEL® SPECTRUM® (milbemycin oxime/lufenuron/praziquantel) is indicated for the prevention of heartworm disease caused by *Dirofilaria immitis*; for the prevention and control of flea populations (*Ctenocephalides felis*); and for the treatment and control of adult roundworm (*Toxocara canis*, *Toxascaris leonina*), adult hookworm (*Ancylostoma caninum*), adult whipworm (*Trichuris vulpis*), and adult tapeworm (*Taenia pisiformis*, *Echinococcus multilocularis* and *Echinococcus granulosus*) infections in dogs and puppies two pounds of body weight or greater and six weeks of age and older.

Dosage and Administration
SENTINEL SPECTRUM should be administered orally, once every month, at the minimum dosage of 0.23 mg/lb (0.5 mg/kg) milbemycin oxime, 4.55 mg/lb (10 mg/kg) lufenuron, and 2.28 mg/lb (5 mg/kg) praziquantel. For heartworm prevention, give once monthly for at least 6 months after exposure to mosquitoes.

| Dosage Schedule | | | | |
|------------------|---|------------------------|---------------------------|---------------------|
| Body Weight | Milbemycin Oxime per chewable | Lufenuron per chewable | Praziquantel per chewable | Number of chewables |
| 2 to 8 lbs. | 2.3 mg | 46 mg | 22.8 mg | One |
| 8.1 to 25 lbs. | 5.75 mg | 115 mg | 57 mg | One |
| 25.1 to 50 lbs. | 11.5 mg | 230 mg | 114 mg | One |
| 50.1 to 100 lbs. | 23.0 mg | 460 mg | 228 mg | One |
| Over 100 lbs. | Administer the appropriate combination of chewables | | | |

To ensure adequate absorption, always administer SENTINEL SPECTRUM to dogs immediately after or in conjunction with a normal meal.

SENTINEL SPECTRUM may be offered to the dog by hand or added to a small amount of dog food. The chewables should be administered in a manner that encourages the dog to chew, rather than to swallow without chewing. Chewables may be broken into pieces and fed to dogs that normally swallow treats whole. Care should be taken that the dog consumes the complete dose, and treated animals should be observed a few minutes after administration to ensure that no part of the dose is lost or rejected. If it is suspected that any of the dose has been lost, redosing is recommended.

Contraindications
There are no known contraindications to the use of SENTINEL SPECTRUM.

Warnings
Not for use in humans. Keep this and all drugs out of the reach of children.

Precautions
Treatment with fewer than 6 monthly doses after the last exposure to mosquitoes may not provide complete heartworm prevention. Prior to administration of SENTINEL SPECTRUM, dogs should be tested for existing heartworm infections. At the discretion of the veterinarian, infected dogs should be treated to remove adult heartworms. SENTINEL SPECTRUM is not effective against adult *D. immitis*.

Mild, transient hypersensitivity reactions, such as labored breathing, vomiting, hypersalivation, and lethargy, have been noted in some dogs treated with milbemycin oxime carrying a high number of circulating microfilariae. These reactions are presumably caused by release of protein from dead or dying microfilariae.

Do not use in puppies less than six weeks of age.

Do not use in dogs or puppies less than two pounds of body weight.

The safety of SENTINEL SPECTRUM has not been evaluated in dogs used for breeding or in lactating females. Studies have been performed with milbemycin oxime and lufenuron alone.

Adverse Reactions
The following adverse reactions have been reported in dogs after administration of milbemycin oxime, lufenuron, or praziquantel: vomiting, depression/lethargy, pruritus, urticaria, diarrhea, anorexia, skin congestion, ataxia, convulsions, salivation, and weakness.

To report suspected adverse drug events, contact Novartis Animal Health at 800-637-0281 or the FDA at 1-888-FDA-VETS.

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Dogs should be tested for heartworm prior to use. Mild hypersensitivity reactions have been noted in some dogs carrying a high number of circulating microfilariae. Treatment with fewer than 6 monthly doses after the last exposure to mosquitoes may not provide complete heartworm protection. Please see full product label for more information or visit www.virbacvet.com.

See brief summary on page m7

Shaping the future of animal health



* *A. caninum*.

** Prevents flea eggs from hatching; is not an adulticide.



3 reasons to start your exit plan today

This author is sick of hearing, 'I want to sell my practice ASAP'—just like you're sick of hearing, 'I knew I should have brought Max in sooner.'

Don't you get discouraged when you diagnose a pyometra and the animal's owner says, "I know I should have gotten her spayed ... " And isn't it downright depressing when somebody comes in with a pet with a large tumor that's later found to have accompanying lung metastasis, and the owner says, "I knew I should have come in when that mass popped up and started growing fast ... "?

It's hard to know what to say to those people. Yes, life is busy and pulls us in a hundred directions—family, finances, career and other obligations all contribute to procrastination. But to a certain extent, part of good judgment is knowing what can be put off and what demands immediate attention.

I see those lapses in judgment every day, as we all do in the practice of veterinary medicine. Remarkably, though, I also see it often in my veterinary law and consulting practice. Frequently, those same veterinarians who would like to give a stern lecture to their clients who postpone important prophylactic care for their pets call my office to try to fix problems resulting from their own failure to do sensible advance planning in their personal and practice lives.

The most frequent "wish I'd done something sooner" lament we hear is the all-too-common situation where a veterinarian (associate, partner, whatever) contacts us having signed an employment or shareholder agreement without first getting it reviewed by a professional advisor. The situation is always so much simpler when we're able to look at a contract before it's

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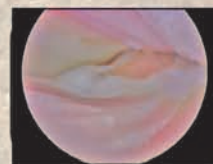
CUE Humeral Implant



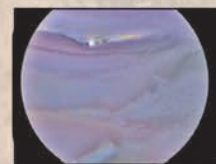
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Post-op cranial-caudal radiograph showing CUE implants in place



Arthroscopic image of severe MCD



Arthroscopic image of CUE 7 months post-op



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been signed and placed into effect.

But nearly as common is the practice owner who calls us saying he wants to sell his hospital “as soon as possible.” I hate hearing those words. It’s akin to having the owner of a 30-pound cat tell you, “He’s started drinking constantly and I know we should have started cutting back his food years ago ...”

So let’s look under the hood of the “I need to sell right away” scenario and see how it happens and what you can do to prepare for the moment when you’re ready to bug out. Here are the top three reasons why it’s essential to start this process today.

1 You’re not immortal

It’s almost like DVMs under the age of 55 feel exempt from the aging process. Whether it’s due to the competition they survived while obtaining their degree or the holistic penumbra that surrounds work with animals, many veterinarians seem to deny that they’ll ever cease to be young. I believe that feeling young is in general a healthy thing, but when a person subconsciously denies advancing age, he or she often procrastinates on business matters related to aging—and that’s an unhealthy thing.

Whether you own a factory, an apartment building or an ownership interest in a professional practice, waiting too long to plan for its eventual disposition is a big mistake. Developing an exit strategy is comfortable and theoretical when begun at a relatively young age. It doesn’t seem imminent so it can be approached logically and objectively.

But those previously immortal veterinarians who are suddenly faced with illness, an empty nest, colleagues and friends passing away, or other reminders that our time is finite can become fearful and tense about their chances of liquidating their practice interest. Those aren’t the sorts of emotions that lead to solid business decisions.

2 You could burn out

Two things I know about burnout: It’s pernicious and it’s insidious. Nobody plans to burn out, but anyone who owns a business, including a veterinary clinic, should plan for the possibility.

The importance of planning for adverse events rises with the personal stake we hold in elements of our present life. If you own classic Corvettes and lose interest in them as you age, no problem. Just send them to an auction and pocket the proceeds.

If you lose enthusiasm for your partnership interest in a clinic or your solo practice animal hospital (but don’t want to walk away until you receive its full value), you may pay a dear price if you want out fast and have no plan. Businesses and professional practices can be sold, but when one is sold in a rush or a panic, the price will almost certainly reflect the urgency. Remember the infamous Wall Street crash of 1929?

3 Buyers might not love your small town

The provincial lifestyle in rural America is disappearing. Hometown boys and girls don’t stay down on the farm anymore. And for generations, these were the folks who, after obtaining a degree and a few years of experience, bought out older practice owners in the small cities where they were raised.

Today, if you own a thriving clinic in metropolitan New York or Los Angeles, there may be a host of potential buyers out there, including other practice owners, big veterinary corporations and recent graduates looking to move to the big city.

But if you live and practice in a smaller town or city with limited entertainment offerings, lousy weather, a deteriorating economy or a lot of veterinary competition, practice buyers may turn out to be in short supply. They can be found, but the search may take time and may even involve cultivating a qualified associate.

The search for the right buyer, qualified both professionally and financially, can rarely be carried out successfully when the seller is desperate to escape his practice. Simple, sensible pre-planning for eventual sale of a veterinary hospital includes the following common-sense steps:

- > Regularly have a qualified professional analyze the clinic’s free cash flow. Is it realistic to think that a bank would lend money to someone interested in your practice?

- > Advise your team that you’re beginning a “long-term search” for a successor so they don’t get edgy when you have potential associates or buyers in to look over your hospital.

- > Spend a few dollars keeping the inside and outside of the building nice. Your clients may tolerate a “vintage” look, but potential buyers are more likely to want good curb appeal.

- > Maximize your contributions to tax-qualified savings such as IRAs and your 401(k) plan. Prepare for the chance that your hospital might not sell for the amount you need to fully fund your retirement.

- > Scan the available information on possible clinic purchasers. Might you cultivate a young competitor nearby? Does anybody at church or your favorite watering hole have a relative who’s in veterinary school?

- > Why not get to know the office staff at your veterinary school admissions office? These folks often pull for students to succeed after graduation. If they know you have a great practice coming up for sale, there’s no reason they couldn’t pass that info along to bushy-tailed DVM candidates from your neck of the woods. After that ... who knows? **dvm360**

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

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Purina **Canine urinary diet**

Purina Pro Plan Veterinary Diets has introduced a canine urinary diet for the nutritional management of dogs at risk for urinary stones. UR Urinary Ox/St Canine Canned Formula is formulated to promote an unfavorable urinary environment for the development of both calcium oxalate and sterile struvite stones in dogs. The new diet was evaluated via both relative supersaturation (RSS) and activity product ratio (APR) testing. RSS provides a detailed analysis of the mineral saturation levels in urine, while APR helps predict urine crystal and urolith formation.

For fastest response visit
purinaveterinarydiets.com



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Brakke-Ipsos **Pet dental study**

The Brakke-Ipsos Pet Dental Market Study includes findings from national surveys of both veterinarians and pet owners. Veterinarians indicate in the study that the majority of the pets they see have dental problems, but the vast majority of pet owners consider their pets' dental status as "normal." The study provides an in-depth analysis of the pet oral care market, including data on the purchases of products and services by pet owners, as well as the dental practices and oral care sales of veterinarians.

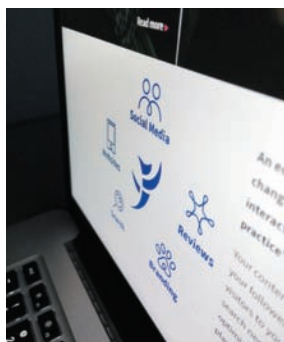
For fastest response contact John Volk at Brakke Consulting, john@volkonline.com; or Colin Siren, Ipsos, colin.siren@ipsos.com



WG Critical Care **Bovine medication**

WG Critical Care announced that Quartermaster Suspension (penicillin-dihydrostreptomycin in oil), which is FDA-approved for intramammary use to reduce the frequency of existing infection and to prevent new infections with *Staphylococcus aureus* in dry cows, is now available from several major veterinary suppliers. The suspension is a combination of 1 million units of procaine penicillin G and 1 gram of dihydrostreptomycin base. It is available in in pails containing 144-by-10-ml syringes and 144 single-use alcohol pads or cartons containing 12-by-10-ml syringes with 12 single-use alcohol pads.

For fastest response visit wgcriticalcare.com/animal-health/animal-health-products/



Beyond Indigo Pets **Veterinary marketing services**

Veterinary marketing agency Beyond Indigo Pets has launched a series of all-inclusive marketing plans designed to help animal care professionals easily and seamlessly consolidate all of their marketing efforts. The four plans can be tailored to meet a variety of veterinary clinic sizes and budgets, from basic startup plans to strategies for large practices with multiple locations.

For fastest response visit
beyondindigopets.com



Boehringer Ingelheim **Equine vaccine label change**

Boehringer Ingelheim Vetmedica has received USDA approval to include "safe for use in pregnant mares" as part of its label claim for the Vetera vaccine portfolio. The USDA approved the additional label claim based on safety studies performed in a total of 446 pregnant mares vaccinated twice during each trimester of pregnancy.

For fastest response call (800) 325-9167 or visit bi-vetmedica.com



Phoenix Design Solutions **Pet bandage company**

Schön A. Gross, founder of DogLeggs and inventor of a variety of veterinary bandaging and support solutions, has formed a new company, Phoenix Design Solutions (PDS). PDS offers the veterinary medical community standard and custom coverage for patients that need elbow protection, carpal and tarsal support, compression, immobilization and hobbling.

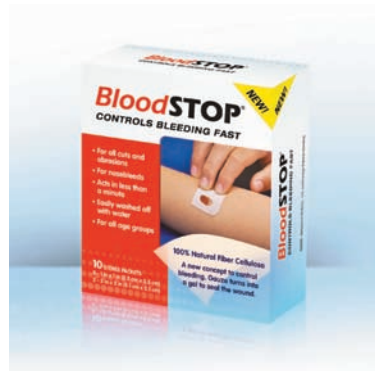
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phoenixdesignsolutionsllc.com or call (703) 715-0333



Bimeda Equine pain medication

Bimeda introduces Flunazine (flunixin meglumine) Equine Paste, an FDA-approved, nonnarcotic, nonsteroidal analgesic with anti-inflammatory and antipyretic activity. Flunazine, used to alleviate inflammation and pain associated with musculoskeletal disorders in horses, is an NSAID approved for oral administration in a 30-g apple-flavored syringe and is active for up to 36 hours.

For fastest response visit BimedaUS.com



Life Science Plus Pet bandage

BloodStop is a bandage used to stop bleeding faster and promote healing. Made from 100 percent natural fiber cellulose, the gauze pad turns into a gel to seal the wound and gently rinses off in water. BloodStop is formed from biocompatible, non-irritating, woven matrices of fibers made from natural plant compounds. It adheres to a wound, initiates blood coagulation, stops bleeding and forms a protective layer to create an optimal environment for wound healing.

For fastest response visit lifescienceplus.com/bloodstop/general-gauze



Miele Professional Washing equipment planning service

Miele Professional, the commercial products division of Miele, has partnered with Attainia, a highly customized equipment planning, budgeting and tracking software. Now healthcare planners, architects and facilities managers have easy access to Miele Professional products, including medical washer-disinfectors, dental instrument washers, undercounter glassware washers, large thermal disinfection laundry systems and more. Planners can add these unique solutions at the budgeting stage through Attainia's capital equipment planning system.

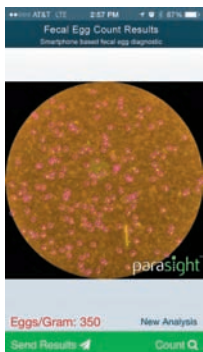
For fastest response visit miele-pro.com



Merial Feline cancer drug

Merial has received a conditional license from the USDA for Feline Interleukin-2 Immunomodulator, which is indicated to delay postsurgical recurrence of fibrosarcomas in adult cats with stage 1 disease. In a European field study, safety and reasonable expectation of efficacy of Feline Interleukin-2 Immunomodulator was demonstrated by administration of the immunotherapy and observation of the time for recurrence after surgery and radiotherapy. Additional potency and efficacy studies are in progress.

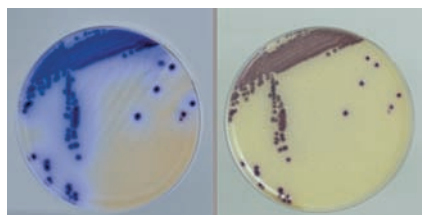
For fastest response call (888) MERIAL-1, option 1, then option 4.



MEP Equine Solutions Smartphone parasitology app

MEP Equine Solutions has received a \$100,000 small business innovation grant from the USDA to develop an app focused on food animal production and protection. The app allows veterinarians to perform a simple on-site test to diagnose the presence of parasites using smartphone technology. The Parasight System provides quantitative results in less than five minutes and emails imaged test results with egg count and type, along with treatment recommendations, to veterinarians and animal owners.

For fastest response visit theparasightsystem.com



Hardy Diagnostics Diagnostic medium

Hardy Diagnostics has released HardyChrom Vibrio, a highly selective culture medium recommended for use in the primary screening, isolation and differentiation of Vibrio pathogens. HardyChrom Vibrio is a chromogenic media that can differentiate *V. cholera*, *V. parahaemolyticus* and *V. vulnificus* on the same plate. The fluorogenic reaction adds another dimension for thorough differentiation. It is also available in the Criterion dehydrated culture media format as well as the prepared plated media.

For fastest response visit HardyDiagnostics.com/HardyChromSS.html



Putney Generic enrofloxacin

Putney has received FDA approval for its Enrofloxacin Antibacterial Injectable Solution. With this approval, Putney can offer an FDA-approved generic of both dosage forms of enrofloxacin developed specifically for pets—flavored tablet and injectable solution.

For fastest response visit putneyvet.com



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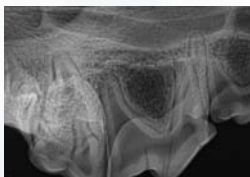
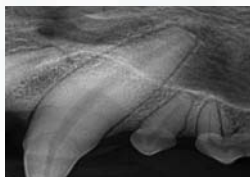


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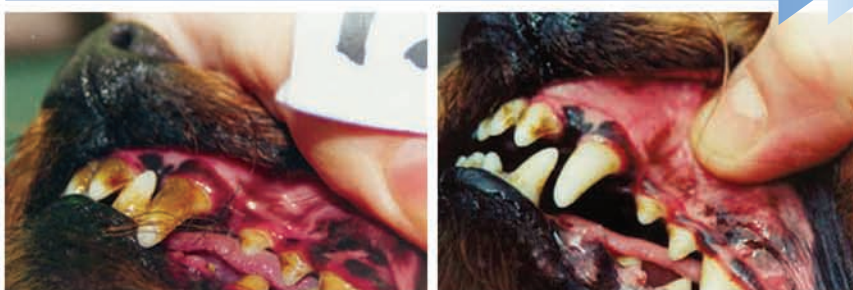
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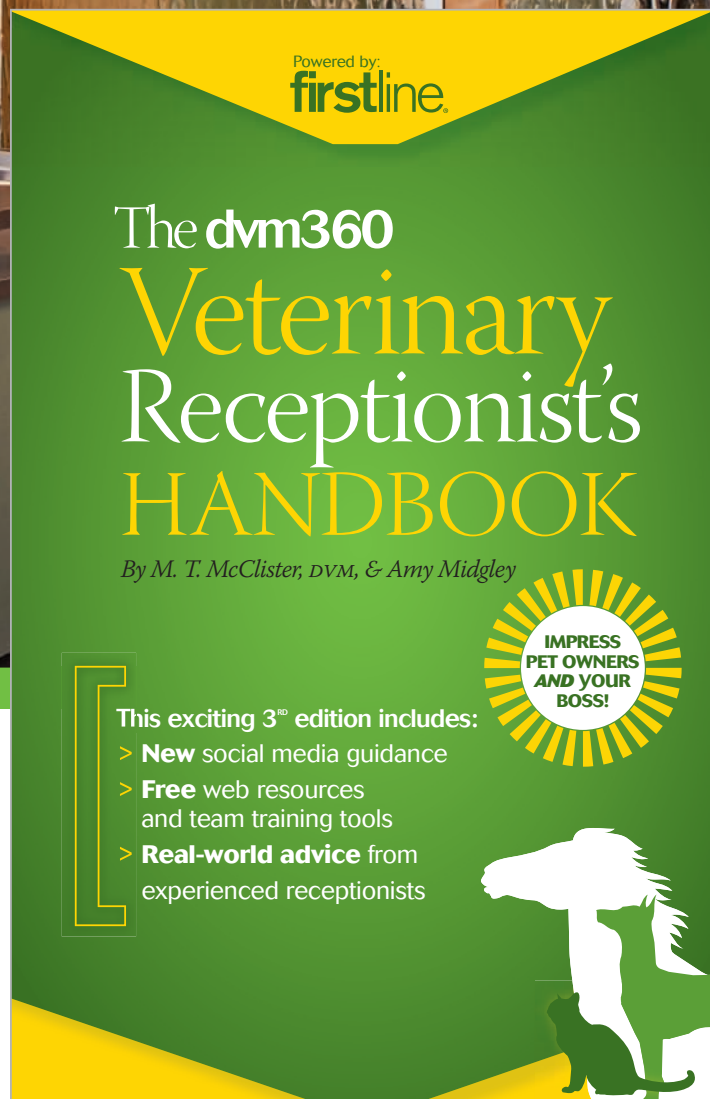


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For a full listing of events in 2015, visit dvm360.com/calendar



August 28-31
CVC Kansas City
(800) 255-6864, ext. 6
thevcv.com/kc



December 3-6
CVC San Diego
(800) 255-6864, ext. 6
thevcv.com/sd



National and international meetings

May 13

Dermatology—Small
Animal Medicine Vet-
erinary Seminar
Plymouth Meeting, PA
(215) 284-7050
delawarevalleyacademyvm.org

May 15-16

Equine
Hindlimb Lameness
Diagnostics & Therapy
Snohomish, WA
(844) 870-6097
vetpd.com/courses-list.php

May 17-20

American Academy
of Veterinary
Pharmacology and
Therapeutics
2015 Symposium

Fort Collins, CO

(970) 492-5458
aavpt.org

May 22-23

Practical Cardiology for
Equine Practitioners
Ashland, VA
(844) 870-6097
vetpd.com/courses-list.php

June 03-06

American College of
Veterinary Internal
Medicine Forum
Indianapolis, IN
(303) 231-9933
acvim.org

June 03-07

Emerald Coast
Veterinary Conference
Sandestin, FL

(678) 309-9800

emeraldcoastvc.com/

June 04-06

Second Annual Ameri-
can College of Animal
Welfare Short Course
Raleigh, NC
(919) 513-6366
cvm.ncsu.edu/connected/acaw.html

June 27

Practical
Microscopic Small
Animal Hematology
Raleigh, NC
(919) 513-6366
cvm.ncsu.edu/connected/acaw.html

June 27-28

Communication Coach-
ing Skills Workshop

Fort Collins, CO

(970) 297-1273
cvmb.colostate.edu/clinsci/ce/products/70-veterinary-communication-coaching.aspx

June 28

Veterinary Dentistry &
Radiology for the Vet-
erinarian and Technician
Denver, CO
(941) 276-9141
veterinarydentistry.net/vet-dental-course-bloomfield-hills-michigan

July 19

Veterinary Dentistry &
Radiology for the Vet-
erinarian and Technician
Bloomfield Hills, MI

(941) 276-9141

veterinarydentistry.net/vet-dental-course-denver-colorado

August 05-08

2015 Therio
Conference
San Antonio, TX
(334) 395-4666
therio.org

August 08-09

Frank Workshop
Fort Collins, CO
(970) 297-1273
csu-cvmb.colostate.edu/academics/clinsci/veterinary-communication/Pages/frank-workshops.aspx

Local and regional meetings

May 13

Massachusetts
Veterinary Medical
Association Spring
CE Conference
Marlborough, MA
(508) 460-9333
massvet.org

GA Veterinary Manag-
ers Association Meeting
TBA
(678) 467-2750
gavma.com

May 14-17

2015 North Carolina
Workshop in Laboratory
Animal Medicine
Raleigh, NC
(919) 513-6366
cvm.ncsu.edu/connected/WLAM.html

May 15-17

New York State Spring
Veterinary Conference
Rye Brook, NY
(607) 253-3200
vet.cornell.edu/nysvc

May 20-21

16th Annual
Pennsylvania VMA
Spring Clinic
State College, PA
(888) 550-7862
pavma.org

June 07-09

Idaho VMA Annual
Conference
Sun Valley, ID
(208) 922-9431
ivma.org/site

June 17-21

Southeast Veterinary
Conference
Hilton Head, SC
(800) 441-7228
scav.org/events/sevc/index.htm

June 18-19

Vermont VMA Summer
CE Conference
Burlington, VT
(802) 878-6888
vtvets.org

June 18-21

Pacific Veterinary
Conference
Long Beach, CA
(800) 655-2862
cvma.net

June 21-23

Montana Veterinary

Medical Association
Summer Meeting
Big Sky, MT
(406) 447-4259
mtvma.org

July 25-26

UC Davis 8th Annual
Back to School Seminar
Davis, CA
(530) 752-3905
vetmed.ucdavis.edu/ce/

September 02

North Carolina Acad-
emy of Small Animal
Medicine / NCASAM
1-Day Meeting
Sanford, NC
(910) 452-3899
ncasam.org

September 03-04

Montana Veterinary
Medical Association
Fall Symposium
Bozeman, MT
(406) 447-4259
mtvma.org

September 09

GA Veterinary Manag-
ers Association Meeting
TBA
(678) 467-2750
gavma.com

September 17-18

Iowa VMA 133rd
Annual Meeting
Ames, IA
(800) 369-9564
iowavma.org

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Do you ever wonder why somebody becomes a veterinarian? Sometimes I do. What moves a person to spend \$300,000 and eight or nine years of their life to take care of the health needs of animals?

I've been a veterinarian for 25 years, and just this morning I was considering that very question. It's

watched little kids cry because their horse died from a necrotic small intestine. I've lain awake at night trying to remember what an important role my team and I play in many lives.

All those negative things certainly weigh heavy on me. But as I considered them a little deeper, it dawned on me: None of them would matter a bit if I didn't care.

Here's where I find comfort in the midst of all this: Veterinarians play an important role in the lives of many people. We do it because we love the human-animal bond on many levels, not because it makes us rich.

been a trying few weeks and the pressures of the job have taken a bit of a toll on me. I've been dealing with some of the bad things that come with veterinary medicine: animals dying under anesthesia, horses that are worth millions of dollars but are still just horses and no one knows it, employees who don't care if things turn out well, clients who expect me to work on their animals for free, clients who don't do what they've been instructed and then wonder why their pets are worse, rising medication prices and sometimes total lack of drug availability.

I've spent hours on the telephone with insurance companies. I've

Veterinarians may be a bit of a different breed. They spend all that money and time training to tend to sick critters because something within them moves them to master an art that's beyond materialism and reward.

Consider this: When I graduated from veterinary school in 1990, the average debt load for a graduating student was somewhere around \$25,000. Some had more; some had less, but that was pretty average. When I graduated, I took a job that paid \$24,000 a year, which meant I was making in one year just a touch less than the average debt load.

Today, students graduate with debt of up to \$300,000 and the aver-

age starting salary is somewhere around \$70,000. This means some students will carry a debt load of three to four times their annual salary. It will take them 20 to 30 years to pay back at a rate of \$18,000 to \$20,000 dollars per year.

This monetary burden comes with a price. Some of the best and brightest young people of our day have chosen other paths simply because of the money. Some young veterinarians who graduated and started practicing have been horribly frustrated because the burden of their student loans keeps them working a huge number of hours per week—and they're unable to buy a house or even a car.

Here's where I find comfort in the midst of all this: Veterinarians play an important role in the lives of many people. We do it because we love the human-animal bond on many levels, not because it makes us rich. We appreciate the effects of animals on the lives of people and we appreciate the people who find a smile from a critter.

A huge financial burden is certainly a challenge, but one good thing that results from such a burden is this: We're doing what we do for the right reason— we love our clients and patients, and all the rest is just a means to get us there. **dvm360**

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

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*Source: Survey conducted in February 2014 of small animal
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A close-up photograph of a man and a light-colored dog lying in bed. The man is on the right, smiling with his eyes closed, wearing a dark grey t-shirt. The dog is on the left, looking up at the man's face. They are both resting on a bed with a green and yellow striped pillow. The background is softly blurred.

I haven't needed an alarm clock
since Brody came along.

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