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TVC

The TVC Veterinary Cooperative SM

Digital magazine

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All Ears

Listening to what clients want and providing a range of services and solutions can do wonders for the success of independent veterinary practices

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At ROYAL CANIN, our expert nutritionists and veterinarians create highly palatable therapeutic diets to help you treat a wide range of feline health conditions. We have balanced formulas to meet your patient's dietary requirements—from promoting healthy skin on the outside to urinary health on the inside—and the palatability to ensure they get all the nutrition they need.

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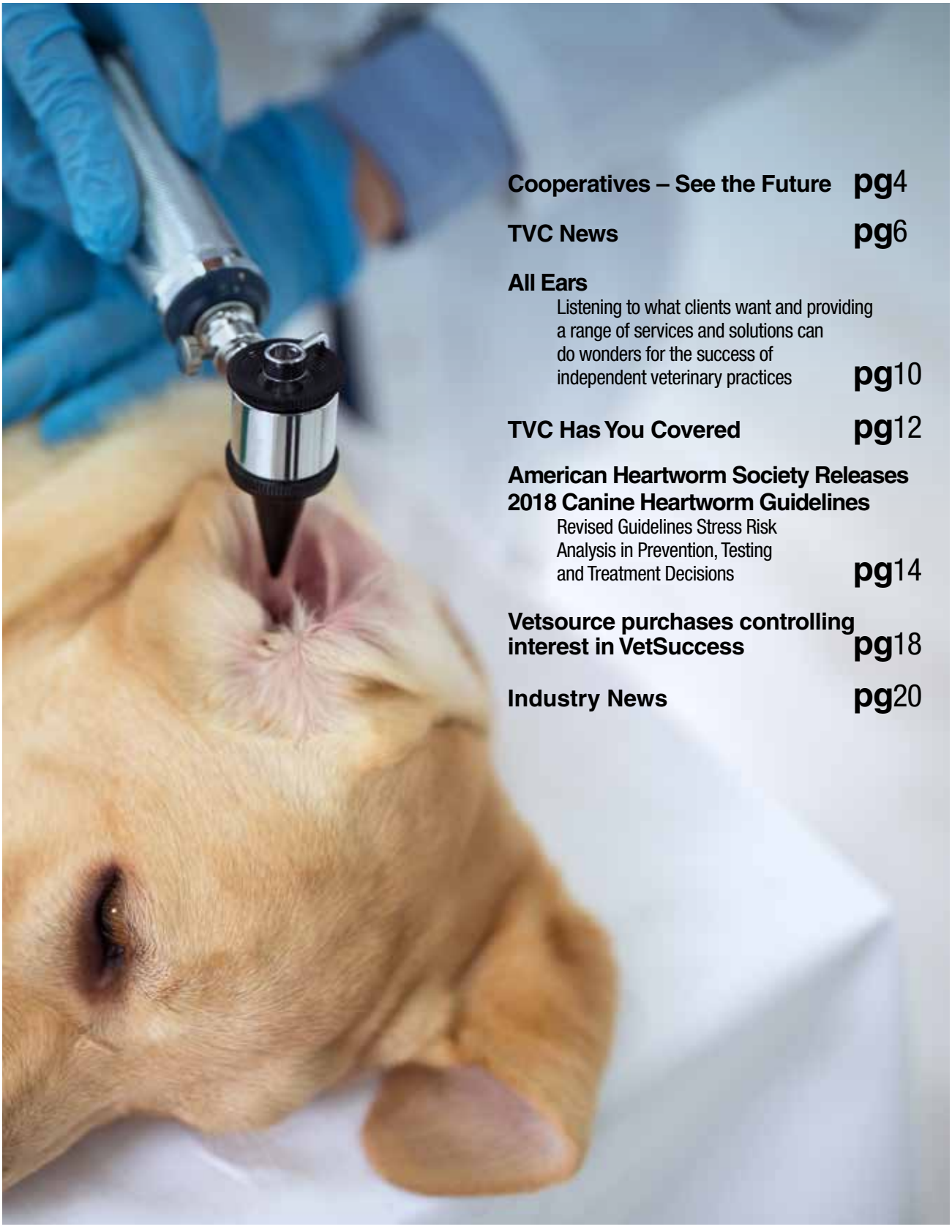
Featured Formulas:



Cooperatives – See the Future

Did you know that October is National Cooperative Month? This year's theme is "Cooperatives – See the Future."

Some fun facts about Co-Ops:

- 1 out of 3 Americans is a member of a cooperative.
- There are 2,106 agriculture co-ops in the United States, with more than 2 million members.
- Consumer cooperatives have a membership base of over 343 million.
- Last year, in recognizing cooperatives' important role in building stronger communities, U.S. Agriculture Secretary Sonny Perdue credited cooperatives with generating more than $650 billion in annual revenue.

Member-owned cooperatives level the playing field as they have in many other industries, ensuring independent businesses, in our case, veterinary hospitals, remain competitive and profitable.

In short, cooperatives are critical to the success of local communities, and the national economy as a whole. Member-owned cooperatives level the playing field as they have in many other industries, ensuring independent businesses, in our case, veterinary hospitals, remain competitive and profitable.

Co-ops across the United States convene every October to celebrate the cooperative movement's history and economic impact on communities nationwide. The annual awareness month provides a key opportunity to reflect on the legacy of cooperative impact and celebrate the many ways co-ops are committing to make an impact in their communities and around the world.

For more information about 2018 National Cooperative Month, including success stories, ways to promote cooperatives in your community and more, visit https://www.coopmonth.coop.

BAYER

BLOOD, SWEAT AND

EARS

BAYTRIL® OTIC

FEATURING ENROFLOXACIN
★ WITH SPECIAL GUEST ★
SILVER SULFADIAZINE

VS

★ THE ★
PSEUDOMONAS OTITIS OF
CHARLIE
"JAWS"
MALONE

BAYTRIL® OTIC
(ENROFLOXACIN/SILVER SULFADIAZINE)
ANTIBACTERIAL-ANTIMYCOTIC EMULSION

FIGHT NASTY

CAUTION: Federal (U.S.A.) law restricts this drug to use by or on the order of a licensed veterinarian. Federal law prohibits the extra label use of this drug in food-producing animals. CONTRAINDICATIONS: Baytril® Otic is contraindicated in dogs with suspected or known hypersensitivity to quinolones and/or sulfonamides.

FIGHTNASTY.COM

TVC NEWS

This Month at the Veterinary Cooperative

New Vendors

The Veterinary Cooperative is excited to announce the addition of four new programs to our portfolio! Our goal is to partner with companies that help you level the playing field to best compete against the big corporate hospitals by leveraging our cooperative strength.

- **Human Interest** – a full-service 401(k) provider that manages compliance, HR, investment advising and all associated administrative needs. Click here for the program.
- **National Cooperative Bank** – nationwide lender providing financial solutions to cooperatives and their members. Click here for the program.
- **RapidBac™ Vet** – the only validated, rapid test for the detection of Gram-negative and Gram-positive bacteria in urine. Click here for the program.
- **Stratford Pharmaceuticals** – companion animal products sold exclusively through veterinarians, with extensive custom/private label support and services available. Click here for the program.

In addition to those programs we've added, **we also must inform the ownership about several programs that will not be renewed in 2019**. TVC has appreciated the partnership of the below organizations:

- Animal Reference Pathology
- Diamondback Drugs (acquired by and merging with Wedgewood Pharmacy)
- IDEXX Telemedicine
- VDI Laboratory

For questions, email Bryan Munson at bryan.munson@tvc.coop.

Be Ready For Disasters Before They Strike

Hurricane season generally runs through November, so we may not have seen the end of it yet, and there can certainly be heavy rains and possibly even tornadoes in sight. Aside from the obvious potential for physical and emotional harm, as well as overwhelming damage to property, there can be separation from pets amid the chaos that comes with such a disaster. Our vendor partner Datamars-Pelink has put together a "Disaster Preparedness Checklist" for you to pass along to your pet parents, and it would be a good idea to discuss the importance of microchipping their pets if they haven't already. Petlink has many money-saving offers on their TVC web page; be sure to check out their offers in their detailers here

TVC Annual Meeting 2019

Registration is open for the required TVC 2019 Annual Meeting scheduled for January 19, 2019 held in conjunction with VMX (formerly NAVC) in Orlando.

Attendance is required, either in-person or virtually, since we'll be voting on different items and our bylaws require that we meet a quorum. Click here for a link to our Annual Meeting page

We really hope you'll join us in person in Orlando; here's why:

- Meet and greet TVC vendors and staff during our catered Happy Hour immediately following the meeting
- Meet other TVC Co-op owners
- Enter in the Happy Hour raffle to win prizes from our vendors
- Get an in-depth report on TVC's financials
- Help elect the new Board slate
- Hear about the latest trends in the industry

Enjoy significant savings from VMX if you register early (**also see the TVC promo code below!**):

VMX Pricing

REGISTRATION TYPE	NOW – 10/5	10/6 – 11/30	12/1 – ON-SITE
Veterinarian	$625.00	$700.00	$825.00

For other registration pricing categories (such as Practice Manager, Vet Tech, etc.), click here

HEARD ABOUT POSATEX®?

POWERFUL, YET GENTLE SOLUTION TO TREAT SERIOUS CASES OF OTITIS EXTERNA

Posatex®
Otic Suspension
(Orbifloxacin, Mometasone Furoate Monohydrate and Posaconazole, Suspension)

POSATEX® Otic Suspension (Orbifloxacin, Mometasone Furoate Monohydrate and Posaconazole, Suspension)

Intervet/Merck Animal Health

Antibacterial, anti-inflammatory, antifungal
For Otic Use in Dogs Only

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

Federal law prohibits the extralabel use of this drug in food-producing animals.

DESCRIPTION:
Each gram of POSATEX® Otic Suspension contains 10 mg of orbifloxacin; mometasone furoate monohydrate equivalent to 1 mg mometasone furoate; and 1 mg of posaconazole in a mineral oil based system containing a plasticized hydrocarbon gel.
Four drops of POSATEX® Otic Suspension delivers approximately 1.0 mg orbifloxacin, 0.1 mg of mometasone furoate monohydrate, and 0.1 mg of posaconazole.

INDICATIONS:
POSATEX® Otic Suspension is indicated for the treatment of otitis externa in dogs associated with susceptible strains of yeast (*Malassezia pachydermatis*) and bacteria (coagulase positive staphylococci, *Pseudomonas aeruginosa*, and *Enterococcus faecalis*).

DOSAGE AND ADMINISTRATION:
Shake well before use. For dogs weighing less than 30 lbs. instill 4 drops of POSATEX® Otic Suspension once daily into the ear canal. For dogs weighing 30 lbs. or more, instill 8 drops once daily into the ear canal. Therapy should continue for 7 consecutive days.

CONTRAINDICATIONS:
POSATEX® Otic Suspension is contraindicated in dogs with known or suspected hypersensitivity to quinolones, mometasone furoate monohydrate, or posaconazole. Do not use in dogs with known tympanic perforation (see **PRECAUTIONS**).

WARNINGS:
Human Warnings: Not for use in humans. Keep out of reach of children.
Animal Warnings: Do not administer orally. Immediately discontinue use of POSATEX® Otic Suspension if hearing loss is observed during treatment (see **ADVERSE REACTIONS**).

PRECAUTIONS:
The use of POSATEX® Otic Suspension in dogs with perforated tympanic membranes has not been evaluated. The integrity of the tympanic membranes should be confirmed before administering this product. Avoid prolonged or repeated use of POSATEX® Otic Suspension. Long-term use of topical otic corticosteroids has been associated with adrenocortical suppression and iatrogenic hyperadrenocorticism in dogs (see **ANIMAL SAFETY**).
The safe use of POSATEX® Otic Suspension in dogs used for breeding purposes, during pregnancy or in lactating bitches, has not been evaluated. The systemic administration of quinolones has been shown to produce cartilage erosions of weight bearing joints and other signs of arthropathy in immature animals of various species.

ADVERSE REACTIONS:
In the field study, 143 dogs were treated with POSATEX® Otic Suspension. Of those, 1 dog with bilateral otitis externa developed hearing loss. POSATEX® Otic Suspension treatment was discontinued and the condition resolved after one week. To report suspected adverse reactions, call 1-800-224-5318. For a copy of the Material Safety Data Sheet (MSDS) call 1-800-770-8878.

CLINICAL PHARMACOLOGY:
Orbifloxacin: Orbifloxacin is a synthetic fluoroquinolone antibacterial agent. The bactericidal action of fluoroquinolones is concentration-dependent and results from interference with bacterial DNA gyrase and topoisomerase IV. Since these enzymes are needed for bacterial DNA synthesis and transcription, fluoroquinolones disrupt bacterial replication and lead to bacterial cell death.
Mometasone: Mometasone furoate monohydrate is a topical corticosteroid characterized by a (2') furoate 17-ester having chlorine at the 9 and 21 positions.
Posaconazole: Posaconazole is a broad-spectrum triazole antifungal agent. The mechanism by which triazoles exert fungicidal action involves the selective inhibition of the enzyme lanosterol a C14 demethylase (a microsomal cytochrome P-450- dependent enzyme) involved in ergosterol biosynthesis in yeasts and filamentous fungi.
Systemic absorption of the active ingredients was determined in single-dose radiolabelled studies with ^{14}C-orbifloxacin, ^{3}H-mometasone furoate, and ^{14}C-posaconazole contained within the POSATEX® Otic Suspension formulation and placed into the ear canals of normal beagle dogs. Most of the absorption occurred in the first few days after administration. The extent of percutaneous absorption of topical medications is influenced by many factors including the integrity of the epidermal barrier. Inflammation can increase the percutaneous absorption of drugs.

EFFECTIVENESS:
The effectiveness of POSATEX® Otic Suspension was evaluated in a placebo-controlled, double-blind, multi-site field study. One hundred and ninety one dogs with naturally occurring clinical otitis externa associated with both yeast and bacteria were randomly allocated to either POSATEX® Otic Suspension or placebo ointment. Of the 160 dogs evaluated for effectiveness, 122 were treated with POSATEX® Otic Suspension and 38 were treated with placebo ointment. Treatments were administered once daily for 7 consecutive days. Assessment of effectiveness was based on improvement in clinical signs at re-evaluation 2-7 days following administration of the last dose.
Compared to the placebo, a significant percent of dogs treated with POSATEX® Otic Suspension showed improvement in clinical signs (discomfort, erythema, and swelling) caused by otitis externa associated with one or more of the following organisms: *Malassezia pachydermatis*, coagulase positive staphylococci, *Pseudomonas aeruginosa*, and *Enterococcus faecalis*.
Percent of Dogs Showing Improvement in Clinical Signs of Otitis Externa

Clinical Sign	POSATEX® Otic Suspension Group	Placebo Group	Significance
Discomfort	88%	45%	p<0.0001
External Ear Canal Erythema	81%	39%	p<0.0001
External Ear Canal Swelling	83%	49%	p=0.0001

ANIMAL SAFETY:
POSATEX® Otic Suspension was administered at 1,3, and 5 times the recommended dosage for 21 consecutive days. The control group received the vehicle in both ears at the clinical dose given five times per day. There was a slight decrease in serum cortisol concentration after ACTH stimulation on Day 21 in the 5X group. Erythema was noted in all groups. Aural pain, swelling, or heat were each noted in 3 separate dogs in the 5X group.

STORAGE INFORMATION:
Store at temperatures between 2°-30°C (35.6°-86°F).
Shake well before use.

HOW SUPPLIED:
POSATEX® Otic Suspension is available in 7.5 g, 15 g, and 30 g plastic bottles.
NADA# 141-266, Approved by FDA.

Made in Germany
114089 R1
CPN: 1047303.2

MERCK Animal Health

Plus, as a TVC Owner, you can ***save an additional 10 percent*** when you enter the code **DISCOUNTTVC** on your VMX registration. Just be sure to click the "apply discount" button on the review page once you enter the code.

Here are the details:

- TVC 2019 Annual Meeting
- Tentatively Saturday January 19th, 2019; 3:30-6:00 p.m., Eastern Standard Time
- Meeting will last approximately 1 hour, followed immediately by a 1 ½ hour cocktail party
- The Executive Ballroom (new room this year; right across from the Junior Ballroom) in the Rosen Centre Hotel, 9840 International Drive Orlando, FL 32189

Click here to RSVP for in-person or virtual attendance

Webinars

Register

Multi-Model Nutritional Therapy
November 13 | 9 a.m. & 1 p.m. (CST)

Join Dr. Cynthia Farrell and **Hills Pet Nutrition** for a 1-hour presentation on "Multi-Model Nutritional Therapy," and earn **1 CE credit**.

The program will discuss Multi-Model Nutritional Approach to Disease Management. 52.5 percent of dogs and 58.3 percent of cats in the U.S. were overweight or obese, according to the National Pet Obesity Awareness Day Survey conducted by the Association for Pet Prevention in 2012.

With such a high percentage of overweight patients, it is not surprising that many pets suffer from more than one disease condition. This presentation will focus on the role of nutritional management for treating patients will multiple disease conditions such as obesity and lower urinary tract disease.

Register

TVC University Live Webinar: Beating the Winter Blues with Nutraceuticals
November 27 | 9 a.m. & 1 p.m. (CST)

For those who attend the TVC University Live webinar, Ceva will be giving away a 60 count tub of TRP-Tri-COX® to each attendee. If you have never purchased TRP-Tri-COX® before, there will also be a new user offer of a Buy 1, Get 1 Free on TRP-Tri-COX®.

During the colder winter months, just as the cold may begin to have adverse effects on your joints, it does the very same for our canine companions. The underlying causes of this exist year-round; however, this can be a particularly painful time due to the changing seasons.

This is also a time of year during which sales may slow in the clinic. Allow us to help traverse the landscape of nutraceuticals and increase your revenue through the sale of nutraceuticals by helping you to educate your clients on their benefits. Ceva will also be sharing a message from Dr. Todd McCracken, who will be speaking about the medical advantages of Ceva's Nutraceutical line.

Conferences

Register

TVC Central: 2019 Chicagoland Veterinary Conference
May 12-16 | Chicago, IL

Chicagoland Veterinary Conference is a great place to expand your knowledge and grow your network. TVC will be sponsoring a fantastic lineup of speakers and lecture topics you won't want to miss out on.**TVC Co-op Owners can receive 10 percent off of their registration with promo code: TVC2019.**

Click here for more informationon the conference.
Hope to see you at this great event!

Promotions

BI: Centragard: Buy a 3-dose carton, get a 1-dose carton FREE through December 31, 2018. Click here for details

Ceva: Q4 Promo: All types of "Buy This, Get That Free" on Pheromones; Clenz-A-Dent; Douxo; Pain and Mobility; Vectra; Vectra 3D; and Catego. Click here for details

Hill's: Get 10 percent off Post-Surgical Prescription Diets, and receive "Get Well" materials for your hospital. Plus, get a $25 Amazon gift card, October 1 – November 30, 2018. Click here for details

Human Interest: New vendor of 401(k) plans tailored for the small business market. They have waived their $499 set up fee exclusively for TVC owners. Click here for details

KVP Custom Orthotics: KVP Custom Orthotics has just launched an exclusive rebate program with TVC. They are offering an $85 rebate on each KVP Custom Orthotics brace! Click here for details

Label Value: Labels for vet offices (and everything else!). Save 10 percent off your order *in addition to your 8 percent TVC discount* with promo code TVC10. Click here for details

Merck Bravecto Client Offer: Pet parents can receive a $15 rebate for 2 doses; Mix, Match, and save when you purchase any Bravecto product! Click here for details

One Place Capital: The "NO Loan" Simple Interest Loan with No prepayment penalties, NO blanket liens, and NO hidden fees just got even better – now there are NO payments until 2019! Click here for details

Provecta: Free Amazon Gift Card with purchase of Provecta for cats. October 1 – December 1, 2018. Refer to banner ad. Click here for details

Securos Surgical: Buy a Vet Tech Pack (includes 3 premium instruments and carry pouch) at 30% off through 10/31/18! Click here for details

VetOne: Switch to VetOne and enjoy 11 percent to 111 percent savings on scores of everyday items for your clinic! Click here for details

Vetoquinol: Vetprofen Buy 3, Get 1 FREE! October 1 – November 30, 2018. New placements. Click here for details

Vetsource: New Q4 Perk: Tired of hearing your clients saying how they can get every product you recommend for less online? If you have a Vetsource online pharmacy, you can offer your clients 20 percent off their first Home Delivery order through December 31, 2018. Even better – the 20 percent off promo is combinable with other manufacturer promotions! Click here for details

All Ears

Listening to what clients want and providing a range of services and solutions can do wonders for the success of independent veterinary practices

This time of year, everyone on staff at 4 Paws Vet Hospital, in Suisun City, California, is all ears. "Progressive Medicine With A Personal Touch" is the mission statement of TVC Owner Dr. Elise Brandwajn and her team. They strive for the highest quality care for their patients, with a very personal touch for their owners in the process.

But there is also another reason they're all ears, this season especially. "We see a great deal of ear infections this time of year, associated with atopic dermatitis," says Dr. Brandwajn.

Indeed, otitis externa is the most common ear disease in dogs, according to the Merck Veterinary Manual. Unfortunately, otitis externa can be caused by many different factors. According to the Merck Veterinary Manual, some of these factors (such as parasites, foreign objects, and allergies) appear to directly cause the inflammation, while others (such as certain bacteria, yeasts, or a middle ear infection) perpetuate the condition. To complicate things further, the shape or form of the pinnae or ear canals can predispose dogs to developing otitis externa. Identifying these factors is key to successful control of the inflammation.

For 4 Paws Vet Hospital, Dr. Brandwajn says the number of patients with ear infections can range anywhere from two to six in a day. "Our hospital routinely sees otitis externa cases and must treat them accordingly."

Because it's a common ailment and frequent client conversation, 4 Paws Vet Hospital aims to provide the best treatment options, which include products such as Merck Animal Health's Mometamax and Posatex consumables.

"We use Posatex extensively in our practice, based on ear cytology findings and results," says Dr. Brandwajn. "Owners really appreciate the once daily treatment and it seems to work much more effectively against Malassezia, or many bacterial infections with inflammation."

Dr. Brandwajn says with Mometamax and Posatex consumables, compliance is much better from owners with once daily treatment, and a shorter course of 5-10 days.

Striking a balance

Just as otitis externa can be caused by many different factors, so to do veterinary practices need to understand that their clients have many things to consider when coming to the best decision for the care of their pet. "Our hospital offers gold standard of care whenever possible, but we always have options that work with owners' budgets," Dr. Brandwajn says. "We try to use innovative medicine, and have a special interest in cold laser therapy and platelet rich plasma regenerative medicine, as well as internal medicine."

A wide range of services and pricing options are appreciated by the clients that walk through the doors of 4 Paws Vet Hospital. Dr. Brandwajn says she hopes thoroughness of care as well as compassion and empathy from she and her staff are things that really stand out for clients and their pets. They achieve this through training and intentional handling practices. "We use low fear, low stress handling techniques and value/respect the human-animal companion bond by being as responsive as we can be, as a team."

Clients and patients keep Dr. Brandwajn and her team on their toes, and that's a good thing. "The ability to offer many treatment options, and always see new cases or variations of diseases," is something Dr. Brandwajn says she loves about veterinary medicine. ■

For 4 Paws Vet Hospital, Dr. Brandwajn says the number of patients with ear infections can range anywhere from two to six in a day. "Our hospital routinely sees otitis externa cases and must treat them accordingly."

TVC Has You Covered

The following is a list of the top diseases that veterinary practices will see from clients, as well as vendors that TVC has partnered with for solutions.

Top Disease	TVC Partner Product	TVC Partner
Skin Allergies	Prescription Diet Derm Defense d/d and z/d	Hills
	MPA shampoo line, Universal Medicated Shampoo	Vetoquinol
	Douxo product line	Ceva
	Hydrolyzed protein diets	Royal Canin
Bladder/Urinary	Prescription Diet c/d, meta urinary, meta/urinary stress	Hills
	Urinary SO diets	Royal Canin
Ear Infection	Ear Cleansing Solution, Cerumene	Vetoquinol
	Claro Otitis	Bayer
	Posatex, Mometamax	Merck
Dental Disease	Prescription Diet t/d	Hills
	Dental Chews, Dental toothbrush kits, fingerbrush kits (Enzadent, Dentahex)	Vetoquinol
	Clenz-a-dent product line, Breakables	Ceva
	OraVet dental hygiene chews	BI
Non cancerous skin mass		
Chronic Kidney disease	Prescription Diet k/d, k/d plus mobility, k/d early support	Hills
	Azodyl, Epakitin, Renal K	Vetoquinol
	Renal Support Diets	Royal Canin
Skin Infection	MPA benzoyl plus, Lime Sulfur Dip	Vetoquinol
	Malaseb Skin Infection	Bayer
	Tresaderm	BI
Vomiting/Upset Stomach	Prescription Diet i/d, i/d stress, i/d sensitive, i/d low fat	Hills
	Endurosyn and Lactoquil	Bayer
	Gastrointestinal diets	Royal Canin
Arthritis	Prescription Diet j/d	Hills
	Orthotic Bracing, KVP Cura patches	KVP
	Synovi G4 and Alenza	Bayer
	TRP-Tri-COX soft chews	Ceva
	Anitinol, Previcox	BI
Excessive Thyroid Hormone	Prescription Diet y/d	Hills

Step into the **NEXT GENERATION** *of Internal Parasite Protection*

NEW!

- ✓ *Prevents heartworm disease **and** treats & controls roundworms, hookworms & tapeworms*
- ✓ *First feline product to combine eprinomectin & praziquantel*
- ✓ *Approved for cats and kittens as young as 7 weeks of age, weighing as little as 1.8 lbs*
- ✓ *Easy-to-use, stress-free applicator*
- ✓ *Rx product available through veterinarians*

IMPORTANT SAFETY INFORMATION: For topical use only. Side effects may include emesis, anorexia, lethargy, and hair changes and skin reactions at the site of application. If ingested, hypersalivation, vomiting and lethargy may be observed. The safety of CENTRAGARD has not been tested in kittens less than 7 weeks of age or less than 1.8 lbs.

Boehringer Ingelheim

CENTRAGARD is a Merial product. Merial is now part of Boehringer Ingelheim.

Centragard™

(eprinomectin and praziquantel transdermal solution)

American Heartworm Society Releases 2018 Canine Heartworm Guidelines

Revised Guidelines Stress Risk Analysis in Prevention, Testing and Treatment Decisions

Wilmington, Delaware—Reducing heartworm transmission, clarifying testing recommendations and avoiding shortcuts in heartworm treatment are priorities of the 2018 canine heartworm guidelines recently released by the American Heartworm Society (AHS). The guidelines, which focus on heartworm prevention, testing and treatment, as well as heartworm biology and epidemiology, are used by thousands of veterinary practices to guide their clinical protocols and day-to-day decisions about heartworm management.

Revisions to the AHS guidelines are published as needed, based on assessment of heartworm research that impacts principles of heartworm management. The 2018 guidelines have just been released and reflect the following updates to the Society's recommendations.

Heartworm Prevention: Weigh the Relative Risk

Given the highly preventable nature of heartworms, prevention practices are the cornerstone of any practice's heartworm management program, says Chris Rehm, DVM, President of the American Heartworm Society. "Unfortunately, the latest AHS survey found that incidence has been trending up rather than down, with the number of infected dogs per clinic rising by 21 percent in the U.S. and its territories between 2013 and 2016."

"In regions with relatively low heartworm incidence numbers and few mosquitoes, use of heartworm preventives alone can be sufficient to safeguard patients."

– Chris Rehm, DVM, President of the American Heartworm Society

Environmental and climatic changes, as well as the relocation of microfilaremic dogs and the expansion of microfilaremic wild canid territories are considered to be contributing factors to both incidence numbers and the spread of heartworms to areas once considered non-endemic. Effective prevention also requires diligence in compliance on the part of pet owners.

"For these reasons, we continue to stress the importance of year-round administration of macrocyclic lactone (ML) preventives, along with practical steps to reduce mosquito exposure, such as eliminating standing water on the property and keeping pets indoors during peak mosquito times," says Rehm. "Year-round prevention is the single most important step owners can take to reduce the risk of heartworms to their pets."

In an update to their prevention recommendations, the AHS Guidelines state that veterinarians should also consider the use of EPA-approved mosquito repellents/ectoparasiticides to control the mosquito vector and reduce heartworm transmission if the risk of heartworm transmission is high.

"The use of repellents is not a blanket recommendation, nor should repellents ever be used in place of ML preventives," stresses Rehm. "In regions with relatively low heartworm incidence numbers and few mosquitoes, use of heartworm preventives alone can be sufficient to safeguard patients. Where mosquito proliferation and heartworm

Take a bite out of Lyme.

NexGard® (afoxolaner) is the ***ONLY*** chew that combines all of the following benefits into the one that dogs prefer[1]:

- ✓ Kills fleas
- ✓ Kills ticks — lone star ticks, brown dog ticks, American dog ticks, and black-legged (deer) ticks
- ✓ **And FDA-approved for the prevention** of *Borrelia burgdorferi* infections as a direct result of killing *Ixodes scapularis* vector ticks

[1]Data on file.

***NexGard* is a Merial product. Merial is now part of Boehringer Ingelheim.**

Boehringer Ingelheim

IMPORTANT SAFETY INFORMATION: NexGard is for use in dogs only. The most frequently reported adverse reactions include vomiting, pruritus, lethargy, diarrhea 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 or neurologic disorders. For more information, see the full prescribing information or visit www.NexGardForDogs.com.

incidence numbers are high, however, additional measures may be warranted on either a year-round or seasonal basis. Individual veterinarians are in the best position to assess the risk for their practices as well as for individual patients."

Heartworm Testing: Putting Heat Treatment in Perspective

Studies have been conducted over the past decade to better understand the potential for heat treatment of serum samples to unmask blocked antigen, raising questions about optimal heartworm testing methods. While noting that further study of this effect is warranted to better understand the mechanisms in play, the AHS Guidelines affirm that the high sensitivity of antigen and microfilaria tests make heat treatment unnecessary for routine heartworm screening.

"This doesn't mean there isn't a time and place for this practice in heartworm diagnosis," Rehm notes. The AHS Guidelines recommend veterinarians consider heat treating serum when either the presence of circulating microfilariae is detected or the veterinarian suspects active clinical disease in the absence of a positive antigen test.

Heartworm Treatment: Stick with the AHS Protocol

"One of the most frequent questions we hear—especially from pet owners—is about the need for adulticide treatment for infected dogs. It's understandable when you consider the expense of treatment and the need for multiple veterinary visits," says Rehm. "We also get questions from veterinarians about the AHS protocol itself, which includes pretreatment with an ML and doxycycline, followed by a month-long waiting period, then three doses of melarsomine on days 60, 90 and 91.

"Heartworm disease is a complex disease, and there are no shortcuts to appropriate treatment," the AHS leader emphasizes, noting that the AHS protocol was designed to kill adult worm infections with minimal complications while stopping the progression of disease. "Skipping any one of these steps can affect both the safety and efficacy of heartworm treatment."

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Rehm adds that non-arsenical treatment protocols, including the "moxy-doxy" combination of moxidectin and doxycycline, have been studied in both Europe and the U.S. to better understand how to manage heartworm-positive dogs that aren't candidates for melarsomine treatment. "Because some dogs are simply not candidates for adulticide treatment, there is a place for alternatives such as these," he explains. "However, it's also important for veterinarians to understand that these non-arsenical protocols have serious disadvantages, the most important of which is the length of time required to kill adult worms, during which time heartworm pathology and damage can progress. This also greatly increases the length of time the pet needs strict exercise restriction, which is problematic."

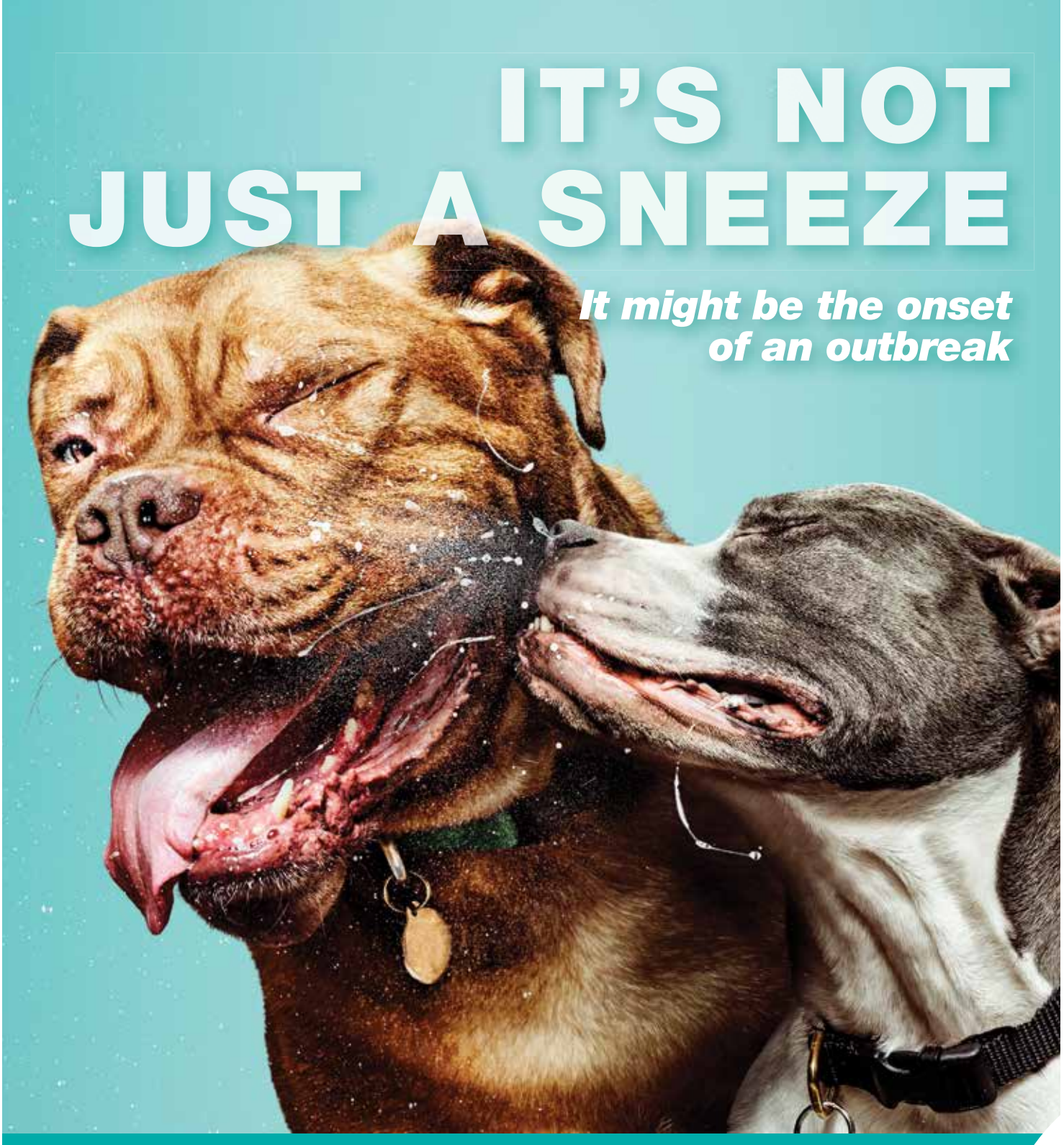
In a 2017 AHS survey of approximately 5,000 veterinarians, three-quarters of practitioners stated they follow the AHS heartworm guidelines. "As the primary heartworm resource for veterinary practitioners and the public, it's our job to continually assess new information on heartworm management and adjust our guidelines accordingly," Rehm concludes. "Our hope is that the 2018 updates will clarify what veterinarians can do day-to-day to reduce the threat of this significant disease."

To access the complete set of AHS canine and feline heartworm guidelines, visit heartwormsociety.org. ■

Source: American Heartworm Society report

IT'S NOT JUST A SNEEZE

It might be the onset of an outbreak



You know it only takes one dog to start a canine influenza outbreak in your area.
And the threat is getting worse. Canine influenza is closer than you think.

Make the Nobivac® Canine Flu Bivalent core for your social patients.

Nobivac

*Rethink the risk — visit **DogFlu.com** to learn more.*

MERCK Animal Health

Vetsource purchases controlling interest in VetSuccess

Vetsource®, a technology-enabled health-care services company with a SaaS platform that empowers veterinarians to deliver better patient care, is growing its technology team and software services in order to bring additional innovative solutions to the veterinary profession, according to a release.

A recent funding round of $50 million led by Bain Capital Ventures is being used to accelerate Vetsource's growth, including significant investments in technology and marketing, the acquisition of data analytics company VetSuccess and a partnership with the telemedicine platform TeleVet, the release said.

Vetsource's technology consists of cloud-native software that supports hundreds of thousands veterinary professionals and pet parents. Its services empower veterinary practices at all levels of their business, from prescription management and pet-owner engagement to revenue generation and data analytics.

"It's an exciting time in Vetsource history as we invest heavily in our technology infrastructure and scalability. This investment allows us to swiftly respond to the changing needs of the veterinary industry by developing new, innovative SaaS applications that help our customers run successful businesses," said Craig Sutter, chief technology officer of Vetsource.

Using Vetsource's mobile-optimized ePrescribing tool, veterinarians can write, review and approve prescriptions from any web-enabled device, even when they are away from the practice. Additional services include software that enables veterinarians to proactively recommend products to their clients and a customizable e-commerce platform where pet parents can shop directly from their vet's online store.

"We are more than doubling our technology expenditure to build out our team and expand our platform as we continue to bring innovative and essential solutions to the vet space," added Sutter, whose team is responsible for all tech software development for the company. "We have an experienced team, a great culture and opportunities for advancement, and we're looking forward to adding new team members that will help us create software that makes a difference in pet care."

Vetsource plans to double its tech team over the next two years, adding a variety of positions — including cloud engineers, application developers, business analysts and quality assurance specialists — to its technology centers in Portland, Ore., and Tulsa, Okla. More information about Vetsource's platform and available jobs can be found on vetsource.com. ■

Pledge to Protect Pets From Infectious Disease

HEROES FOR HEALTHY PETS™

YOUR REPUTATION MATTERS

Infectious disease affects hundreds of veterinary practices and thousands of pets nationwide each year.

The **Heroes for Healthy Pets Infectious Disease Management Certification Program** can help train your veterinary clinic staff in best practices to help manage and prevent infectious disease. It is based upon the 2017 American Animal Hospital Association (AAHA) Canine Vaccination Guidelines that suggest vaccine protocols to help protect against diseases that place pets at risk in certain situations, such as for social dogs.

How It Works

- Register online at ***heroes4healthypets.com*** and view complimentary online educational modules taught by veterinary experts in infectious disease:
  - Understanding Infectious Diseases
  - Effective Infectious Disease Control
- Pass the final examination

Veterinary professionals receive two hours of RACE-approved Continuing Education credit.

Print and display your *Infectious Disease Management Certificate.* Show your commitment to pet health!

Register now at *heroes4healthypets.com*

CLOROX HEALTHCARE · Barkleigh · NAVTA · IBPSA · PSI Pet Sitters International · VETgirl

The Program is sponsored by Merck Animal Health and Clorox Healthcare in coordination with Barkleigh Productions, the National Association of Veterinary Technicians in America (NAVTA), International Boarding and Pet Services Association (IBPSA), Pet Sitters International (PSI), and VetGirl.

MERCK Animal Health

Industry NEWS

AAHA announces new Board of Directors at Connexity

The American Animal Hospital Association welcomed three new officers and one new director to the AAHA Board of Directors. The new officers and new director on the 2018-2019 AAHA Board of Directors include: Darren Taul, DVM, is AAHA's 2018–2019 president; Guylaine Charette, DMV, is AAHA's new president-elect; Pamela Nichols, DVM, CCRP, is now the vice president on the AAHA board; Margot Vahrenwald, DVM, joins the AAHA board as a director. Several 2017 AAHA directors will be returning in 2018 as well.

Bayer Animal Health and NeuroCycle Therapeutics sign global license agreement

Bayer Animal Health GmbH and NeuroCycle Therapeutics, Inc. (NCT) have signed a global license agreement to advance innovative allergy treatment options for companion animals, according to a release. As part of the license agreement, Bayer will develop and commercialize novel compounds based on knowledge and intellectual property licensed and controlled by NCT. Further terms of the agreement have not been disclosed.

Pets factor into home buying decisions of millennials, survey says

A recent CNBC article examined how big a role pets factor into home buying for millennials. A full 73 percent of millennials currently own a pet, according to the American Pet Products Association, and 89 percent of millennials who bought a home so far this year own a pet, according to Realtor.com. For this demographic, 79 percent of pet-owning homebuyers who closed on a property this year said they would pass up an otherwise perfect home if it didn't meet the needs of their pets, according to a Realtor.com survey. Read more at: https://www.cnbc.com/2018/08/31/millennials-put-pets-first-when-buying-a-home.html

MyPetDoc now available on Google Assistant

Vet24seven announced the launch of MyPetDoc on Google Assistant. MyPetDoc enables pet parents to have veterinarian-backed conversations regarding their pets' health, behavior, and wellness, 24/7, right in their own homes. MyPetDoc launched on Amazon Alexa in July 2018, and its expansion to Google Assistant-enabled devices includes Google Home smart speakers, smart TVs, and more than 124 million Android cell phones in the United States today, according to a release. Once MyPetDoc has answered the pet parents' questions, they can then choose to immediately speak with a licensed veterinarian for more guidance and advice. "Every month, 3 million people spend time searching the Internet for answers to pet-related concerns. With pet owners increasingly choosing to search using voice, MyPetDoc provides an opportunity for them to hold 2-way dialogue and get veterinarian-backed answers when they are worried about their pet's health or behavior," said Cal Lai, CEO and President of Vet24seven.

Centragard™

(eprinomectin and praziquantel transdermal solution)

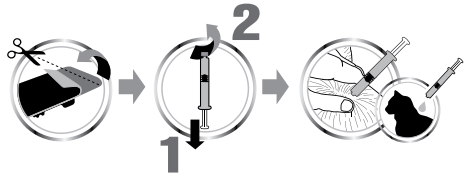
CAUTION: Federal (USA) law restricts this drug to use by or on the order of a licensed veterinarian.

Description:
CENTRAGARD is a transdermal solution containing eprinomectin and praziquantel available in 0.3 mL and 0.9 mL unit applicators to treat cats from 1.8 lbs to 33 lbs. Each mL of CENTRAGARD contains 4 mg of eprinomectin and 83 mg of praziquantel, as well as the inactive ingredients (dimethyl isosorbide, glycerol formal, and butylated hydroxytoluene). Eprinomectin belongs to the avermectin class of anthelmintics and is a mixture of homologous components referred to as eprinomectin B1a and B1b. Praziquantel is a pyrazinoisoquinoline anthelmintic.

Indications:
CENTRAGARD is indicated for the prevention of heartworm disease caused by *Dirofilaria immitis*, and for the treatment and control of roundworms (adult and fourth stage larval *Toxocara cati*), hookworms (adult and fourth stage larval *Ancylostoma tubaeforme*; adult *Ancylostoma braziliense*), and tapeworms (adult *Dipylidium caninum* and *Echinococcus multilocularis*) in cats and kittens 7 weeks of age and older and 1.8 lbs or greater.

Dosage and Administration:
CENTRAGARD is dosed at a minimum of 0.055 mL/lb (0.12 mL/kg), which delivers a minimum dose of 0.23 mg/lb eprinomectin and 4.55 mg/lb praziquantel. Administer the entire contents of a CENTRAGARD unit applicator topically once a month as specfied in the following table:

Cat Weight (lb)	Volume (mL)	Eprinomectin (mg)	Praziquantel (mg)
1.8-5.5	0.3	1.2	24.9
5.6-16.5	0.9	3.6	74.7
16.6-22.0	0.3+0.9	4.8	99.6
22.1-33.0	0.9+0.9	7.2	149.4



To apply CENTRAGARD pull back the plunger of the unit applicator slightly and remove the cap. Part the hair in one spot on the midline of the neck between the base of the skull and the shoulder blades, place the tip of the unit applicator on the skin and apply the contents directly on the skin. If the weight of the cat requires a second application, apply the contents in the same manner as described above in the same location. Discard applicator after use.

Heartworm Prevention:
For prevention of heartworm disease, CENTRAGARD should be administered once a month. CENTRAGARD may be administered year round or at a minimum, should start 1 month before the cat's first expected exposure to mosquitoes and continuing at monthly intervals until at least one month after the cat's last exposure to mosquitoes. If a dose is missed and a 30-day interval between doses is exceeded, administer CENTRAGARD immediately and resume the monthly dosing schedule.

When replacing another monthly heartworm preventive product in a heartworm prevention program, the first treatment with CENTRAGARD should be given within one month of the last dose of the former medication. At the discretion of the veterinarian, cats older than 6 months of age may be tested to determine the presence of existing heartworm infection before treatment with CENTRAGARD.

Treatment and Control of Roundworms, Hookworms and Tapeworms:
CENTRAGARD treats and controls roundworms (adult and fourth stage larval *Toxocara cati*), hookworms (adult and fourth stage larval *Ancylostoma tubaeformae*, adult *Ancylostoma braziliense*), and tapeworms (adult *Dipylidium caninum* and *Echinococcus multilocularis*) after a single administration or when given monthly as part of a heartworm prevention program. Cats may be exposed to and can become infected with roundworms, hookworms, and tapeworms throughout the year, regardless of season or climate. Clients should be advised of appropriate measures to prevent reinfection of their cat with intestinal parasites. Because the prepatent period for *E. multilocularis* may be as short as 26 days, cats treated at the labeled monthly intervals may become reinfected and shed eggs between treatments.

Human Warning:
Not for human use. Keep out of reach of children. Avoid contact with the application site for 5 hours following treatment. Wash hands after administering the product. If the product accidentally gets into the eyes, flush thoroughly with water. In case of accidental ingestion, or if skin or eye irritation occurs, contact a poison control center or physician for treatment advice.

Precautions:
Do not administer orally. Cats may salivate excessively and vomit if CENTRAGARD is accidentally administered orally or is ingested through licking/grooming the application site (see ANIMAL SAFETY).

The safety of CENTRAGARD has not been tested in breeding, pregnant or lactating cats.

The safety of CENTRAGARD has not been tested in kittens less than 7-9 weeks of age or weighing less than 1.8 lbs (0.8 kg).

Adverse Reactions:
In a well-controlled field study emesis, anorexia, lethargy, temporary clumping or spiking of the hair, or mild, transient skin reactions (itching, hair loss) were reported. When cats licked the application site after treatment, temporary excessive salivation was observed. Oral ingestion of CENTRAGARD may also result in hypersalivation, vomiting and/or lethargy. In margin of safety studies, transient neurological signs such as ataxia, disorientation, lethargy, and pupil dilation were observed in some cats. Correct application will minimize the occurrence of such events.

To report suspected adverse events, for technical assistance or to obtain a copy of the SDS, contact Merial at 1-888-637-4251.

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.

The Safety Data Sheet (SDS) provides additional occupational safety information. For customer service or to obtain product information, including the SDS, call 1-888-637-4251.

Information for Owner or Person Treating Animal:
Echinococcus multilocularis is a tapeworm found in wild canids and domestic cats. *E. multilocularis* can infect humans and cause serious disease (alveolar hydatid disease). Owners of cats living in areas where *E. multilocularis* are endemic should be instructed on how to minimize their risk of exposure to this parasite, as well as their cat's risk of exposure. Although ML-635 was 100% effective in laboratory studies in cats against *E. multilocularis*, no studies have been conducted to show that the use of this product will decrease the incidence of alveolar hydatid disease in humans. Because the prepatent period for *E. multilocularis* may be as short as 26 days, cats treated at the labeled monthly intervals may become reinfected and shed eggs between treatments.

Mode of Action:
Eprinomectin binds to glutamate gated chloride channels that are present in invertebrate nerve and muscle cells and increases the permeability of the cell membrane to chloride ions that triggers hyperpolarization of the nerve or muscle cell resulting in paralysis and death of the parasite.

Praziquantel's mode of action is not precisely known but treated tapeworms undergo muscular paralysis accompanied by a rapid influx of calcium ions and the disruption of the tegument.

Effectiveness:
Effectiveness studies were conducted with an early formulation (ML-635), containing 8.3% fipronil, 0.4% eprinomectin, 8.3% praziquantel, and 10% *(S)*-methoprene. The doses of eprinomectin and praziquantel in ML-635 are equivalent to the final formulation of CENTRAGARD (eprinomectin and praziquantel transdermal solution).

Heartworm Disease Prevention:
In well-controlled laboratory studies, ML-635 provided 100% effectiveness against induced heartworm infections after a single application.

Treatment and Control of Roundworms, Hookworms, and Tapeworms:
In well-controlled laboratory studies, ML-635 provided >90% effectiveness against natural and/or induced roundworm (adult and fourth stage larval *Toxocara cati*); hookworm (adult and fourth stage larval *Ancylostoma tubaeforme*; adult *Ancylostoma braziliense*), and adult tapeworm *(Dipylidium caninum; Echinococcus multilocularis)* infections.

Animal Safety:
Margin of Safety Study: A combination of fipronil, eprinomectin, praziquantel, and *(S)*-methoprene was applied topically to 7 to 9 week old healthy kittens at 1, 3, or 5X the maximum dose (8 cats/group) six times at 28 day intervals. One 5X kitten exhibited ataxia, disorientation, and lethargy for 12 hours and exhibited pupil dilation for 24 hours following the 3rd treatment. This 5X kitten exhibited ataxia, disorientation, and lethargy for 6 hours, and moderate pupil dilation for 24 hours following the 4th treatment, and had pupil dilation following the 5th treatment. Hypersalivation was observed for one hour for one 5X kitten following the 1st treatment and one 3X kitten following the 4th treatment. One 5X kitten had slow pupillary light responses for one day after one treatment and one 3X kitten had slow pupillary light responses for 3 hours after one treatment. One control cat had marked pupil dilation and slow pupillary light responses lasting two hours after one treatment. Immediately post-treatment cats in all groups scratched and groomed the application site.

Study in Heartworm Positive Cats: Three groups (0X, 1X and 3X) of 12 young, adult cats, 4.7 to 6.6 months of age, were experimentally infected with adult heartworms *(D. immitis)* by venous transplantation. All cats were negative for heartworm antibody, antigen and microfilariae prior to transplantation. Two weeks after transplantation, immunoserology verified positive antigen and the presence of microfilaria in all enrolled cats. A combination of fipronil, eprinomectin, praziquantel, and *(S)*-methoprene was applied topically to cats at 1X or 3X the maximum exposure dose once every 28 days for three consecutive treatments. One cat in the 1X group exhibited cyanotic mucous membranes and tachypnea for 24 hours following the first treatment. The cat recovered and exhibited no abnormal signs following two subsequent treatments. There was no difference between the treatment groups in the number of adult *D. immitis* recovered at the end of the study.

Oral Administration Study: Oral tolerance was evaluated to assess the effects of accidental oral ingestion. Sixteen cats (8 male and 8 female) ranging in age from 9 - 10 months were studied. Eight cats were orally administered a combination of fipronil, eprinomectin, praziquantel, and *(S)*-methoprene at 1X the maximum exposure dose; the 8 control cats were sham dosed. All 8 treated cats immediately exhibited hypersalivation after oral administration, and 2 cats vomited and 3 cats were lethargic during the 1-2 hour post-treatment observations. Treated cats continued to hypersalivate and lick lips/mouth for 1-2 hours after oral administration. Cats were monitored for 14 days thereafter, during which one treated cat vomited on Day 12.

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

How Supplied:
CENTRAGARD is packaged as a single dose in 0.3 mL (for cats 1.8 – 5.5 lb) and 0.9 mL (for cats 5.6 – 16.5 lb) applicators.
Each size applicator is available in cartons containing 1, 3 or 6 applications.

NADA 141-492, Approved by FDA

Manufactured for:
Merial, Inc.,
Duluth, GA 30096-4640
USA
Made in France

Revision date: Feb 2018

NexGard®
(afoxolaner) Chewables

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

Description:
NexGard® (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-Naphthalenecarboxamide, 4-[5- [3-chloro-5-(trifluoromethyl)-phenyl]-4, 5-dihydro-5-(trifluoromethyl)-3-isoxazolyl]-N-[2-oxo-2-[(2,2,2-trifluoroethyl)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. NexGard is indicated for the prevention of *Borrelia burgdorferi* infections as a direct result of killing *Ixodes scapularis* vector ticks.

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:
Afoxolaner is a member of the isoxazoline class. This class has been associated with neurologic adverse reactions including tremors, ataxia, and seizures. Seizures have been reported in dogs receiving isoxazoline class drugs, even in dogs without a history of seizures. Use with caution in dogs with a history of seizures or neurologic disorders (see **Adverse Reactions** and **Post-Approval Experience**).

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

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

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

Table 1: Dogs With Adverse Reactions.

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

[1]Number of dogs in the afoxolaner treatment group with the identified abnormality.
[2]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.

Post-Approval Experience (July 2018):
The following adverse events are based on post-approval adverse drug experience reporting. Not all adverse events are reported to FDA/CVM. It is not always possible to reliably estimate the adverse event frequency or establish a causal relationship to product exposure using these data.

The following adverse events reported for dogs are listed in decreasing order of reporting frequency for NexGard:

Vomiting, pruritus, lethargy, diarrhea (with and without blood), anorexia, seizure, hyperactivity/restlessness, panting, erythema, ataxia, dermatitis (including rash, papules), allergic reactions (including hives, swelling), and tremors.

Contact Information:
For a copy of the Safety Data Sheet (SDS) or to report suspected adverse drug events, contact Merial at 1-888-637-4251 or www.nexgardfordogs.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.

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. In two separate, well-controlled laboratory studies, NexGard was effective at preventing *Borrelia burgdorferi* infections after dogs were infested with *Ixodes scapularis* vector ticks 28 days post-treatment.

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

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

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.

1050-4493-07
Rev. 05/2018

FRONTLINE VET LABS
A DIVISION OF MERIAL LIMITED