



# firstline®

The best read veterinary team journal. Bam.

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IS LEAKING!"**  
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## Suffer a sea change

dvm360  
leadership  
challenge

When the winds of change blow through your practice—or your life—embrace the chance to explore new advances in medicine, new opportunities for your career and new possibilities for your life.

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# 3 HACKS FOR ANESTHESIA

By Sarah J. Wooten, DVM

Uneventful. Routine. Boring. Not how you want to define your life, but definitely how you want to define your anesthetic cases. In these cases, uneventful is actually the ultimate goal! Before you or your team rev up for your next full surgery day, here are some tips I found ridiculously helpful from a recent Fetch dvm360 Launchpad Learning session, “Anesthesia basics and beyond: Things you learned in school but have forgotten.” In this session, the original Anesthesia Nerd, Tasha McNerney, BS, CVT, VTS (anesthesia and analgesia), discussed how to make your anesthesia as smooth and uneventful as possible.



## 1 The critical period for brachycephalics

McNerney says brachycephalics are most likely to have a problem with hypoxia during induction or postoperatively. Monitor these guys closely at all times, but especially during induction and until they are fully recovered.

## 2 Is it pain or is it dysphoria?

McNerney says that while dysphoric patients are not focused at all on their surroundings, patients in pain will display an element of focus and awareness of surroundings. If you have a postop patient in which you can't tell the difference between pain and dysphoria, reduce drugs that can cause dysphoria (such as a constant-rate infusion of fentanyl) and add in something like dexmedetomidine, which offers pain control and sedation. Acepromazine is not a good choice because it does not provide any pain control, says McNerney.

## 3 Well-thought-out warmers

McNerney prefers a Hot Dog patient warming system to a Bair Hugger because it doesn't dry out her electrocardiography leads, it's quiet, and it doesn't blow air around the surgical site. Blowing air has been associated with increased bacterial counts near surgical sites, which is a no-no, especially with orthopedic surgery. If you don't have a Hot Dog, McNerney suggests using warmed intravenous fluids and wrapping the patient in bubble wrap (core and extremities) to retain heat. It's cheap and easy.

Want more? Check out six more tips at [dvm360.com/anesthesiahack](https://dvm360.com/anesthesiahack).

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*Firstline* (Print ISSN: 1095-0613, Digital ISSN: 2150-6574) is published 6 times/year as combined issues in Jan/Feb, March/April, May/June, July/Aug, Sept/Oct & Nov/Dec by UBM LLC, 131 W. First St., Duluth, MN 55802-2065. Subscription rates: one year \$21.00, two years \$36.50 in the United States & Possessions; \$31.50 for one year, \$57.00 for two years in Canada and Mexico; all other countries \$42.00 for one year, \$78.00 for two years. Single copies (prepaid only) \$10.00 in the United States; \$14.00 in Canada, Mexico, and \$16.00 in all other countries. Periodicals Postage Paid at Duluth, MN and additional mailing offices. POSTMASTER: Please send address changes to *Firstline*, P.O. Box 6086, Duluth, MN 55806-6086. Canadian G.S.T. number: R-124213133RT001. PUBLICATIONS MAIL AGREEMENT NO. 40612608. Return Undeliverable Canadian Addresses to: IMEX Global Solutions, P.O. Box 25542, London, ON N6C 6B2, CANADA. Printed in the U.S.A. © 2018 UBM. All rights reserved. No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical including by photocopy, recording, or information storage and retrieval without permission in writing from the publisher. Authorization to photocopy items for internal/educational or personal use, or the internal/educational or personal use of specific clients is granted by UBM for libraries and other users registered with the Copyright Clearance Center, 222 Rosewood Dr., Danvers, MA 01923, 978-750-8400 fax 978-646-8700 or visit [http://www.copyright.com](https://www.copyright.com) online. For uses beyond those listed above, please direct your written request to Permission Dept. fax 440-756-9255 or email: [mcannon@advanstar.com](mailto:mcannon@advanstar.com). UBM Life Sciences provides certain customer contact data (such as customers' name, addresses, phone numbers, and e-mail addresses) to third parties who wish to promote relevant products, services, and other opportunities that may be of interest to you. If you do not want UBM Life Sciences to make your contact information available to third parties for marketing purposes, simply call toll-free 866-529-2922 between the hours of 7:30 a.m. and 5 p.m. CST and a customer service representative will assist you in removing your name from UBM Life Sciences's lists. Outside the U.S., please phone 218-740-6477. *Firstline* does not verify any claims or other information appearing in any of the advertisements contained in the publication and cannot take responsibility for any losses or other damages incurred by readers in reliance on such content. *Firstline* cannot be held responsible for the safekeeping or return of unsolicited articles, manuscripts, photographs, illustrations, or other materials. Address correspondence to *Firstline*, 8033 Flint, Lenexa, KS 66214; (913) 871-3800; email [firstline@ubm.com](mailto:firstline@ubm.com). To subscribe, call toll-free 888-527-7008. Outside the U.S. call 218-740-6477.





A person is in a downward-facing dog yoga pose, with their hands and feet on a reflective floor. A small white kitten is standing on the person's right foot. The background is a warm, golden glow.

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# PEARLS

(Lustrously good advice and tips)

## The dogs of Otavalo

**Veterinary professionals band together to help hundreds of street dogs in Ecuador in need of care.**

*By Kristen Cooley, BA, CVT, VTS (anesthesia)*



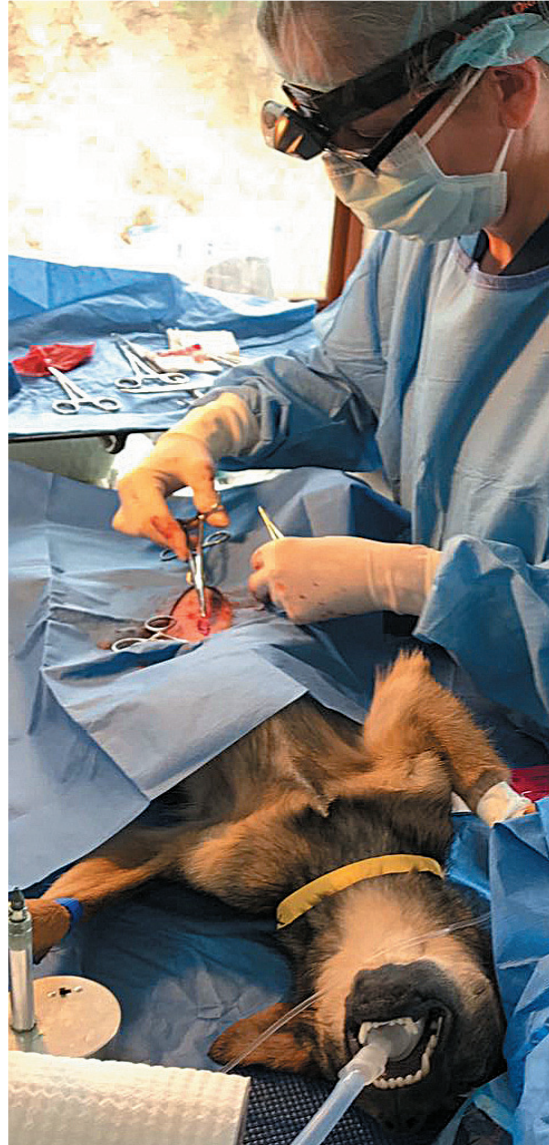


Sometimes feelings of helplessness can paralyze us, and sometimes they can propel us forward. For Azadeh 'Azi' Chegini, it was the latter. In April 2016, Chegini was visiting the home of friends in Otavalo, Ecuador. Chegini came across a street dog with two broken legs—and it seemed as though this poor dog had been sitting on the side of the road for days. She was in great pain but too weak to move or make noise.

Chegini took the dog into her arms and made a promise that she would come back to Ecuador with help. The dog was left with animal protection in the city of Quito as Chegini boarded a plane back to the United States. On that flight back to Virginia, the organization The Dogs of

Otavalo was born. Chegini, a Zoetis Pharmaceutical rep in the Virginia area, was determined to return to Otavalo with an army of veterinary professionals, including veterinarians, technicians and others to help the forgotten street dogs. The goal was to provide high-quality care to at least 300 dogs and cats over six days. Volunteers would need to carry more than 3,000 pounds of supplies and equipment from the United States in checked luggage to turn an old concrete community center building into a fully functioning animal hospital. Chegini began recruiting volunteers and formulating a plan. Read how she brought high-quality veterinary care to the dogs of Otavalo at [dvm360.com/Otavalo](http://dvm360.com/Otavalo).

*Kristen Cooley, BA, CVT, VTS (anesthesia), is an instructional specialist at the University of Wisconsin School of Veterinary Medicine and a consultant in Veterinary Anesthesia Support and Training.*







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## Get a paw up on your new job

Hey there. New here? Whether you've worked at a veterinary practice for 10 minutes or 10 years, a new position means it's time to grow.

Let us help. Here we've compiled nose-to-tail advice on taking on your new role, whether you're the new receptionist, technician, practice manager or associate. Visit [dvm360.com/pawup](http://dvm360.com/pawup) to find strategies to make this career move your best move ever. Then check out page 20 for advice to manage your vet life transition.

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## THE TOP 10 FUNNIES OF 2017

Need a laugh? We scoured the fun center to bring you the top cartoons and articles of this year. Check them out at [dvm360.com/10funnies](http://dvm360.com/10funnies).



## TOP 10 FUNNIES OF 2017





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

#### Important Safety Information

**BRAVECTO Chews for Dogs:** The most common adverse reactions recorded in clinical trials were vomiting, decreased appetite, diarrhea, lethargy, polydipsia, and flatulence. Bravecto has not been shown to be effective for 12-weeks' duration in puppies less than 6 months of age. Bravecto is not effective against lone star ticks beyond 8 weeks after dosing. Please see Prescribing Information on page 08.

**BRAVECTO®**  
(FLURALANER)

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Flavored chews for dogs.

#### Caution:

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

#### Description:

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

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

#### Indications:

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

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

#### Dosage and Administration:

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

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

Bravecto should be administered with food.

#### Dosage Schedule

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

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

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

#### Contraindications:

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

#### Warnings:

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

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

#### Precautions:

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

#### Adverse Reactions:

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

#### Percentage of Dogs with Adverse Reactions in the Field Study

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

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

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

#### Clinical Pharmacology:

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

#### Mode of Action:

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

#### Effectiveness:

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

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

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

#### Animal Safety:

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

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

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

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

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

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

#### Storage Information:

Do not store above 86°F (30°C).

#### How Supplied:

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

NADA 141-426, Approved by FDA

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Client handout:

# HELP!

## My dog is leaking!

Your clients have noticed their dog leaving wet spots behind. Here's a handout to help explain what's wrong and how you can help.

Incontinence in dogs can be a situation your veterinary clients have never thought of before. Managing a leaky pet can be even more unheard of. Ease their minds with this client handout that covers what incontinence is, why it might be caused and what can be done about it. Visit [dvm360.com/leakydog](http://dvm360.com/leakydog) to download a printable copy.



# Shred your patients' fear-based aggression

Fixing behavioral problems in patients starts with removing inciting stimuli.

By John Ciribassi, DVM, DACVB

**S**eparation anxiety and phobias are two of the most common behavior problems that veterinary behaviorists face. Even more common still? You guessed it: aggression. Traditionally, dominance aggression is most often diagnosed, especially when evaluating owner-directed aggression.

So how do we shred these behavioral issues before they take a turn for the worse? One key facet of the basis of treatment is to remove exposure to inciting stimuli. Have your clients try these tips at home.

**1 Attempt response substitution.** Discontinue all forms of punishment. Focus instead on distraction and redirection of inappropriate behavior to more appropriate responses that you can then reinforce.

**2 Use a head halter.** Help facilitate response substitution using an indoor drag leash. A head halter decreases arousal and allows safe, efficient, nonemotional interruption of problem behaviors.

**3 Avoid reinforcement** of the behavior by withdrawing in response to aggression or giving positive attention (telling the dog, "It's all right").

**4 Have unfamiliar people ignore the dog** at first greeting to

allow more time for the dog to assess the situation without feeling threatened.

**5 Identify and avoid fear-inducing triggers.** For example, if the house has several young children, isolate the dog to avoid potentially negative interactions.

**6 Increase consistency of owner and dog interaction.** Instruct pet owners to always give a command, wait for a response and reward.

**7 Avoid inconsistent, casual interactions** by ignoring all attention-seeking behaviors. Punishment should never be used.

**8 Train with reinforcement methods.** This is often called "Nothing in life is Free" or "No Free Lunch."

**9 Find the inciting stimuli and—most important—get rid of it** to bring pet owners (and pets!) one step closer to living a stress-free life. This, along with avoiding possible trigger stimuli in the future, using counter conditioning and desensitization and adding appropriate medication where needed can make a serious difference.

*John Ciribassi, DVM, DACVB, is a veterinarian with Chicagoland Veterinary Behavior Consultants in Carol Stream, Illinois.*





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# Why aren't you talking about **feline heartworms**?!

By *Brendan Howard, Business Channel Director*

A veterinary visit is busy. There's a lot to talk about. And you're putting your brilliant mind to work at tunneling through the patient history and client's information to figure out what's most important to talk about right now. But Ciera Miller, CVT, VTS (clinical practice), with Metzger Animal Hospital in State College, Pennsylvania, really hopes that includes heartworm disease and heartworm preventives when it's a cat you've got on the exam room table (or, with those rare, strangely calm cats, wrapped around your ankle looking for attention).

"Veterinary technicians usually have the biggest role in the discussion as we're the ones getting a history and talking to owners about what's recommended," Miller says. "But, yes, I know it's common for veterinary staff to recommend less vaccines and often no preventive medications for cats who stay strictly indoors."

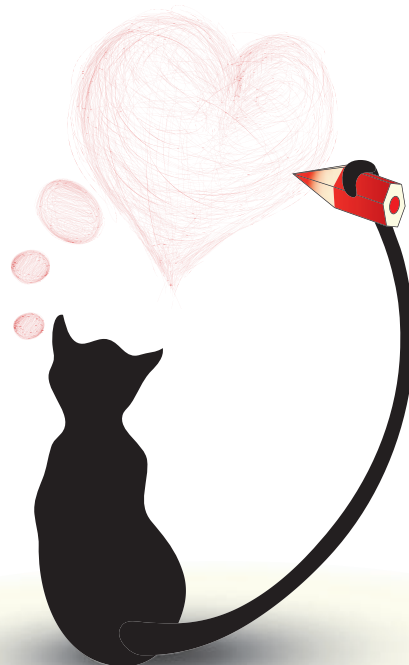
But because the health consequences for an infected cat are so grave, Miller really wants to press the point home with cat owners.

"We need to remind them that although the chances are greatly lowered, it's possible for indoor cats to be infected with heartworm," she says. "It only takes one mosquito to transmit the disease, and cats who live in areas of larger mosquito populations are at an even greater risk."

OK, OK, you knew all that already. So now the question is: Why don't you recommend it all the time?

"I believe that many veterinary staff members are reluctant to push feline prevention medications either because they themselves do not believe in their necessity or because they have experienced a long history of clients declining them," Miller says, echoing the reality that for many DVMs and their teams, too many "no" answers over a day, a week or a career can be exhausting if you take them personally. Don't. Up your game, Miller says.

"This is where educating ourselves the best we can about the risk for heartworm disease can aid in accurately and efficiently making our recommendations."



## Warm up on heartworms

Uhhh, I could have phrased that better, in retrospect. Regardless, here are three steps from Ciera Miller, CVT, VTS (clinical practice), to get your pulse pounding to educate clients about heartworm disease and prevention. (See? I made a heartbeat joke there.)

### 1. Get updated education for staff members.

Many studies have shown that feline heartworm disease is more prevalent than we'd thought in the past.

### 2. Get help from your favorite, trusted veterinary drug reps,

who may have educational materials on heartworm disease, preventive measures and annual screening tests.

**3. Put it all to work.** Team members who take these opportunities to learn more about the disease—including the latest, updated statistics—may be more willing and better equipped to have the often-dreaded feline heartworm prevention talk.

"As with any aspect of veterinary medicine, the more we know, the better we can continue to raise the standard of care for our patients," Miller says.





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<sup>1</sup>Veterinarian-supervised feeding study with 351 client-owned pets; 314 pets completed after 67 days. Data on file. Hill's Pet Nutrition, Inc.

<sup>2</sup>Data on file. Hill's Pet Nutrition, Inc.

<sup>3</sup>Data on file. Hill's Pet Nutrition, Inc.

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# TOP TECH FOR TECHS

From head to toe to exam-room ready, here's everything a veterinary tech needs to get through a day.

By Julie Carlson, CVT

**A**s veterinary professionals, we endure long days filled with activities that include standing still for hours in the operating room, wrestling dogs on the floor and

running around the hospital tending to patients. We all have some things that get us through those long days, and here are mine. Let's start at the top and work our way down, shall we?

## Scünci No Slip Grip Hair Ties

Until about a year ago I had thigh-length hair; it's now shoulder-length. In both situations, I do braids, buns, ponytails and sometimes this kind of weird Princess Leia thing. The only hair ties that are able to keep my locks in place through the day without causing a lot of breakage are these. They also come in enough colors that I can match them to my scrubs.

## Chapstick

It keeps my lips from drying out and cracking during long days in the operating room when I don't get a lot in the way of fluids. It's also not sticky like some lip glosses, so the cat hair doesn't stick to my lips. That's not a good look on anyone.

## Lydia's Select 4-Pocket V-Neck Scrub Top

I heart scrubs. Not gonna lie, wearing scrubs played into my decision to leave office work. I don't have to think about what I'm going to wear each day beyond what color I feel like putting on. I've tried a lot of different brands, but this brand keeps me coming back for more. I also like S.C.R.U.B.S. brand because they come in a lot of fun patterns, but they can be pricey. Lydia's scrubs are about half the price, and there's a wide variety of colors to choose from that change with the season. I hate feeling all fidgety and pulling on my clothes throughout the day, and these feel comfortable enough that I can forget they're there. They do tend to run small, so I suggest ordering a size bigger than you usually would. Don't let a number define you, ladies; no one's going to know anyway.





### Stethoscope

I used to have a Prestige Medical stethoscope with transparent green tubing, but something happened and it started growing some kind of fuzzy gunk inside the tube. One of the doctors and I tried to MacGyver a cleaning device from cotton-tipped swabs, but it was useless. So I bought a Littmann Classic II, and I really like it. I'm not sure what the difference is in the material used in the tubing, but it doesn't slide around on my neck and give me hickey marks anymore. I can hear really well with it and the earpieces are very comfortable.

### Bandage scissors

I like Knowles Bandage Scissors by Miltex Co. They're offset just a little, and the blades are more slender than other scissors, allowing me to slip them under those little cat bandages. They're also a nice matte finish, so I don't get a lot of icky tape residue that stays on them.

### Highlighter

Sharpie Accent Liquid Highlighter is my favorite of all time. I used these through school, so they hold a sentimental value for me as well. But their performance stands on its own. They work very smoothly, and the tip keeps a sharp edge so I can make clean marks on treatment sheets. I also like that I can see the liquid sloshing around inside so I know when it's time to buy a new one.

Fun fact: if you use a highlighter like this one with that neon yellow color (not just the plain yellow) you can write "Original—use to make copies" on things and it won't show up when you copy it!



## Post-its

We've all worked for that doctor who comes over and is all, "Max is gonna need a heartworm test, get some urine from Cleo, the dog in room three just threw up, order some leptovaccines, call Mrs. Jones to let her know she needs to bring Fifi back in and tell me when you have fecal results on Baxter."

Post-its help. In my early days as a tech I wrote everything on my hand. That only works until the first time you have to wash. I moved on to writing things down on paper towels, but if you drop it someone will think it's trash and pitch it. I have finally graduated to using actual paper. My pocket notebook comes in handy (more on that later), but Post-its are nice because I can stick them on things.



I start a heartworm test, set my timer, and BAM! Post-it with the pet's name goes on the counter with the test. I start a load of laundry and BOOM! Post-it telling the team that the pink blanket belongs to Princess. I highly recommend them.

## Mini notebook

I have a notebook that I keep with me always. It has notes on which tests are included in which blood panels, how much our most common products cost, preferences for each of our doctors (Dr. A likes country music in the OR. Dr. B likes to take vitals himself), and other things that I need to know on pretty much a daily basis. I got mine from some bank or mortgage company—I can't remember who—but it has a nice plastic cover on it that protects it from my other pocket goodies. I have another handy notebook I keep in my locker called a Nerd Book. Some of you might be familiar with this concept. My lab tech

teacher had us make one in school, and it has proven to be extremely valuable throughout my career.

In this book are procedures for tests (ACTH stim test, LDDS test, clotting time tests), info on detection and identification of internal and external parasites, hematology parameters for multiple species, microbiology procedures and a bunch more stuff. This little gem has been coveted by many and is something I've even had my students create on their own. It's impossible to keep everything in our heads all the time, so my Nerd Book has really proven to be invaluable.

## Suture removal scissors

I keep my own around because you can never find a sharp pair when you need one, am I right?

## Slip lead

I can't count how many times I've seen a dog slip out of its collar or come in on a flexible leash. I've learned to keep a slip lead on me all the time so I don't lose a dog while I'm walking it to the treatment room. It's flat enough that it doesn't take up a lot of room in my pocket and it's machine washable if it gets something gross on it. My personal lead is kind of an obnoxious rainbow color so I know it'll make it back to me. Plus I like rainbows.

## Nail trimmers

I keep a little cat nail trimmer and a small dog nail trimmer on me. I actually prefer a small trimmer for dogs—even the big dogs—because I can take little nips at different angles to round off the nail, leaving less sharp edges and avoiding cutting the quick.

## Thermometer

There are lots of thermometers out there, but this is my fave. I got this one during my internship and it's still humming ... same battery, even! I think it may be immortal. I like it because it has a flexible tip, it takes an accurate reading in only six seconds and the whole body of it is smooth, which allows me to clean it thoroughly.





# Raise your arachnid radar

The tick invasion is already in your area.  
Help your clients batten down the hatches  
and protect their pets.

p2



## TICK CONTROL

February 2018  
[dvm360.com/toolkit](http://dvm360.com/toolkit)

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# Raise your arachnid radar

Much less of an occasional blip and more of a perpetual ping, the tick invasion is already in your area. Help your clients batten down the hatches and protect their pets. *By Sarah Wooten, DVM*



**T**icks! These obligate blood-sucking arthropods and the diseases they carry are on the rise, and if you aren't already hitting tick prevention hard with your clients, there's no time like, well, right now! Fetch dvm360 conference speaker Richard Gerhold, DVM, MS, PhD, is on deck with what's new in tick-borne disease, full of advice to assist you in your battle with these super stealthy arachnid vampires.

### **Recommend year-round tick prevention.**

In much of the United States, there isn't a "break" from tick season. *Ixodes* species ticks are out in the fall and winter, says Dr. Gerhold. To protect your clients, strongly recommend year-round tick prevention.

### **Ticks live indoors. (Ewww. Really?)**

*Rhipicephalus sanguineus*, the brown dog tick, is a tropical tick that doesn't survive the winter outdoors in temperate areas. So Dr. Gerhold warns that these spooky ticks can hide in warm indoor nooks and crannies for up to a year, waiting for the right host to come along. Don't forget though that the brown dog tick can survive outdoors year-round in Arizona and New Mexico and has been infecting dogs and people with Rocky Mountain spotted fever, causing human morbidity and mortality.

### **Pull, don't twist.**

When it comes to tick removal, keep "pull, don't twist" in mind, which is contrary to popular belief. Dr. Gerhold says to tell clients that when they encounter an embedded tick, they should slowly pull the tick straight out to avoid breaking the hypostome. The hypostome (mouth part) may transmit pathogens, and if you twist you risk breaking it. Go to [dvm360.com/ticktoolkit](http://dvm360.com/ticktoolkit) for a client handout on tick removal best practices.

### **Positive in-house test result? Don't treat the result ...**

It happens all the time—a clinically normal, happy, wagging dog comes up positive for *Ehrlichia* species. What to do? Treat the animal, not the test, Dr. Gerhold says.

Tell the owner this: "The test indicates your dog has been exposed to ticks. Now we need to run additional

tests to see if your dog actually has the disease, because the result could be from antibodies, or it could be a false positive." Then recommend a complete blood count and serum chemistry profile. If you see a thrombocytopenia or an anemia, then the index of suspicion goes up, especially if the dog has joint pain or neurologic dysfunction.

If you have a positive result for Lyme disease, do all of the above and also add in a urinalysis to look for proteinuria. Serologic tests take a while (especially IgG), so polymerase chain reaction (PCR) testing is best for early infections, Dr. Gerhold says. The gold standard is to run both tests at the same time. Lyme disease moves into tissues very quickly and is difficult to diagnose via serology. With Lyme disease, Dr. Gerhold recommends performing a biopsy of the skin.

## Test the tick!

While waiting on serology, if you have an animal with clinical signs and a tick that came off the animal, you can ship the tick off to a laboratory and have it DNA tested. If it is positive, then you have a diagnosis. If the tick comes back negative, however, it doesn't rule out disease because infection may have been transmitted by another tick that has already fallen off, says Dr. Gerhold.

## Cats deserve tick protection too.

*Cytauxzoon felis* is a rapidly fatal tick-borne disease mainly vectored by the lone star tick seen in domestic cats on the eastern side of the United States. The bobcat is the main reservoir host. If a cat recovers, which is uncommon, Dr. Gerhold says it may be an infected carrier for life. Merozoites penetrate macrophages and replicate rapidly, causing the macrophages to swell. This can cause ischemic necrosis that may resemble saddle thrombus. Other signs include anorexia, fever, and pale mucous membranes. The piroplasm stage occurs late, and cats may die even before it occurs, so Dr. Gerhold says a negative blood smear should not be considered diagnostic. Confirmatory testing is through PCR testing. Historically, imidocarb was used for treatment, but the success rate was poor. Dr. Gerhold says the current recommended treatment is atovaquone and azithromycin. In endemic regions, the most effective prevention is to apply products such as fipronil and to keep cats indoors to minimize exposure.

## The CAPC website is your friend.

Local disease prevalence should be used as a lens through which to interpret diagnostic test results. The Companion Animal Parasite Council has put together a great website that includes parasite prevalence maps to help you interpret your data ([capcvet.org](http://capcvet.org)).





## Don't be afraid of the great outdoors.

Many times, clients are so spooked by the idea of themselves or their dogs acquiring a tick that they stop enjoying playing outside. Encourage your clients that with a few simple precautions, there is no need

to forgo the health benefits of being in nature. Dr. Gerhold's tips?

Wear light-colored clothing, tuck shirts into pants and pants into socks, apply tick control to the pets, and do a thorough tick check on humans and dogs after enjoying Vitamin D time.

Some tick particulars:

## Did you know ... ?

- > After a female tick's last blood meal turns into eggs, she falls off the host, uses the blood meal to make eggs, ruptures, and releases anywhere from 3,000 to 8,000 eggs.
- > Other than mosquitoes, ticks are the second-most-important disease vector on the planet—80% of the world's cattle are infested with ticks.
- > Most ticks that are pertinent in veterinary medicine are three-host ticks.
- > Immature *Ixodes scapularis* ticks prefer to feed on lizards, and lizard serum may lyse *Borrelia* species organisms.
- > Tick larvae have six legs, and nymphs and adults have eight legs.
- > Only nymph and adult ticks can transmit *Borrelia* species that cause Lyme disease.





#### FOR ORAL USE IN DOGS ONLY

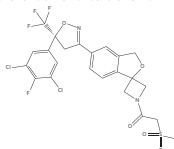
**CAUTION:** Federal (USA) law restricts this drug to use by or on the order of a licensed veterinarian.

#### Description:

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

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

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



#### Indications:

SIMPARICA kills adult fleas, and is indicated for the treatment and prevention of flea infestations (*Ctenocephalides felis*), and the treatment and control of tick infestations (*Amblyomma americanum* (lone star tick), *Amblyomma maculatum* (Gulf Coast tick), *Dermacentor variabilis* (American dog tick), *Ixodes scapularis* (black-legged tick), and *Rhipicephalus sanguineus* (brown dog tick)) for one month in dogs 6 months of age or older and weighing 2.8 pounds or greater.

#### Dosage and Administration:

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

#### Dosage Schedule:

Body Weight	SAROLANER per Tablet (mg)	Number of Tablets Administered
2.8 to 5.5 lbs	5	One
5.6 to 11.0 lbs	10	One
11.1 to 22.0 lbs	20	One
22.1 to 44.0 lbs	40	One
44.1 to 88.0 lbs	80	One
88.1 to 132.0 lbs	120	One
>132 lbs	Administer the appropriate combination of tablets	

SIMPARICA can be offered by hand, in the food, or administered like other tablet medications. Care should be taken that the dog consumes the complete dose, and treated animals should be observed for a few minutes to ensure that part of the dose is not lost or refused. If a dose is missed, administer SIMPARICA and resume a monthly dosing schedule.

SIMPARICA should be administered at monthly intervals.

#### Flea Treatment and Prevention:

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

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

#### Tick Treatment and Control:

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

#### Contraindications:

There are no known contraindications for the use of SIMPARICA.

#### Warnings:

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

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

#### Precautions:

SIMPARICA may cause abnormal neurological signs such as tremors, decreased conscious proprioception, ataxia, decreased or absent menace, and/or seizures (see **Animal Safety**). The safe use of SIMPARICA has not been evaluated in breeding, pregnant, or lactating dogs.

#### Adverse Reactions:

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

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

**Table 1. Dogs with adverse reactions**

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

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

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

#### Clinical Pharmacology:

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

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

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

#### Mode of Action:

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

#### Effectiveness:

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

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

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

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

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

#### Animal Safety:

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

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

#### Storage Information:

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

#### How Supplied:

SIMPARICA (sarolaner) Chewables are available in six flavored tablet sizes: 5, 10, 20, 40, 80, and 120 mg. Each tablet size is available in color-coded packages of one, three, or six tablets. NADA #141-452, Approved by FDA

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Kalamazoo, MI 49007

Made in Switzerland Revised: July 2016

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# Talking to pet owners about the "blue dot"

We can do better than, "Look, it doesn't mean your dog has a tick-borne disease, but it doesn't not mean that."

Is a dog adequately covered by the tick preventive?

You don't know. So your veterinary practice runs a test, and you get back the "blue dot."

"What does that mean?" asks the pet owner.

In the audio clip below, Fetch dvm360 educator Richard Gerhold, DVM, MS,

PhD, shares his advice on the matter:

"If you're seeing blue dots on your test, the current language we're encouraging general practitioners to use [with pet owners] is, 'The blue dot indicates tick exposure in the animal.' It's a way of showing your clients they're not doing a good

enough job as they should be in their tick control efforts.

"And then you'll say, 'I need now to go do further testing to determine if there are any current pathogens in your dog causing disease.' That may be done through CBC, chemistry, UA, a really good physical exam, a neurological exam and potentially a PCR."



Scan the code to listen to Dr. Gerhold explain why to get 'em on that tick preventive! And get to testing!



# TICK MYTHS

You talk with your clients all day long about the risks of vector-borne disease and why parasite preventives should be used year-round, so you're pretty well-versed when it comes to parasitology—right? Maybe it'd surprise you to know there are some facts that trip up even the most experienced veterinarians.

**T**hink ticks are active and questing for hosts only during spring and summer?

False. Although ticks may appear to be most abundant in specific geographical areas during the warmer parts of the year, certain species are active during fall and winter. One example is the black-legged tick (*Ixodes scapularis*), which is a known vector for pathogens including *Borrelia burgdorferi* (the causative agent of Lyme borreliosis), *Anaplasma phagocytophilum* and *Babesia microti*.

In most temperate climates where *I. scapularis* exists, the adult stage emerges in autumn and can be found questing or attached to hosts throughout winter. Adult *I. scapularis* may parasitize domestic and wild animals as well as people. It's important for veterinarians to educate their clients about the need for year-round tick prevention for their pets as well as routine examination of pets for ticks to minimize pathogen transmission.

—Richard Gerhold,  
DVM, MS, PhD







DOWNLOADABLE TOOLS

## Myths vs. facts: The truth about ticks

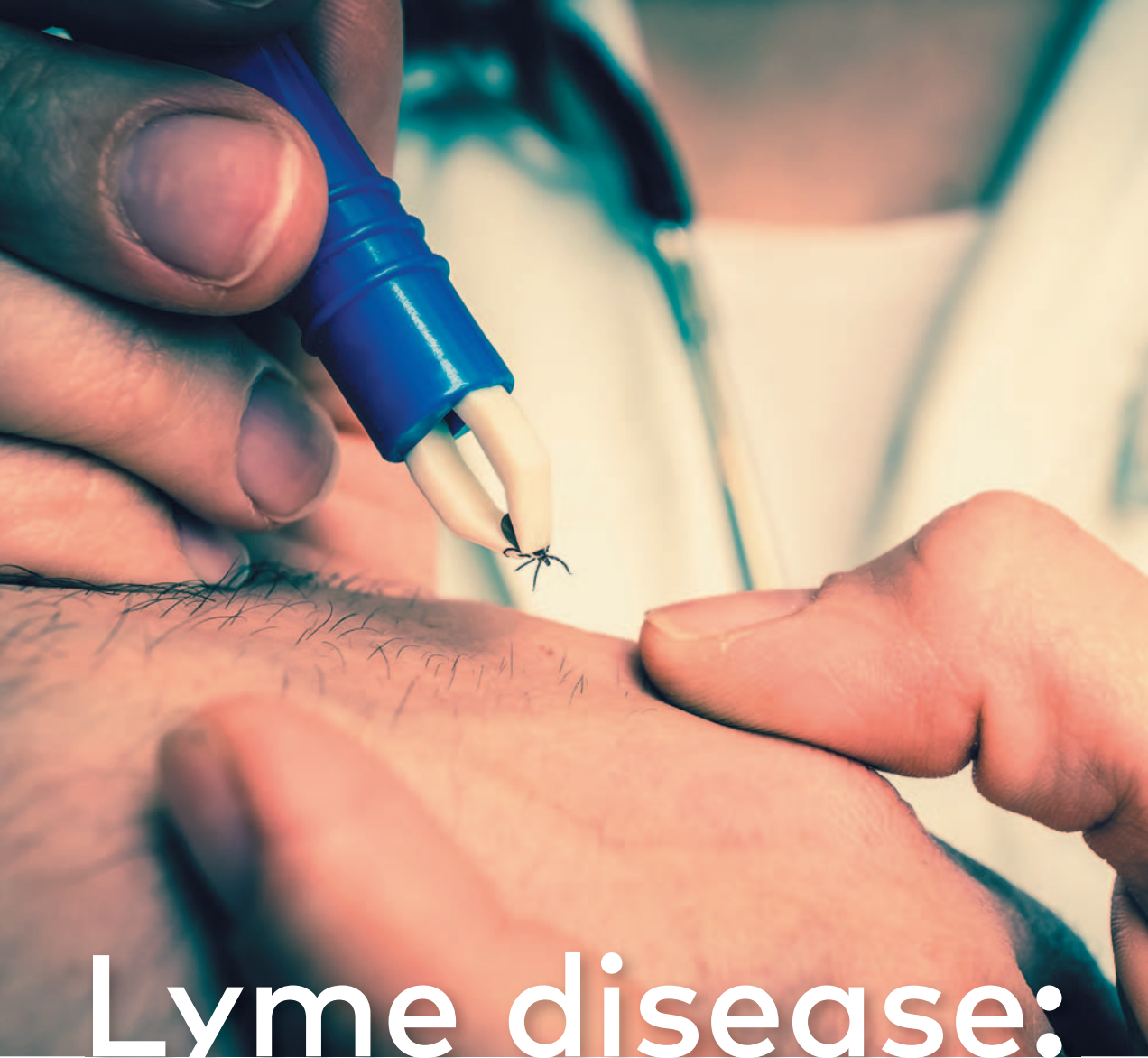
As a veterinary professional, you want to make sure ticks have no place on pets. But often you're confronted with a lot of misinformation and confusion from clients. Use this client handout to set the record straight. Scan to download now.



## "Ticks fall from trees!"

Ummm...no. Have you heard people say the ticks were falling from the trees? Scan the code to watch as Dr. Susan Little discusses where to expect questing ticks.





# Lyme disease: Human cases

When discussing the dangers of tick-borne diseases like Lyme with your clients, it may be helpful to include human incidence rates too.

**E**very year, state and local health departments collect Lyme disease reports and submit them to the Centers for Disease Control

(CDC). The total number of cases tends to be around 30,000. The graph at right shows the 15 states that qualify as “high incidence states,” meaning they

have an average incidence of at least 10 confirmed cases per 100,000 people for the previous three reporting years (2014-2016).



Using the three-year average is preferred, as according to the CDC’s website, the reported data is “subject to each state’s abilities to capture and classify cases, which are dependent upon budget and personnel and varies not only between states, but also from year to year within a given state.” In other words, a sudden or significant change in the data may be more related to human

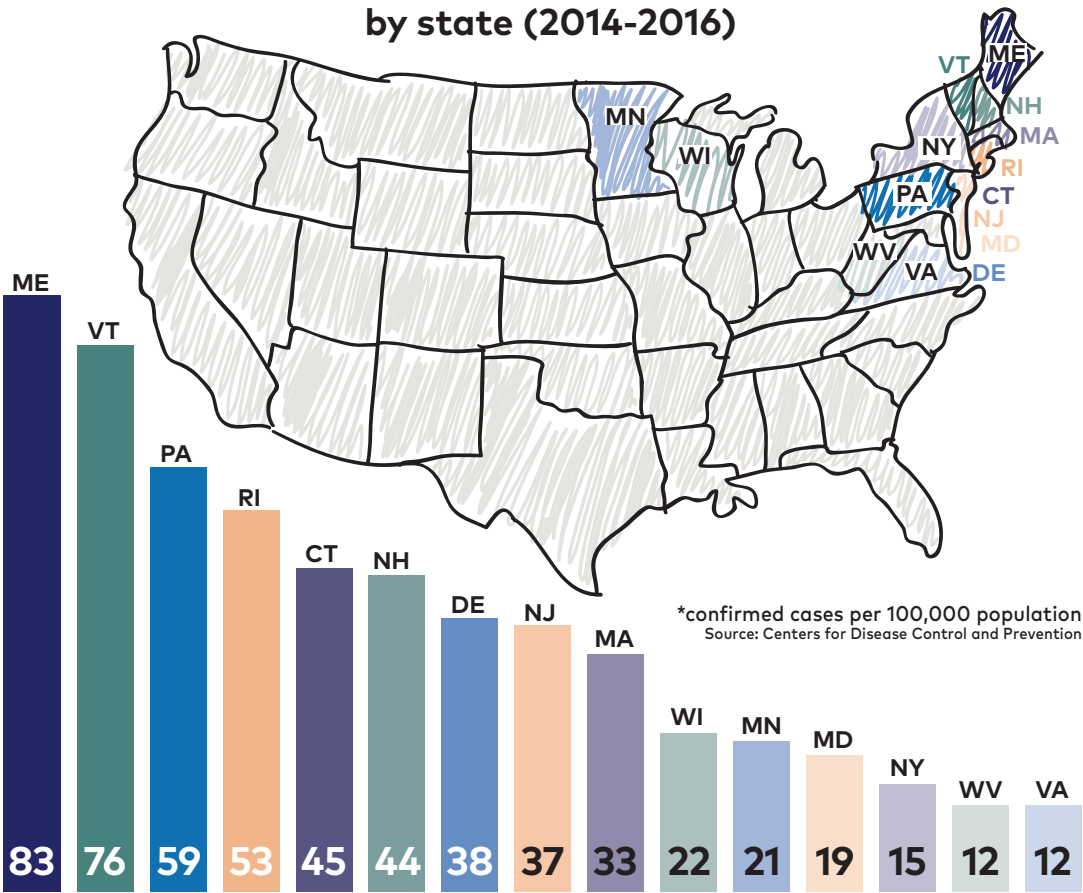
and financial resources than to the true disease incidence.

**A few other points worth putting in the *lymelight***

- > Ninety-five percent of confirmed Lyme disease cases in 2015 were reported from 14 of the states on the graph below (excluding West Virginia).
- > The national three-year average incidence rate for Lyme

disease in 2014-2016 is 8.  
> High-incidence states for people match high-risk Companion Animal Parasite Council (CAPC) states—except the latter also includes Alaska and Wyoming in 2016.  
> According to the CDC’s website, “Lyme disease is the most commonly reported vectorborne illness in the United States.”

**3-year average Lyme disease incidence\* rates in people by state (2014-2016)**



Find more tips, tools, techniques  
and clinical updates at  
[dvm360.com/ticktoolkit](http://dvm360.com/ticktoolkit).

# Why isn't there more Lyme in the southeastern and western United States?


**L**yme disease is highly regional, with the areas where it's endemic (Northeast, Great Lakes region) glowing red-hot on prevalence maps. It's spreading, yes, but the rest of the country seems relatively unaffected. What gives?

Richard Gerhold, DVM, MS, PhD, has a possible answer: lizards.

*Ixodes*-species ticks, the ones that transmit the *Borrelia burgdorferi* bacteria, prefer to feed on lizards, he says. So if faced with a choice between a dog (or a person) and a lizard, the tick is

going to hop on to that lizard in a flash. What do the western and southeastern states have plenty of crawling around on patios and fences? That's right—lizards.

What's more, it's been hypothesized that the lizard and tick biological systems work together in such a way that the bacteria is cleansed from both hosts after a period of attachment, Dr. Gerhold says. Hooray for our scaly friends! "It makes you wonder why they're not air-dropping lizards into Rhode Island," Dr. Gerhold jokes.

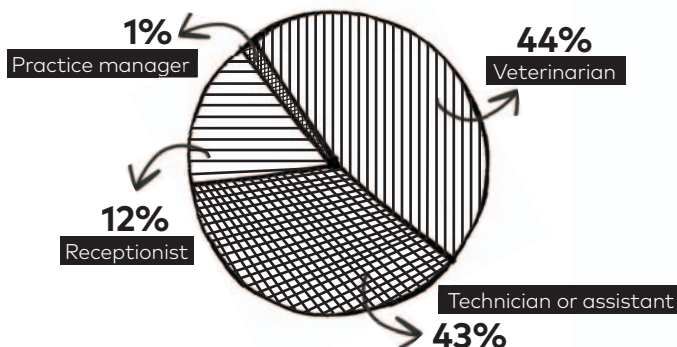


The western fence lizard is one known to host *Ixodes* ticks.

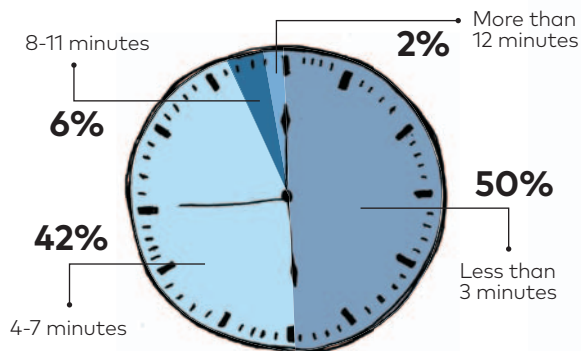


# Tick talks in practice

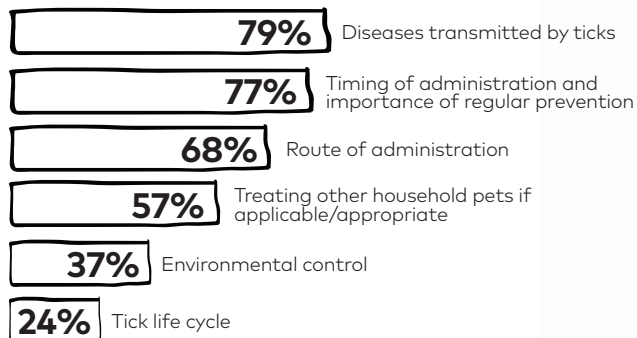
Who on your team spends the most time educating clients about tick control?



How much time do you think your team spends in total, per client, discussing tick control?



Which tick control topics does your team typically cover with a client in that time? (Check all that apply)



## What's your angle?

We asked a couple favorite DVMs about their approach when it comes to talking to clients about ticks. We specifically wanted to know if any of them get a little ... you know, gross (easy to do when your subject is a bloodsucking parasite).

"I have some large ticks preserved in formalin, but I typically only pull those out when talking with young kids. For clients, it's more of a discussion about potential exposure. Our technicians always ask where pets have been traveling to in our standard history (such as areas with high tick exposure like northern Michigan or the Carolinas). We have maps that show owners where there are higher incidences of tick-borne disease."

—Andy Rollo, DVM

"While I do share extreme examples at times, a fair percentage of my clients are more holistic and appreciate a less-is-more approach. I present myself as an educated guide, sharing all the facts, statistics, and pros and cons to help owners understand the importance of tick prevention and the many types (including natural options) that work. I then let clients decide what's best for their pet considering their environment and lifestyle."

—Lisa Aumiller, DVM

Find more tips, tools, techniques  
and clinical updates at  
[dvm360.com/ticktoolkit](http://dvm360.com/ticktoolkit).

# Up close and personal with **4** common ticks

A pictorial guide to these sickening suckers to help advise your veterinary clients.

**F**orget arachnophobia. Think  
entonophobia, the fear of ticks.

A phobia that might be good to instill in pet owners because of all the diseases ticks can transmit to their pets—as well as to owners themselves. But there are so many different species of these small arachnids to be familiar with. Here is an overview of four common ticks to help scare your clients into realizing the importance of monthly preventives in their pets.





# 1 *Amblyomma americanum* a.k.a. The lone star tick



A female lone star tick.  
(Image: Michael L. Levin, PhD; CD/ Public Health Image Library)

These assertive ticks actually hunt down their hosts. Most lone star ticks quest, or wait on low shrubs, bushes and blades of grass—some run toward their host instead of passively waiting for an opportunity to hop on.

**Seasonality:** Start to come out as early as February

**Geographic distribution:** Historically southern U.S. but now considered present in most of the eastern two-thirds of the U.S.

**Diseases they transmit:** Ehrlichiosis, Rocky Mountain spotted fever, cytauxzoonosis, rickettsiosis, tularemia, coxiellosis (Q fever), heartland virus, bourbon virus, southern tick-associated rash illness (STARI)

# 2 *Amblyomma maculatum* a.k.a. The Gulf Coast tick



Dorsal view of a female Gulf Coast tick.  
(Image: Dr. Christopher Paddock; CDC/Public Health Image Library)

These large, aggressive ticks like to hang out at the top of grass blades and other vegetation, catch hold of whatever walks by and start feeding as quickly as possible.

**Seasonality:** Start to come out as early as February

**Geographic distribution:** The south, by the Gulf Coast, of course, but moving north to include the central East Coast and states such as Kansas, Missouri and Ohio

**Diseases they transmit:** American canine hepatozoonosis, most prominently (transmitted by ingestion)

### 3 *Dermacentor variabilis* a.k.a. The American dog tick



A female American dog tick.  
(Image: Gary O. Maupin; CDC/Public Health Image Library)

This tick may have “dog” in its name, but that doesn’t matter much when it’s looking for a blood meal. The American dog tick also infests cats and urban wildlife, such as opossums, raccoons, rabbits and squirrels—which means these ticks are probably in your backyard.

**Seasonality:** Start seeking hosts in early February

**Geographic distribution:** Most of North America except higher elevation areas (Rocky Mountains and extreme Southwest)

**Diseases they transmit:** Rocky Mountain spotted fever (primary vector), tularemia, tick paralysis, cytauxzoonosis

### 4 *Rhipicephalus sanguineus* a.k.a. The brown dog tick



A male brown dog tick.  
(Image: James Gathany; William Nicholson; CDC/Public Health Image Library)

This species of tick is the only one that prefers to feed off of dogs through all of its life stages. It can also survive at a much lower humidity than other ticks and is the only tick species in North America that can infest buildings, including our homes.

**Seasonality:** Year-round since they live inside in homes and kennels—they love carpet and upholstery

**Geographic distribution:** Anywhere dogs are, thus, everywhere—even Canada and Alaska!

**Diseases they transmit:** Ehrlichiosis, Rocky Mountain spotted fever, anaplasmosis (in Hawaii and the Caribbean), hepatzoonosis, babesiosis





# Tick-borne Powassan virus on the rise in humans

There's no evidence that Powassan virus, a tick-borne disease transmitted by the *Ixodes* species, poses a threat to your veterinary patients—yet. You and your clients are another story, says Richard Gerhold, DVM, MS, PhD. (Did you know the virus is named for the Canadian town in which it was identified after a human fatality?)

**Q** What can you tell us about the tick-borne Powassan virus that's making headlines in mainstream news?

**A** Powassan virus is a disease transmitted by two *Ixodes* species—the black-legged tick and another *Ixodes* species that we see mainly on wild mammals like raccoons, woodchucks, skunks, possums. It's been around for a while, but we have seen an increased number of cases in humans. It causes encephalitis, so people can have headaches, altered consciousness or flu-like symptoms.

The virus is transmitted anywhere between spring and late fall, even potentially winter. That's the season when these ticks at some life stage are out

and about. It's important for people having these symptoms to seek medical help.

There is no evidence of Powassan virus causing disease in pets. However, there are a lot of tickborne diseases that we do see in pets—whether it be Lyme disease, anaplasmosis or *Ehrlichia*—that are significant health concerns for domestic and livestock animals. So it's important for pets to have good veterinary services and also year-long tick prevention.

I don't want talking about tick diseases to make people not want to go outside, because being outside is really important for mental health and connecting with nature. Just do simple things to minimize tick disease like a good tick check in the evening, tuck your pants in your socks and use repellents.

Powassan doesn't affect pets (at least that we know of yet), but the rest of us need to remain vigilant about ticks for our own sake, says Fetch dvm360 conference educator Dr. Richard Gerhold.

Watch the video by scanning the code or go to [dvm360.com/ticktoolkit](https://dvm360.com/ticktoolkit).





# 4 tips to manage parasiticide inventory

Don't get ticked off during slow months. Use your downtime as a practice manager or practice owner for something not so fun but super-useful: improving your drug inventory processes. *By Sarah Wooten, DVM*

**W**hen it comes to buying parasiticides, your customers have a plethora of choices, including 900-plus Petco stores, PetSmart, Walmart, Target, Ace Hardware, Cabela's (of all places), Costco, feed stores and online auctions, which last time I checked had more than 2,000 listings for parasiticides. The struggle is real, and veterinary practices are feeling the pain.

So, practice management superhero, how can you maintain appropriate inventory without breaking the bank or incurring losses due to expiration while at the same time staunching the profit hemorrhage to other retailers?

You've got time. It's winter, things are probably slower around the hospital, and it's a perfect time to evaluate your parasiticide inventory and inventory management practices.

Here are four of my best tips on how to make it happen.





# 1 Delegate this stuff!

You're a practice manager (or practice owner), you're not an inventory manager. You need help, so look to your staff. Do you have someone who could identify specific steps of improvement, stay on task with minimal supervision, and help make it happen with a supportive and encouraging attitude toward staff? That's your pony!

If that person doesn't quite exist in your veterinary practice, could you develop someone on staff to become that person—or hire that person?

If your practice is like the ones I've worked in, parasiticides wind up stuffed wherever they fit—or hidden away in unmarked cabinets. If you store

parasiticides in too many places in your practice or in too many open bottles, then it gets hard to visualize volume when there are so many places to count stuff. It also eats up your support staff's time and leads to incorrect inventory problems.

Keep internal and external parasiticides centrally located and on open display so you know exactly what you're dealing with. Are you having a problem with loss due to expiration? Designate a central, visible location as the "drug morgue," and put expired drugs there. Seeing the loss in your face ups the squirm factor and helps everybody be more mindful of the importance of accurate inventory.

## What an 'inventory strategist' could do for you

- > Manage and order retail and OTC products
- > Manage and order cleaning supplies and customer care hospitality products
- > Develop and maintain good relationships with vendors and meet with them on a regular basis
- > Stock all workstations twice a day
- > Stock the hospital pharmacy once a day
- > Stock food displays once a day
- > Stock retail displays once a day.



## 2 Do the audit!

Why not use downtime early on in the year for a parasiticide inventory audit?

Boy, THAT sounds fun! Maybe you'd rather stick a needle in your eye, but that inventory strategist you promoted is probably chomping at the bit to make the system her own, so ask her to do it.

Before you do anything, you need to know how much you have. It can be daunting, so empower your inventory strategist to break up the counting with color stickers or permanent

marker marks or whatever. Ask your strategist to find out how much you're carrying versus what you need to keep parasiticides available, convenient and affordable for your customers.

Instruct your inventory strategist to review the top 20 percent of parasiticide inventory and what's sold to the top 20 percent of your clientele. Both of these likely generate 80 percent of your practice's revenue. Keep those big products available, affordable and convenient.

## 3 Use your software!

Learning how to really use the inventory part of your practice management software requires effort, and there's always that fear that it'll wind up being inaccurate and require a physical count anyway. But used properly, inventory software generates reorder lists, easily manages pricing and markups, and can't get lost like that clipboard that has a hard copy version of the parasiticide

inventory from the 1980s.

For real: It's time to get modern. No, software still can't automatically increase staff accountability, efficiency and practice profitability, but inventory software remains the single-most underused software module in private practice. If you're not using inventory management software, there's no time like the present to start.





## 4 Get online already!

I feel like I'm about to tell you something you already know, but humor me. When Nielsen Online surveyed 1,000 shoppers, the research firm found that the No. 1 reason consumers shop online is convenience—81 percent versus 46 percent who shop online for low prices. More than anything, your clients want convenience, and if they don't find it from you, they'll go elsewhere.

The same goes for parasiticides. According to a recent Vetstreet survey of 1,000 pet owners, 63 percent said an

online pharmacy would mean they'd be more compliant with heartworm and flea product repurchasing. There are several online pharmacies that work with veterinary hospitals—Vets First Choice, Vetstreet, Vetsource, ProxyRX and others—that profit-share on products sold online. Some of the platforms have the added benefit of alerting the practice when clients fail to refill their prescriptions, which gives your front-desk team the chance to follow up with clients.

## No internet for me!

So, if your veterinary practice still lives in the technological dark ages, there are still things you can do to remedy your winter parasiticide doldrums:

- > Give your clients the ability to buy products from you before and after work
- > Provide a quick and easy sales process (I was in the Apple store the other day, and my entire transaction took less than a minute)
- > Offer competitive prices. Or go online and make money even when you're sleeping. Your choice.

## The parasite picture

Ticks are a high-profile parasite, and rightfully so, according to Fetch dvm360 conference speaker Richard Gerhold, DVM, MS, PhD.

Though they get a lot of press for their connection to Lyme disease, the pathogens ticks transmit affect humans and wildlife in many different ways.

And the pests are dynamic, heading this way and that: *Amblyomma americanum* is moving north into Canada; *Ixodes scapularis* is moving south, he points out.

Since ticks are a hot topic, Dr. Gerhold has some advice when discussing them with clients:

"The biggest thing to hit on when it comes to ticks is the importance for year-round tick prevention. People sometimes think if it's not spring or summer, ticks aren't out and that's not true," he says.



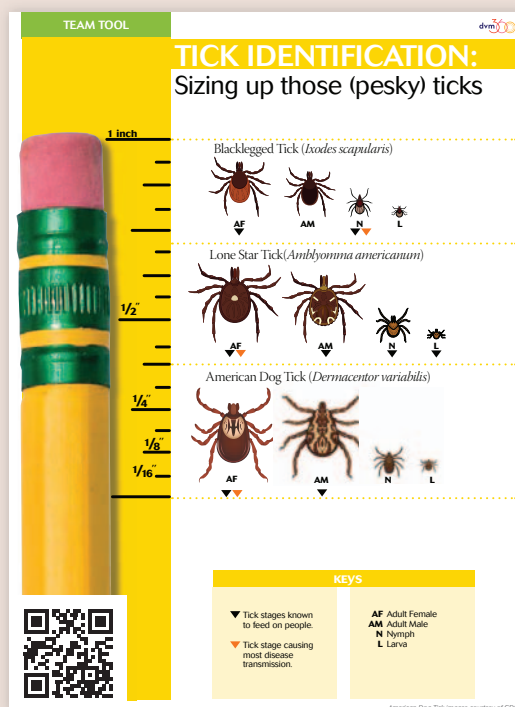
Watch the video to learn how to get this message out.

# Give clients the deets on ticks

**T**icks are second only to mosquitoes in the number of diseases they transmit, which is why it's so critical to prevent ticks from attaching to—and feeding on—pets and people in the first place. Size up pesky ticks with this tool.

Understanding the tick life cycle and the behavior of these parasites can help keep them in check, so we developed this handy tick identification chart for you, your team and your clients. This chart, inspired by a similar

chart from the Centers of Disease Control and Prevention shows what three common ticks—the blacklegged tick, the lone star tick and the American dog tick—look like at different phases in their life cycle. It's all drawn to scale to help your clients see how tiny these little bloodsuckers can be.



Scan this code to download the free client handout or find more information at [dvm360.com/ticktoolkit](https://dvm360.com/ticktoolkit).



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# Heads up!

## Doxycycline treatment tip

**H**ave a patient with Lyme or another tick-borne disease that needs treatment with doxycycline? Here's some advice from Garret Pachtinger, VMD, DACVECC, to attendees at a recent Fetch dvm360 conference. One of doxycycline's known adverse effects is irritation and esophagitis with the potential for esophageal stricture if it sits in the esophagus too long. This is much more likely to happen if the drug is given before bedtime, when the dog is about to lie still for hours. Instead, have clients give the drug in the morning with breakfast. The act of eating, plus a day's worth of running around, will help move the medication through the esophagus, lowering the risk of esophagitis and stricture in that patient.

Don't miss tick talks at  
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\*Studies show Simparica starts killing ticks in 8 hours and is ≥96.9% effective for 35 days against weekly reinfestations of *Ixodes scapularis*, *Amblyomma americanum*, *Amblyomma maculatum*, *Dermacentor variabilis*, and *Rhipicephalus sanguineus*.<sup>1,2</sup>

Learn more about Simparica.  
Contact Zoetis Customer Service at  
**1-888-ZOETIS-1 or 1-888-963-8471.**

**References:** 1. Six RH, Geurden T, Carter L, et al. Evaluation of the speed of kill of sarolaner (Simparica™) against induced infestations of three species of ticks (*Amblyomma maculatum*, *Ixodes scapularis*, *Ixodes ricinus*) on dogs. *Vet Parasitol.* 2016;222:37-42. 2. Six RH, Everett WR, Young DR, et al. Efficacy of a novel oral formulation of sarolaner (Simparica™) against five common tick species infesting dogs in the United States. *Vet Parasitol.* 2016;222:28-32.

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## Cuff syringe

When I'm in surgery, I always keep a cuff syringe in my pocket next to my bandage scissors. You don't know panic until your surgery patient goes from completely unconscious to standing up and chewing on the ET tube in one second. In emergencies such as this, I don't want to be looking around for a cuff syringe. I also have my bandage scissors at the ready so I'm not wasting time trying to untie the tube and having it knot or get caught in the pet's hair.



## Writing utensils

I keep two pens and a fine-point Sharpie in my pocket. One pen is a really slick gel pen. I'm constantly finding new ones I love, but my current infatuation is with Pentel EnerGel pens. They have needle-point ones and big fat ones, so everyone gets the size they like.

I keep a generic click-y pen in my pocket for times when I have to hand it over to a client to sign paperwork. I've had good pens walk off with clients, so I make sure to keep a different one just for them. The fine-point Sharpie works great for writing on blood tubes and labeling slides.

## Calculator

Office Depot makes this really small, incredibly lightweight calculator that is perfect for carrying in my pocket. It only costs \$4, which makes it even better. You never know when you'll need to calculate a drug dose or convert a weight or temperature, so having a calculator at the ready is a must.



## Crocs

I tried the Dansko shoes that everyone swears by, but they hurt my feet like crazy. I started wearing Crocs years ago and they feel phenomenal, especially on those really long days. They're roomy enough that if I'm having a flare-up of plantar fasciitis I can slip an insole into them, too.

Crocs recently came out with a new line called "Crocs at Work" that have a slip-resistant sole and closed toe and heel to be in line with safety standards. I also don't get shocked on everything metal like I used to with my regular Crocs. The Crocs at Work line has a bunch of really fun patterns to choose from; my favorites are the tie dye and the flames. I joke that my flame shoes make it look like I'm walking really fast.



## Last but certainly not least ... snacks

I know that granola bars aren't a lot better than a candy bar, nutritionally speaking. But they fill my belly when I only have a quick break. I like the chocolate chip variety. I also like Armour LunchMakers. They're basically Lunchables that are half the price. They're quick to eat and have meat, cheese and crackers that keep me full for a long time. There is also a bite-sized candy bar in them that's a nice touch.



*Julie Carlson, CVT, is a freelance author and certified veterinary technician in Phoenix. She is the cofounder of Vets for Vets' Pets, a nonprofit organization providing supplies and medical care to the pets of homeless and at-risk veterans.*

# Champion pets' chompers

If your practice's current dental procedure marketing methods seem a bit long in the tooth, brush up on some new approaches.

**F**etch dvm360 conference speaker Barden Greenfield, DVM, DAVDC, knows how important veterinary technicians are to a practice's bottom line—especially when it comes to marketing dental procedures. Here are simple ways you can arm yourself to the teeth to promote better oral care in your practice.

## Successful storytelling

Word-of-mouth marketing can be impactful—especially coming from technicians rather than veterinarians, says Dr. Greenfield, as pet owners tend to assume you truly have the pet's

medical interest at heart (as opposed to the practice's financial interests).

Recount success stories from the trenches to educate and encourage pet owners about how dental procedures can safely improve their pets' lives. For example, if you have a pet in front of you that needs to have some teeth extracted, tell its owner about a past patient in a similar position that came out the other side happier and healthier.

## Please hold

Instead of playing smooth, sleepy jazz for pet owners while they're on hold, record a message that promotes a dental care conversation in the

future, says Dr.

Greenfield.

Here's an

idea from Dr.

Greenfield to get you started:

"Did you know that the majority of dogs and cats over the age of 3 have periodontal disease?

Please talk to one of our trained technicians about your pet's oral care."

## Down with Dental Health Month (sorta)

If your team is only pushing dental health in February, you're sending the wrong message and are doing your practice and your patients a disservice, Dr. Greenfield says. You don't want pet owners putting off necessary dental treatments for a specific month because they'll save 10 percent. And you also want to avoid stacking up so many dental procedures in one day that you can't do a good job.

"Dentistry is a 24/7 recommendation," says Dr. Greenfield. Push for oral care compliance to be discussed as often as heartworm compliance, he says.

## Experiment for better medicine

If you're helping with a young pet spay or neuter, Dr. Greenfield recommends looking for missing teeth and malocclusion before intubating. He says you could propose doing this for every spay or neuter appointment for a six-month span to see how much income you can generate for the practice by catching dental problems this way. By doing so, you'll demonstrate your worth as a smart, proactive technician to your employer and your clients. Dr. Greenfield says you could even ask for a cut of the profits you generate from your experiment.







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# Suffer a sea change

When the winds of change blow through your practice—or your life—embrace the chance to explore new advances in medicine, new opportunities for your career and new possibilities for your life.

By Julie Carlson, CVT

**O**ur patients' health changes from minute to minute. Our clinic schedule changes from hour to hour. You'd think we'd be good at adapting to change—but are we? When a new doctor joins the team, or even when a relief doctor fills in for the day, it can throw us into a tailspin while we try to adjust to new ways of doing things. The same is true for a new technician joining the team. Maybe they prefer doing a lateral saphenous blood draw on large dogs instead of a cephalic draw and you're not as familiar with the restraint needed for that. Change can be intimidating, even in a field as dynamic as ours.

*“Nothing of him that doth  
fade, but doth suffer a sea-  
change, into something rich  
and strange ...”*  
—The Tempest, William Shakespeare

## A new tech blows into town

When new technicians join the team, it can feel like they're challenging the way you're doing things. For instance, maybe your team routinely does over-the-table jugular blood draws on cats, but this new tech prefers doing lateral jugular draws.

Instead of putting up a mental roadblock, ask her why she prefers this method and try it for yourself. She might have just handed you the solution for an easy blood draw on a tough feline patient. New team members can bring ideas that you may never have thought of before. A new hire might show you how to strain fecals through layers of gauze instead of a metal sieve—and wouldn't it be nice to not have to wash a stool-covered strainer anymore?

## A new doctor drops anchor

Just like technicians, every doctor has their own way of doing things. One doctor might want you to take an extremely thorough history while another doesn't even want you to take vitals, let alone interview the client. It might feel as though that doctor



doesn't trust your skills, but it could just be that he enjoys doing that portion himself.

Take that opportunity to complete tasks that you've been trying to get to—you know you have plenty. You might even ask the doctor if you can listen in on one of his appointments—maybe he has some interviewing techniques you can implement with other clients.

### Handling the winds of role change

When team members change roles it can also throw a team out of whack. One technician being promoted to a manager role can breed jealousy and contempt if others feel they were better suited for the position. In these cases, presenting a united front is key. Every doctor in the practice needs to be on board with granting this new manager the authority to make decisions and then support them if she needs to enforce disciplinary rules.

In turn, the new manager must take on the responsibility of learning how to be fair and unbiased in her new role, not allowing personal relationships to interfere. Making the tran-

sition from technician to manager can be an especially tough one, but a good support system and clearly defined roles are necessary for success.

### Changing your own tune

Sometimes we find ourselves needing to make a big change in our life. But even when our change is well thought out, we'll likely still experience anxiety. I used to work with a tech who had been in the field for a few years. She'd gone back to school for a degree in education while still working in our clinic. The unpredictable hours eventually got to be too much for her with her heavy class schedule,





# NexGard<sup>®</sup> (afoxolaner) Chewables

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

## Description:

NexGard<sup>®</sup> (afoxolaner) is available in four sizes of beef-flavored, soft chewables for oral administration to dogs and puppies according to their weight. Each chewable is formulated to provide a minimum afoxolaner dosage of 1.14 mg/lb (2.5 mg/kg). Afoxolaner has the chemical composition 1-Naphthaleneacetic acid, 4-[5-[[3-chloro-5-(trifluoromethyl)phenyl]-4,5-dihydro-5H-tetrahydro-2H-pyridin-2-ylidene]-3-isoxazoly]-N-[2-oxo-2-[2,2,2-trifluoroethoxy]amino]ethyl.

## Indications:

NexGard kills adult fleas and is indicated for the treatment and prevention of flea infestations (*Ctenocephalides felis*), and the treatment and control of Black-legged tick (*Ixodes scapularis*), American Dog tick (*Dermacentor variabilis*), Lone Star tick (*Amblyomma americanum*), and Brown dog tick (*Rhipicephalus sanguineus*) infestations in dogs and puppies 8 weeks of age and older, weighing 4 pounds of body weight or greater, for one month.

## 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 <sup>1</sup>	% (n=415)	N <sup>2</sup>	% (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

<sup>1</sup>Number of dogs in the afoxolaner treatment group with the identified abnormality.

<sup>2</sup>Number 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](http://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 >97% effectiveness against *Dermacentor variabilis*, >94% effectiveness against *Ixodes scapularis*, and >93% effectiveness against *Rhipicephalus sanguineus*, 48 hours post-infestation for 30 days. At 72 hours post-infestation, NexGard demonstrated >97% effectiveness against *Amblyomma americanum* for 30 days.

## Animal Safety:

In a margin of safety study, NexGard was administered orally to 8 to 8-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.

## Storage Information:

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

## How Supplied:

NexGard is available in four sizes of beef-flavored soft chewables: 11.3, 28.3, 68 or 136 mg afoxolaner. Each chewable size is available in color-coded packages of 1, 3 or 6 beef-flavored chewables.

NADA 141-406, Approved by FDA

Marketed by: Frontline Vet Labs™, a Division of Merial, Inc.  
Duluth, GA 30096-4640 USA

Made in Brazil.

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1050-4493-03  
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so she left her job and took a new one as a barista.

A few weeks later she told me she was strongly considering asking for her old job back. She said, "It's really hard going from knowing pretty much everything about my job to knowing nothing about it." She took the barista position thinking it would be an easy way to make money, but found that the different recipes and formulas were challenging enough that it might be easier to fall back on the job she knew, even though it would wreak havoc on her school schedule.

## A switch in the field

Some technicians leave the field of veterinary medicine to pursue a career in the human health field. They feel that the pay and benefits are better, the hours are more predictable and there will be greater respect for their position. It seems like it would be an easy switch: veins are veins, right? And with human patients you don't have to wrestle them or worry about finding a vein through a thicket of fur.

But in human medicine there's also a more defined hierarchy. Human nurses are typically responsible for those who work under them, such as licensed practical nurses and nursing assistants. So by moving into human nursing you are also taking on a management position. Not everyone wants that responsibility.

## Protocol permutation

Changes in clinic protocol usually also lead to tension. The management team might decide to buy reusable fabric gowns for surgery instead of the disposable paper gowns. This means more work for the technicians, who will have to soak bloody gowns and do extra laundry.

Or maybe the medical director decides to make the switch to doing centrifugal fecals instead of buying Fecalizers. You have to learn a whole new technique that takes longer and has more steps.

But maybe all of these small changes that seem like such a disruption are going to save your hospital enough money that you can get a raise at the end of the year, a larger continuing education allowance or even enough that the hospital can afford to buy a digital dental radiography machine instead of using those annoying little dipping cups to develop dental films. And that zaps one huge hassle from your to-do list.

While change can be scary, it doesn't have to intimi-

Make killing  
fleas & ticks

DELICIOUSLY  
SIMPLE.



**Preferred by dogs<sup>1</sup> and dog owners<sup>2</sup> –**

NexGard® (afoxolaner) makes it easy to protect your canine patients against fleas and four of the most common species of ticks in North America.

See brief summary on page 22

<sup>1</sup>Data on file at Merial.

<sup>2</sup>Data on file at Merial. Based on veterinary dispensed dose data.

**NexGard is a Merial product.  
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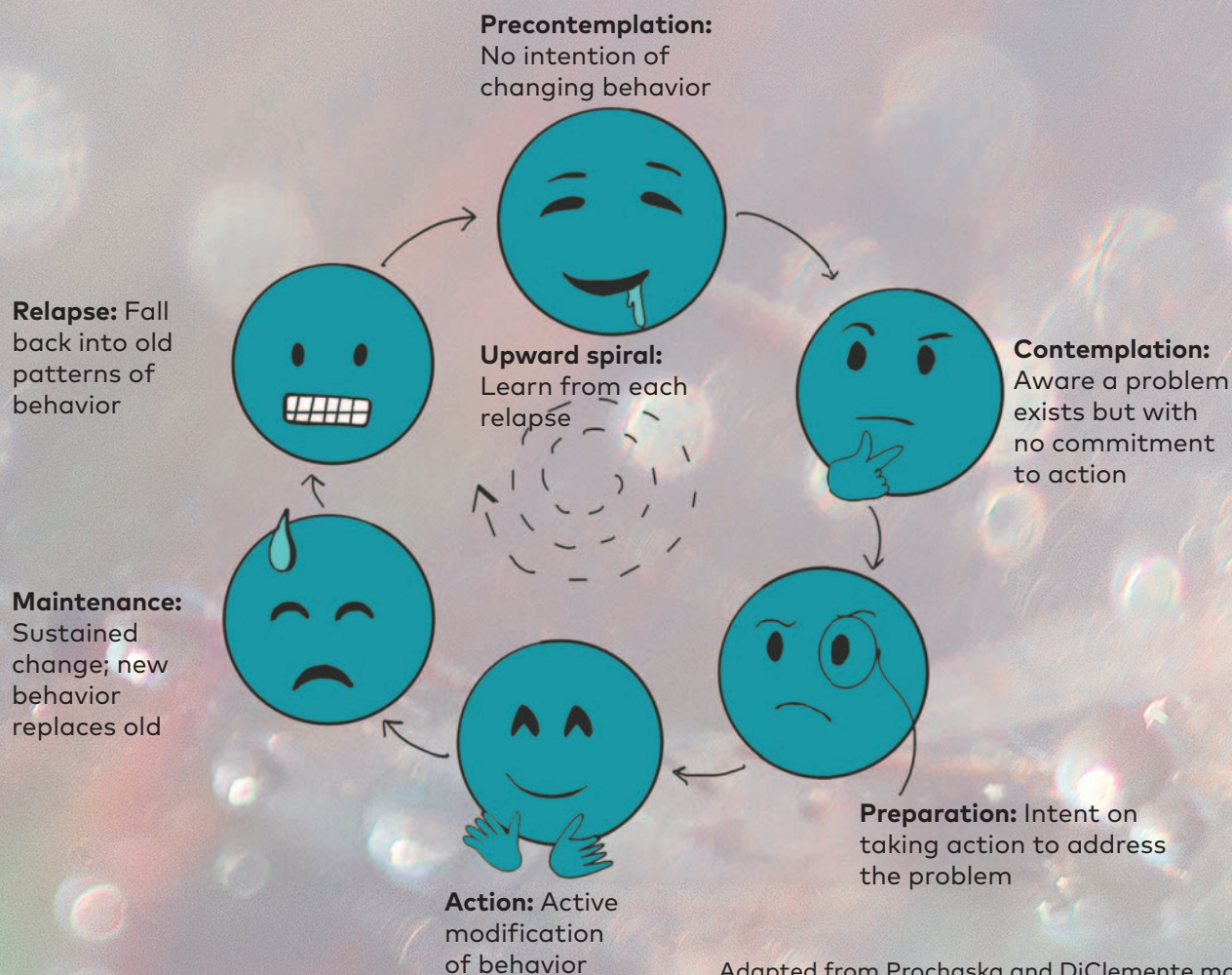
**IMPORTANT SAFETY INFORMATION:** NexGard® (afoxolaner) is for use in dogs only. The most frequently reported adverse reactions included pruritus, vomiting, dry/flaky skin, diarrhea, lethargy, and lack of appetite. The safe use of NexGard in pregnant, breeding, or lactating dogs has not been evaluated. Use with caution in dogs with a history of seizures. For more information, see full prescribing information or visit [www.NexGardForDogs.com](http://www.NexGardForDogs.com).



# The stages of change

In the late 1970s, psychologists James Prochaska, PhD, and Carlo DiClemente, PhD, studied smokers, namely those who quit on their own and those who required further treatment. From their research they developed The Transtheoretical Model—a model

for change based on the theory that people do not change their behaviors quickly or decisively. Instead, change occurs as a cyclical process, with relapse being a normal part of the process. Here's a look at how it works:



date us to the point of inaction. The medical field is all about inventing new technologies, creating new medications and developing new techniques. You can choose to see all of this newness as stressful and intimidating or exciting and innovative. The trick is to find the positive side of every change and learn how to welcome it instead of shying away.

As medical professionals, we should never get so set in our ways that we're blind to new ideas. As a quote from the *Benjamin Button*

screenplay goes, "You can change or stay the same; there are no rules to this thing. We can make the best or the worst of it. I hope you make the best of it."



*Julie Carlson, CVT, is a freelance author and certified veterinary technician in Phoenix. She is the cofounder of Vets for Vets' Pets, a nonprofit organization providing supplies and medical care to the pets of homeless and at-risk veterans.*





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What happens when a vet student becomes an associate, an associate becomes a practice owner, a practitioner becomes a retiree, or a technician becomes a practice manager? How do kids, marriage, divorce, illness and losing a spouse affect a veterinarian's career? *dvm360* magazine examines career transitions and life changes that can be both painful and rewarding—often at the same time!—in the life of a veterinary professional.



We're examining change at two very different levels—from public to personal. See how one veterinary practice switched to a no declaw policy and got everyone on board, plus what to do when you're facing a big and scary change in your own life.



Check out our live coverage on how to manage change at Fetch *dvm360* conference in Virginia Beach, May 17-20. Visit [fetchdvm360.com](http://fetchdvm360.com) to learn more or to register now.



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# 5 ways to manage change

As practice managers, we can help make our teams more adaptable and efficient.

By Oriana Scislowicz, BS, LVT, APHR

## 1 Hire champions of growth

Ideal candidates for positions on a veterinary super team get excited about re-evaluating processes and finding ways to improve them—even when things are functioning “OK.” There are ways to ask questions to see if the job applicant you’re talking to has this superpower. Try “Tell me about a time when you were involved in carrying out a company-wide change in policy. What ways did you make the change successful and help get others on board?” Or, “Can you describe a time when you found a way to improve workflow or processes? How did you implement this change?”

Every team has a mix of personalities. Some people are progressive cheerleaders for change, others are ambivalent, and detractors will push against any change. It’s important to focus on winning over your more progressive team members first. So, before you introduce change in a team meeting, talk over your proposed plan with change-friendly team members and ask them to help you evaluate potential hurdles and develop a plan to “sell” your idea to the rest of the team. These key players will help keep morale high during times of change and convert the skeptics.

## 2 Create direct lines of communication

During times of change, make sure everyone on your team feels like they’ve got a direct line to you and the latest information throughout the entire process of change—from inception to the actual “go live” date. Team members will appreciate knowing the plan ahead of time, so they can ask questions and provide feedback. It’s also easier to make changes when everyone has been

plenty of time to absorb the plan. The feedback received will give another perspective on potential issues with the strategy and ideas for ways to adjust.

Then, after pushing the change in motion, keep the lines open by actively seeking feedback via surveys and in team and one-on-one meetings. This will create a culture of respect and openness among the team.

### 3 Slow down

Slow your roll, speedster. Significant adjustments in a veterinary hospital business plan don't happen overnight. Ease into your plan with small changes.

For example, if you want to work on team morale as a whole, don't start with a new set of company core values, a social contract and a "shout-out"

system for compliments all in one month. Start by introducing the general concept, prioritizing steps in the long-term plan and giving a few months for each step. These gaps in time allow team members to adjust and tweak the plan to make it as effective as possible, instead of focusing only on speed and checking tasks off a to-do list.

### 4 Put every team member's abilities to work

Delegate responsibilities to team members—you're on a super team, not a dictator in charge of an army here, people. Then follow up with team members regularly. Involving the team in changes gives them ownership of the plan they

need to make happen and means they'll invest in the plan's success. Before you implement changes, plan check-in times (such as every Wednesday at noon), and encourage team members to ask questions so you can clarify concerns and offer support.

### 5 Appreciate your team's efforts

Make sure you don't forget to thank your team members when they do a great job during a transition period. Remember it takes patience and determination for a team to come through successfully during change. Set aside time each week to deliver kudos to your team. Towards the end of the project, be sure to spotlight those individuals who carried the team through and led to the hospital's success.

These small adjustments to your management approach will allow your team members to feel more at ease and less burnt out in an ever-changing environment. With a primary focus on the team's well-being, morale will improve, which cultivates success on all levels.

*Oriana Scislowicz, BS, LVT, APHR, is a frequent speaker at Fetch dvm360 conferences as well as a Firstline Editorial Advisory Board member and regional manager at CVCA Cardiac Care for Pets in Richmond, Virginia.*





# 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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1

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2

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3

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# TRUST.

<sup>1</sup> Data on file at Merial.

<sup>2</sup> Freedom of Information: NADA140-971 (January 15, 1993).

**HEARTGARD Plus is a Merial product. Merial is now part of Boehringer Ingelheim.**



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3 SPECIES OF HOOKWORMS**



**TREATS AND CONTROLS  
2 SPECIES OF ROUNDWORMS**



**OWNERS PREFER IT<sup>1</sup>  
AND DOGS LOVE IT<sup>2</sup>**



**See brief summary on page 28.**

**IMPORTANT SAFETY 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](http://www.HEARTGARD.com).

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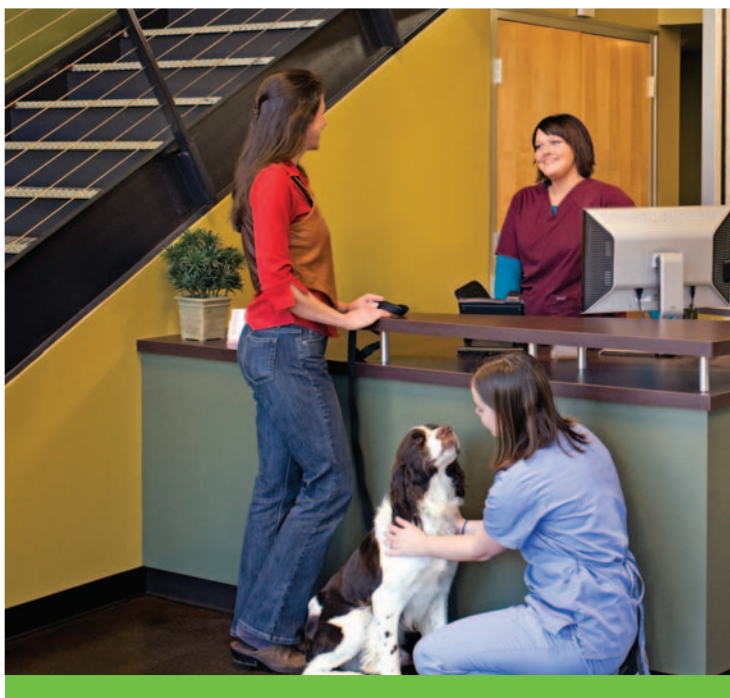
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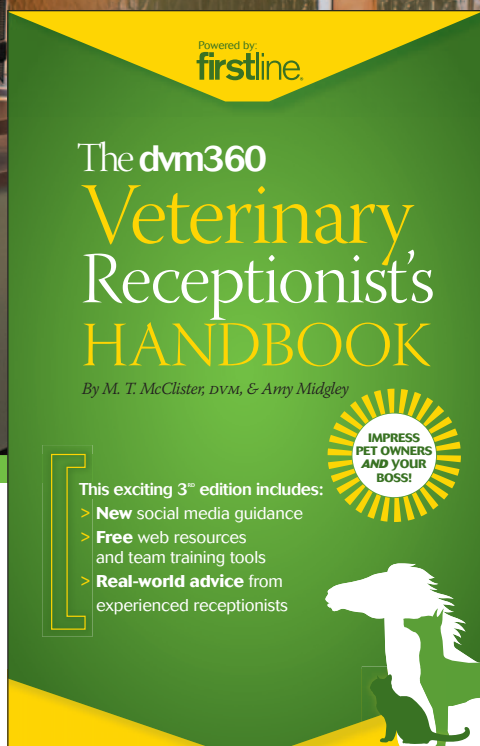


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# Scratch their itch

When dog owners want the deets on their pet's dermat issues, where do they go for answers?

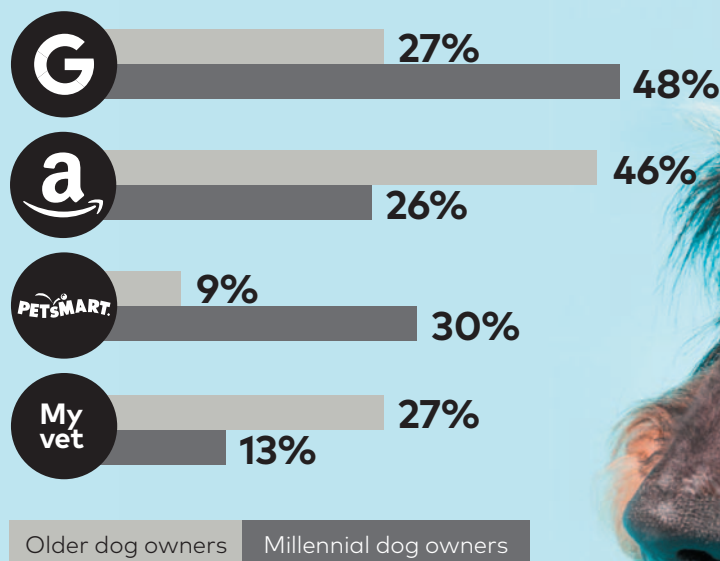
Often the answer is online, according to the Merck-Unfenced Pet Owner Paths research, which looks at the steps pet owners take when making decisions about their pets' health.

More than half of dog owners have used online sources at least once to become more knowledgeable about their dogs' dermatology needs, and millennials are more likely to have read about it versus older owners.

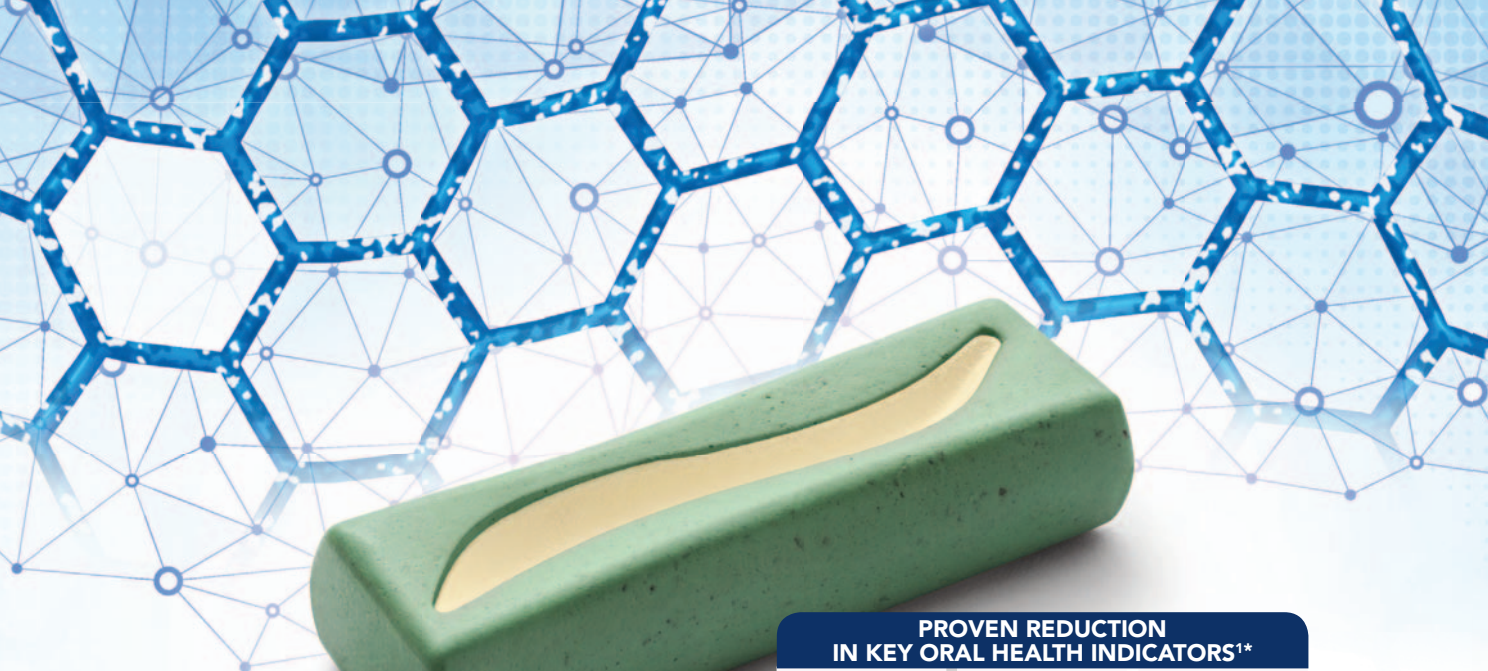
And when they went to the web, where did they go? You guessed it, Google (and Yahoo, too!).

Millennials were more likely to read reviews or ratings.

Here's where each group was looking most:



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



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IN KEY ORAL HEALTH INDICATORS<sup>1\*</sup>

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53%

PLAQUE

42%

CALCULUS

54%

# Block plaque, calculus, and halitosis with the science of prevention

**ORAVET® Dental Hygiene Chews** combat plaque, calculus, and halitosis where they start—bacterial biofilms.



The mechanism of action is simple but effective: Each daily chew releases delmopinol hydrochloride to create a barrier that prevents bacterial attachment.<sup>2,3</sup> When bacteria can't attach, they can't produce plaque biofilms or the volatile sulfur compounds of halitosis. And the scrubbing action of the chew works in parallel to effectively remove plaque and calculus.

For more information, contact your sales representative or visit **oravet.com**

## Science You Can Believe In

### Delmopinol

- Delmopinol has been extensively tested in human and animal trials
- Proven technology originally developed for a human oral rinse

### ORAVET Dental Hygiene Chews

- Efficacy demonstrated in multiple canine trials
- Novel mechanism of action
- Exceptional halitosis control<sup>1</sup>
- Highly palatable<sup>1</sup>
- Available through veterinarians

\*Compared with dry diet alone.

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



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**ORAVET®**  
DENTAL HYGIENE CHEWS  
*Serious Oral Care Made Simple®*





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