

# vetted™

Because practice ain't perfect.



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# Not all heroes wear capes

Come to a keynote just as super as you are.

By Hannah Wagle

Veterinary professionals are superheroes, whether they recognize it or not. Among them, Alane Cahalane, DVM, MA, is a veterinary surgeon who acknowledges those powers, and the great responsibility that comes with them. "Being a surgeon truly is a great superpower, and sometimes I get to use those powers," she says in a recent TEDx Talk.

At Fetch dvm360 conference in Baltimore, Dr. Cahalane will give a keynote speech that will inspire and instill hope and passion to her fellow heroes of vet med. Her greatest piece of advice? Being a superhero isn't all about the cape you wear. "Being a surgeon is a great superpower, but it's not about the scrubs and it's not about the instruments or the diagnostics—it's about the people that surround me. No superhero exists in a vacuum. We all rely on the people around us," she says.

Check out her amazing story—from becoming a veterinarian to saving captive moon bears in China—at the

Fetch dvm360 conference in Baltimore, May 2-5.

Learn more about the upcoming Fetch dvm360 conference at [fetchdvm360.com/baltimore](http://fetchdvm360.com/baltimore).



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# 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<sup>1</sup>:

- ✓ 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



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

**NexGard is a Merial product.**  
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**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](http://www.NexGardForDogs.com).

# THE PICKS

(what we care about now)



## When a new furry friend makes the list

**Puppies and kittens are gifts that keep on giving (and taking your things and ripping them to shreds). Share these points for potential pet-gifters to ponder before placing a new companion under the Christmas tree.**

**A**s the holidays approach, many are thinking of surprising a loved one with that most squeal-worthy of gifts: a puppy or kitten. We asked Julia Albright, MA, DVM, DACVB, if that's

a good idea. She says one common thought is that gifted pets, which can seem like a sweet gift idea under twinkling lights, are more likely to wind up in shelters come the new year. But she cites an ASPCA study that found no correlation between pets that were gifted and pets that were relinquished. "As long as the person receiving the pet knows about it and is prepared to take care of it, it shouldn't be an issue," she says.

Of course, mentally and physically preparing to take care of a pet isn't a small task, and it can be especially difficult at Christmastime. One reason: potty training. In many places, the holiday season naturally coincides with cold weather. This can be a factor when housetraining puppies. Dr. Albright does support

crate training and the use of training pads, but she notes that the former can be time-consuming and the latter isn't immediately recognizable to young pups.

Oh, yeah—what about kittens, anyway? "Kittens don't tend to cause us quite as much disruption, but they can be quite destructive and wake us up on the middle of the night," Dr. Albright says.

### **HAVE WE GOT A GIFT PACKAGE FOR YOU!**

If a client is welcoming a furry new gift, shop through our list of free downloadable handouts on caring for new pups and kittens at **dvm360.com/newpetcare**.

# 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 <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.

### 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](http://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

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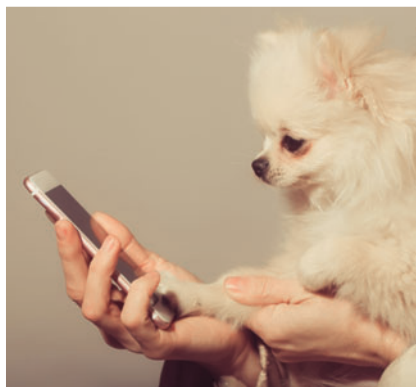
# Swipe left to get it right

## Avoid ethics exhaustion by matching with the right team.

By Sonnya Dennis, DVM, DABVP

In personal relationships, we swipe left if the profile doesn't match us. So why do we settle for "good enough" in our professional life? Poor choices early on in any relationship can lead to bad breakups later. Beyond thinking about salary, hours and location in a job search, there is more to assess, such as your personal ethics. Here's what to ponder, and why it's so important.

A term I've coined is "ethics exhaustion," which is fatigue, emotional distress and a lack of will to continue to act in a way that is consistent with what you believe is the ethical thing to do. Ethics



exhaustion contributes to burnout, compassion fatigue and depression in ways that better hours and higher salary cannot fix.

To prevent ethics fatigue and ethics exhaustion when going through the hiring process—or if you are the one doing the hiring—discuss the issue of ethics up front. It's easier to figure out quickly that you're a bad match and swipe left to avoid an uncomfortable and more emotionally exhausting breakup down the road.

For a list of ethical questions to assess to spark a conversation, go to [dvm360.com/ethicsexam](http://dvm360.com/ethicsexam).

*Sonnya Dennis, DVM, DABVP, is the owner of Stratham-Newfields Veterinary Hospital in Newfields, New Hampshire.*

## Can you have too many wellness plans?

By Jenny Matthews, CVT, CVPM

When I started at my hospital, there were 27 different pet wellness plans for clients to choose from—and also for our staff to remember. The practice owners had gone through the work of creating, approving and designing these plans, so they were reasonably hesitant to change things if they were working. So, I decided to analyze the plans to see which ones were performing best. It turned out we hadn't sold 15 of the 27 packages in more than two years. This is where the change started. We pared down the packages to the ones we worked with most often, and then refined them.

In the old system, our puppy and kitten packages were broken down by male and female. Our hospital performs three puppy visits and

then the spay/neuter visit. That made up six individual packages just for puppy visits. (A new and different "package" could start at any of these visits!) It was the same for kittens. After months of discussion and debate with the practice owners, the office manager and the team, we narrowed down our packages to nine plans: two for puppies,

two for kittens, three for adult dogs and two for adult cats.

Go to [dvm360.com/wellplanned](http://dvm360.com/wellplanned) for more details on the plans.

*Jenny Matthews, CVT, CVPM, is practice manager at Pet Medical Center of Edmond in Edmond, Oklahoma, and an entrant in the 2018 dvm360/VHMA Practice Manager of the Year contest.*





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# Where do we go from here?

## Sorting through when to pursue aggressive treatment for small animal cancer patients

By Michael O. Childress, DVM, MS, DACVIM (oncology)

**S**urgery, radiation therapy and chemotherapy—the mainstays of cancer treatment in pets—can confer significant benefit to cancer patients. However, they are equally capable of producing significant morbidity if used without discretion. Your two key questions are these: “What benefits can a patient derive from cancer therapy?” and “How do you judge whether a patient is likely to experience these benefits?”

### What do we hope for?

To address the first question, let’s look at the three fundamental ways cancer patients benefit from therapy:

- 1) The pet’s cancer is cured
- 2) The pet’s life is extended in the absence of cure, while quality of life is concomitantly maintained or improved
- 3) The pet’s quality of life is

improved in the absence of cure or extension of life.

To achieve a cure in patients with advanced cancers, aggressive therapy is usually required. With aggressive therapy comes a significant risk of treatment-related complications. In contrast, treatments with more palliative intent frequently improve quality of life and may also extend life if used carefully. It should be noted that the use of the term “palliative” here is not synonymous with hospice-style care for a terminally ill patient. Radiation therapy, chemotherapy and even surgery all can be used with palliative intent. However, as opposed to the rationale for their use in the aggressive treatment setting, the focus of palliative therapy is to minimize treatment-related morbidity. This necessarily comes at some expense to the prospects of curing a cancer or extending a patient’s life.

### \*BIG SIGH\*

In case all signs point to palliative care, see our handouts on helping clients handle pet pain and death at [dvm360.com/petpainhandouts](http://dvm360.com/petpainhandouts).



## Can it happen?

Fully answering the question of how to judge whether a patient is likely to derive benefit from therapy requires some review of the typical diagnostic and staging process for cancer patients ...

### > Cytologically diagnosed mass.

Decision tree 1 (below) details the initial decision-making process for a patient with a newly diagnosed tumor, assuming that the tumor has been sampled by fine-needle aspirate cytology. If cytology suggests cancer, then collecting a biopsy sample for histopathologic confirmation of this diagnosis is of paramount importance. Ideally, the biopsy should also define the cancer grade (how malignant the tumor's behavior is likely to be). Low-grade tumors tend to grow slowly and metastasize with reluctance, and they are curable with wide surgical excision. High-grade tumors, in contrast, grow rapidly, metastasize readily and are rarely curable even with aggressive surgical excision.

When planning a biopsy, the clinician must decide whether to remove the tumor entirely via excisional biopsy or to perform an incisional biopsy and wait for the histopathology results before planning defini-

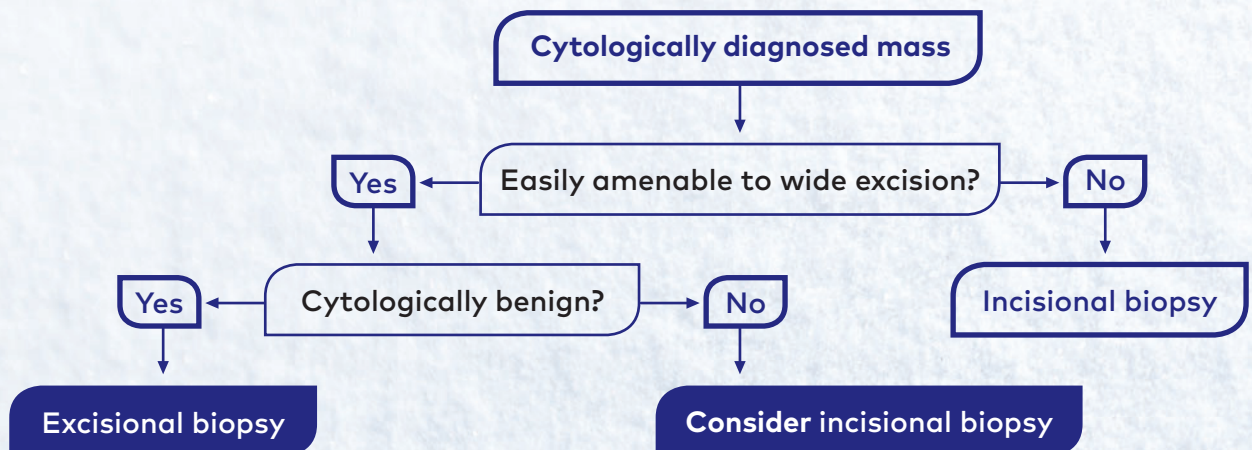


**Figure 1.** This low-grade cutaneous mast cell tumor makes this Boston terrier a candidate for excisional biopsy. This tumor, measuring approximately 1 cm in maximal diameter, is confined to the dermis. The dog's owner noticed that the mass grew slowly to this size over many months. The size, depth of extension and anatomic location make the tumor amenable to wide surgical excision. These features, along with the slow growth rate, further suggest a benign biological behavior. Collectively, these characteristics support the tumor's suitability for excisional biopsy.

tive therapy. An example of a tumor suitable for an excisional biopsy is presented in *Figure 1*, while a tumor for which an incisional biopsy may be more appropriate is presented in *Figure 2*.

Although pet owners may balk at the added expense of incisional

biopsy, poorly planned excisional biopsies can lead to such serious complications as wound dehiscence and tumor recurrence. In patients in which an aggressive cancer is suspected, an incisional biopsy can provide valuable information as to what types of benefit may be



Decision tree 1





**Figure 2.** This high-grade cutaneous mast cell tumor makes this dog a candidate for incisional biopsy. This tumor, measuring approximately 4 cm in maximal diameter, is palpably invasive to the subcutis and located over the caudal thigh, lateral to the vulva. The dog owner noticed that it grew rapidly over the past several weeks. It has an ulcerated surface, implying an aggressive biological behavior. As such, extensive surgical resection is likely necessary to provide durable local tumor control. However, the proximity to the vulva and depth of invasion will limit the extent of surgery that can be performed. Because the tumor may be aggressive and local control may be difficult to achieve surgically, incisional biopsy is indicated prior to planning definitive therapy.

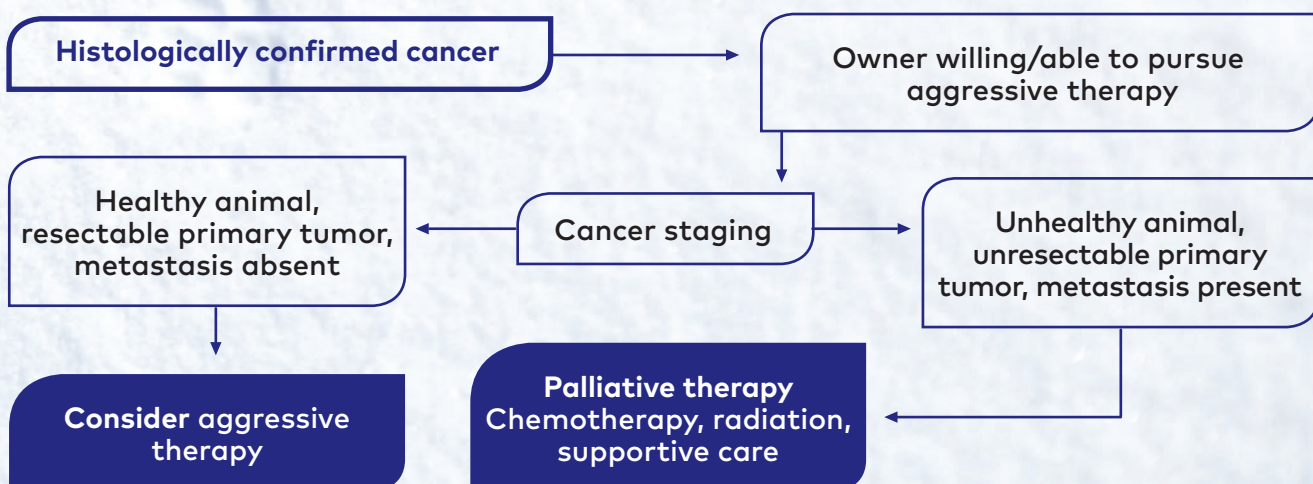
derived from therapy as well as the extent of treatment necessary to achieve these outcomes. Many pet owners may, quite reasonably, forego surgical tumor removal if an incisional biopsy suggests the pet's prognosis for survival is poor.

**> Histologically confirmed cancer.** When clients wish to pursue treatment for a pet after a biopsy diagnosis, order staging tests to determine the extent of its cancer and its ability to tolerate therapy (*Decision tree 2 below*). The staging

process typically consists of a battery of diagnostic imaging studies to estimate the primary tumor's size and to screen for metastatic lesions. Laboratory tests typically are also performed to gauge the pet's overall health. Pets with no serious comorbid disease, resectable primary tumors and no evidence of metastatic disease are the best candidates for aggressive cancer therapy. Consider pets who don't meet these criteria more appropriate for palliative treatments.

**> A healthy animal with a resectable primary tumor and metastasis absent.** The final decision to pursue or forego aggressive cancer therapy takes information from both the tumor biopsy and the staging process into account (*Decision tree 3, page 12*). Animals with low-grade, resectable, nonmetastatic tumors are ideal candidates for aggressive cancer surgery and are often cured of their cancers.

In contrast, animals with high-grade tumors are considerably less likely to be cured, even with aggressive, multimodal therapy. For these patients, the key question is, "Can aggressive therapy extend their lives to a greater extent than would be possible with palliative therapy?"



**Decision tree 2**



# VETORYL® CAPSULES (trilostane)

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**BRIEF SUMMARY** (For Full Prescribing Information, see package insert.)

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

**DESCRIPTION:** VETORYL Capsules are an orally active synthetic steroid analogue that blocks production of hormones produced in the adrenal cortex of dogs.

**INDICATION:** VETORYL Capsules are indicated for the treatment of pituitary- and adrenal-dependent hyperadrenocorticism in dogs.

**CONTRAINDICATIONS:** The use of VETORYL Capsules is contraindicated in dogs that have demonstrated hypersensitivity to trilostane. Do not use VETORYL Capsules in animals with primary hepatic disease or renal insufficiency. Do not use in pregnant dogs. Studies conducted with trilostane in laboratory animals have shown teratogenic effects and early pregnancy loss.

**WARNINGS:** In case of overdosage, symptomatic treatment of hypoadrenocorticism with corticosteroids, mineralocorticoids and intravenous fluids may be required. Angiotensin converting enzyme (ACE) inhibitors should be used with caution with VETORYL Capsules, as both drugs have aldosterone-lowering effects which may be additive, impairing the patient's ability to maintain normal electrolytes, blood volume and renal perfusion. Potassium sparing diuretics (e.g. spironolactone) should not be used with VETORYL Capsules as both drugs have the potential to inhibit aldosterone, increasing the likelihood of hyperkalemia.

**HUMAN WARNINGS:** Keep out of reach of children. Not for human use. Wash hands after use. Do not empty capsule contents and do not attempt to divide the capsules. Do not handle the capsules if pregnant or if trying to conceive. Trilostane is associated with teratogenic effects and early pregnancy loss in laboratory animals. In the event of accidental ingestion/overdose, seek medical advice immediately and take the labeled container with you.

**PRECAUTIONS:** Hypoadrenocorticism can develop at any dose of VETORYL Capsules. A small percentage of dogs may develop corticosteroid withdrawal syndrome within 10 days of starting treatment. Mitotane (o,p'-DDD) treatment will reduce adrenal function. Experience in foreign markets suggests that when mitotane therapy is stopped, an interval of at least one month should elapse before the introduction of VETORYL Capsules. The use of VETORYL Capsules will not affect the adrenal tumor itself. Adrenalectomy should be considered as an option for cases that are good surgical candidates. The safe use of this drug has not been evaluated in lactating dogs and males intended for breeding.

**ADVERSE REACTIONS:** The most common adverse reactions reported are poor/reduced appetite, vomiting, lethargy/dullness, diarrhea, elevated liver enzymes, elevated potassium with or without decreased sodium, elevated BUN, decreased Na/K ratio, weakness, elevated creatinine, shaking, and renal insufficiency. Occasionally, more serious reactions, including severe depression, hemorrhagic diarrhea, collapse, hypoadrenocortical crisis or adrenal necrosis/rupture may occur, and may result in death.

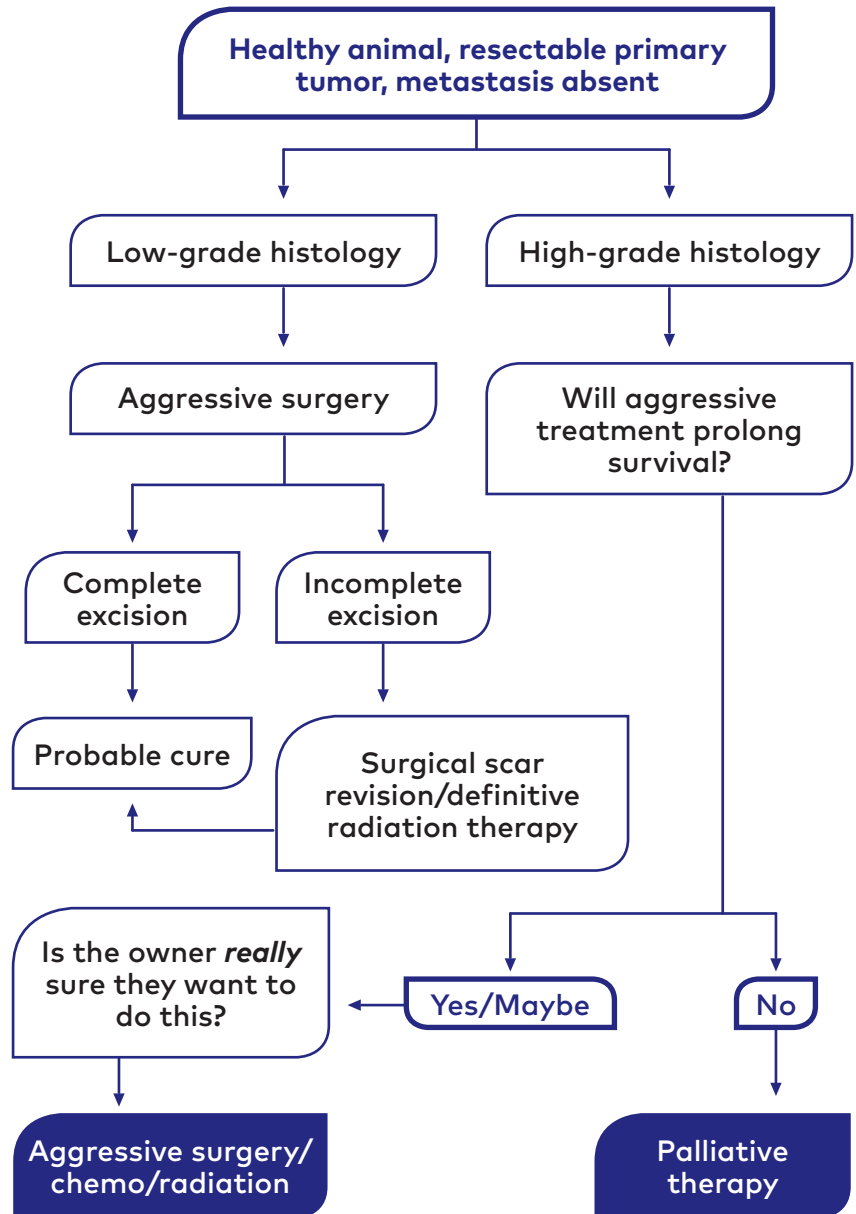
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For most high-grade cancers, aggressive therapy has yet to show a clear survival advantage over palliative therapy. While an aggressive approach may still benefit some patients with these cancers, the decision to pursue aggressive therapy should only be made after careful discussion with your client.

With these principles in mind, usually it's possible to generate a treatment plan for pets with cancer that balances clinical benefit

with treatment-related morbidity. Striking this balance is critical to affording a satisfactory outcome from treatment to both the patient and the pet owner. Moreover, it also honors that time-tested medical aphorism: Never make the treatment worse than the disease.

*Michael O. Childress, DVM, MS, DACVIM (oncology), is associate professor of comparative oncology at Purdue College of Veterinary Medicine.*

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See summary on page 12

  
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# Fear, stress and pain— what about nausea?

Your postoperative veterinary patients will thank you if you consider this fourth key element of their well-being.

*By Carla Johnson, DVM*

**T**he veterinary profession is trying to make the hospital experience better for our furry friends. In the last decade, prevention of patient discomfort has received increasingly more attention in veterinary medicine. Stress-free handling techniques and fear-reduction protocols for dogs and cats are sweeping the nation. Pain management in our veterinary patients is a routine topic in lectures, workshops and symposia. Pain scoring systems and pain management standards have been developed and have become standards of care.

In all types of practices, veterinarians are doing a fantastic job of incorporating stress, pain and fear prevention into their medical, procedural and surgical protocols.

## So are we forgetting something here?

Postoperative nausea and vomiting in people undergoing surgery and anesthesia, which even has its own moniker—PONV, or postoperative nausea and vomiting—is a perpetually hot topic, with new studies or articles about the treatment or prevention of it being published almost monthly. One article states that human “patients have reported that [the] avoidance of PONV is of greater concern than avoiding postoperative pain.”<sup>1</sup>

Routinely used perioperative opiates are famously emetogenic.<sup>2</sup> Additionally, though muddled by the use of opiates, there appears to be a linked—if not a causal—relationship between the level of nausea and the

degree of reported pain in human patients in one direction or both.<sup>3–5</sup>

This could mean that pain (and opiates) can cause nausea, or nausea can worsen a human patient’s experience of pain. In people, there are many study-based suggestions and protocols for help in preventing nausea using antiemetics, antihistamines and single-dose corticosteroids; avoiding certain opiates; and avoiding opiates altogether in patients at high risk for nausea.

PONV risk factors have been analyzed—the type and dose of opiates, patient gender, history of motion sickness in general, duration of anesthesia and type of procedure have been found to be among the risk factors for problematic PONV in humans.<sup>6</sup> Because of these



analytics, human hospitals can identify high-risk patients and appropriately prevent nausea in these surgical patients.<sup>7</sup>

### Why don't we know the risk factors for animals for PONV?

Well, because we can't. The difficulty lies in the age-old conundrum in our profession: animals can't clearly convey to us how they feel. Nausea and pain can be notoriously subclinical. As veterinarians, we are stuck subjectively interpreting clinical signs, extrapolating from human medicine and human experiences, and designing studies that attempt to grade or objectify experiences like pain and nausea, using indirect but measurable parameters like respiratory rate and heart rate, food intake and vomiting. We know for certain that animals are experiencing nausea if they vomit. We can make an inference that they are nauseated if they drool or lip smack. We might suppose that they are nauseated if they refuse to eat, but there are many other reasons that dogs, and especially cats, may refuse food in the hospital, or even drool or lip smack.

### So what do we do?

Ralph C. Harvey, DVM, MS, DACVAA, an associate professor of anesthesiology at the University of Tennessee, recommends the prevention of nausea as part of our routine preanesthetic protocols in all of our surgical or opiate-sedated patients. He recommends it for both cats and dogs, although dogs dominate the current studies.

At the 2017 International Veterinary Emergency and Critical Care Symposium, Dr. Harvey recommended the prophylactic use of antiemetics in cats and dogs in any veterinary situation in which patients might become nauseated. Specifically, he strongly recommended standard perioperative use of maropitant (Cerenia—Zoetis; 1 mg/kg injectable or 2 mg/kg orally) for dogs and cats in all of our preanesthetic protocols, including for spays and neuters.

Maropitant is a powerful antiemetic that acts on both peripheral (e.g. vagal stimulation) and central receptors (chemoreceptor trigger zone) to prevent vomiting. In studies, it exceeds the efficacy of all other antiemetics used in veterinary medicine. It also blocks nausea from motion sickness, such as that car ride over to your clinic. Additionally, it blocks the binding of substance P to NK1 receptors, so it may have analgesic properties.

### What do the studies say?

Dr. Harvey describes a student lab study in which 31 dogs in a spay-neuter lab were given morphine as a



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preanesthetic medication and were divided into two groups: one group received a maropitant injection 45 minutes prior to the opiate and the other group received a placebo.<sup>8</sup> After the morphine, vomiting events and food intake over 20 hours were measured. None of the dogs receiving maropitant vomited, while 90% of the placebo dogs receiving a placebo vomited—over half of these vomited more than once. By hour 20, 42% of the placebo dogs were eating, but over 80% of the maropitant dogs were eating. The dogs receiving maropitant were perceived to have less postoperative pain. Additionally, these dogs were eating five times more food than the placebo dogs.

"That's good medicine!" Dr. Harvey says. "And you know something else? Food is love! Our dogs and cats are eating machines, and our clients want them to eat!" By hour 20, they are already at home, and the owners see that they are eating and feel good about it. When the owners offer food at home and the patient refuses, they hear: If you loved me, you wouldn't have taken me to the vet. "So it's so nice to get them eating

again," Dr. Harvey says. "It reinforces the human-animal bond, gets them in a positive nitrogen balance, and supports gut function."

### Should we preemptively treat surgical patients that might become nauseated?

It seems that added cost is the only downside to adding antiemetics to our anesthetic protocol. Bonnie Hay Kraus, DVM, DACVS, DACVAA, Iowa State University College of Veterinary Medicine, addressed this by performing a survey of clients that asked: "If we could do something to prevent nausea and vomiting in your animal, would you want us to?"<sup>9</sup> The answer was a resounding: Oh, yes, please! "How much would you be willing to pay for this?" The median figure written on the questionnaire was \$50. (Note that her demographic was not very wealthy.)

"That will buy you a lot of maropitant," Dr. Harvey says. It only costs us about 1.5 times as much as a carprofen (Rimadyl—Zoetis) injection. Most clients are willing to pay for this because they are searching for value. It is "value added" in the

way that sedation for lower stress, higher quality, and less (technician) time-consuming radiographs is "value added." It is "value added" in the way pain prevention is.

### A more comfortable conclusion

Vomiting and nausea is stressful for an animal—probably as stressful as it is for humans. Because our patients can't talk, we as veterinarians need to take preventive measures to ensure comfort. The use of antiemetics should be strongly considered as an addition to our routine anesthetic and sedation protocols. Just like pain, fear and stress reduction is important to clients, the added value of preventing nausea appears to outweigh the added cost for most clients.


If low cost is a necessity in your hospital, consider having owners pick up an oral dose of maropitant (2 mg/kg) prior to the scheduled surgery date to be given at home the morning of surgery or even the night before. And don't forget to tell your clients why you're doing this. Communication often adds more value than skill or discounts do.

The complete references are online at [dvm360.com/notenausea](http://dvm360.com/notenausea).

*Carla Johnson, DVM, practices emergency medicine at Berkeley Dog and Cat Hospital in Berkeley, California, and general practice at Cameron Veterinary Hospital in Sunnyvale, California.*

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# Hospital design

## Side step these **stumbling blocks** to a Fear Free exam room

It's a slippery slope to an apprehensive exam experience for pets. Help them start out on the right foot by equipping your rooms with comfort in mind.

In days past, a discussion of veterinary exam tables would've considered materials, height and possibly positioning in the exam room. At the HospitalDesign360 conference in Kansas City this year, veterinary architects Heather Lewis, AIA, NCARB, and Wayne Usiak, AIA, discussed how the concept of Fear Free medicine is influencing even choices of clinic outfitting.

Lewis says that stainless steel tables, while hygienic, are reflective and slick under patients' paws—characteristics that are not calming to sensitive pets.

"Having the stainless steel table is not appropriate because it induces fear and anxiety in the pet," she says. A quick fix? She suggests using a yoga mat or other grippable item atop an existing table.

For those of you who aren't thrilled with the thought of spending so much time on your knees to examine patients as Fear Free guidelines recommend, Lewis says using a lift table can help. They get the pet down near the floor level so the exam can be done in a sitting position.



Sam is sitting pretty on this exam table, but standing up on its slippery surface could quickly become a trepidatious experience.

Usiak suggests you can go one step further for cats by creating feline rooms featuring wicker baskets stocked with warm towels or even custom, cat-sized window sills or shelves. When the technician brings the cat in, they can put the carrier on the floor, open the door and allow the patient to venture out.

"Let the animal go to where it's comfortable, and the doctor can then see it where it's relaxed," he says. There's confidence in coziness!

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# HELPFUL STUFF

## Pet insurance: Rainy-day investing in your team?

Almost all veterinary team members have pets, yet just like average Americans, most have no pet insurance for that proverbial rainy day. Have you thought about offering this employee benefit?

**Y**ou're not a pet insurance salesperson. The rest of your veterinary team are not pet insurance salespeople. But one solution to the perennial problem of money conversations with clients is getting people to either change their saving habits to put away money for big pet medical expenses down the road or get them to sign up for pet insurance.

And one way for veterinary team members to offer more thoughtful education to clients about pet insurance? Let them use it themselves. We sought out some details on discounts for your team from a few providers.

### Which pet insurance providers say they offer special pricing or special benefits for veterinary practice employees?

- > ASPCA Pet Health Insurance offers a 20 percent veterinary practice employee discount, and the insurer promises "personalized service" when it comes to designing, implementing and managing those benefits.
- > Embrace offers a 20 percent veterinary practice employee discount that can be combined with some other discounts for



a maximum of 25 percent off.

This discount is available in most states.

- > Figo offers promotional codes for veterinary staff.
- > Nationwide offers a veterinary professional discount of 5 percent and a multipet discount of another 5 percent for two pets or 10 percent for three or more pets.
- > Petplan offers a veterinary professional discount (subject to state regulatory approval).
- > Trupanion can offer group pricing in select states, which lets them price organizations based on their specific pet data.

### Which pet insurance providers say they offer "refer-a-friend" discounts or incentives?

- > Nationwide pet insurance customers who refer new customers can receive Amazon gift cards for every completed application.
- > Petplan is on the verge of launching a new refer-a-friend program.

Does this all sound great in theory, but you wonder how it works in practice? Hear a few particulars from those that offer this benefit to veterinary staff at [dvm360.com/teaminsurance](https://dvm360.com/teaminsurance).





## Liberate yourself from the labels when it comes to lung x-rays

Reading radiographs can be tough, and lung radiographs can be even more challenging, according to Fetch dvm360 conference speaker Maria Evola, DVM, MPH, DACVR. This is partly due to what she calls an "entrenched dogma" of learning and identifying specific lung patterns. Even as a specialist, Dr. Evola says designations like "interstitial," "bronchial" and "alveolar" appear similar and even overlap.

Ultimately, she says, you shouldn't get caught up in the terminology.

"The bottom line is, it doesn't really matter what we call it," she says. "It matters what that means for the patient and how we treat the patient because of what we're calling it."

A medical diagnosis and course of treatment is what is most important, Dr. Evola says—to the patient, the pet owner and the veterinary medical team. "That's what we all care about," she says.

Watch more from Dr. Evola at **dvm360.com/lungxray**.

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# Oh joy! A new tick species we have to worry about in the U.S.

The Asian longhorned tick is relatively small, but hardy, causing trouble for pets, wildlife, livestock and humans. And these suckers can reproduce asexually?!

By Richard Gerhold, DVM, MS, PhD

**T**he Asian longhorned tick (*Haemaphysalis longicornis*) is native to East Asia and is a significant invasive species in New Zealand, Australia, some Pacific islands and, now, the United States.<sup>1</sup> In 2017, the Asian longhorned tick was first confirmed in the U.S. in New Jersey, but it was later determined through archived tick samples to have been in the country since 2010 or earlier. It has since been found in Arkansas, Virginia, West Virginia, New York, Pennsylvania and Maryland. The introduction of ticks into the U.S. is uncommon, and the exact route of entry remains unknown, but possibilities include entering the country on livestock, humans or pets.<sup>2</sup>

## What are they like?

An adult Asian longhorned tick is dark brown with no distinct markings and is approximately pea-sized when fully engorged.<sup>2,3</sup> Compared to other ticks, unfed adult Asian longhorned ticks are fairly small, measuring approximately 3 to 4 mm.<sup>3</sup> *Haemaphysalis* species ticks are inornate, have festoons and do not have eyes; the second segment of the palpi extends past the rectangular basis capitulum.<sup>4</sup> Invasive Asian longhorned tick populations are parthenogenetic, but parthenogenetic and bisexual populations have been found in their native range.<sup>1</sup> With the ability to reproduce without males, an entire population can be created by a single female Asian longhorned tick.<sup>2</sup>

This tick species is able to sur-

vive in cold and warm climates, increasing its ability to expand its range to the rest of the U.S.<sup>1</sup> It's also important to note that there are two native *Haemaphysalis* species of ticks in the U.S., including *H. leporispalustris* found on rabbits, rodents and ground-dwelling birds and *H. chordeilis* found on ground-dwelling birds. There are subtle morphological differences between ticks in this genus, and any parasitology researchers who believe they have found an Asian longhorned tick should send the specimen to the National Veterinary Services Laboratory (USDA-APHIS) for morphological identification.<sup>4</sup>

## Do they carry disease?

The Asian longhorned tick is able to transmit diseases of medical and veterinary importance, including anaplasmosis, babesiosis, ehrlichiosis, rickettsiosis, theileriosis and a variety of viruses.<sup>2,4</sup> Numerous cases have been published detailing the Asian longhorned tick parasitizing humans. While disease transmission from the tick has yet to be reported in humans or nonhuman animals in the U.S., transmission is well-documented in other countries. The largest threat from Asian longhorned ticks in the U.S. is the risk they pose to livestock. Infestations on livestock can cause stress, decreased growth and production, exsanguination or death.<sup>1</sup> The tick has already infested numerous host species in the U.S, including sheep, cattle, horses, dogs, cats, opossums, raccoons and deer.<sup>2</sup>



## How can we stop them?

At this time, standard tick preventions and treatments are thought to be effective for livestock and pets. Typical tick prevention methods on feedlots and pastures are encouraged, including trimming grass and weeds and eliminating brush.<sup>2</sup> Veterinary and other health and research professionals should be vigilant and are encouraged to review archived *Haemaphysalis* collections for detection of the Asian longhorned tick. Veterinarians should place suspect ticks in 70% ethanol and send them as soon as possible to veterinary diagnostic laboratories that have trained veterinary parasitologists on staff for identification.

*Dr. Richard Gerhold works in the Department of Biomedical and Diagnostic Sciences in the College of Veterinary Medicine at the University of Tennessee.*

Find the complete references for this article at [dvm360.com/longhorntick](http://dvm360.com/longhorntick).



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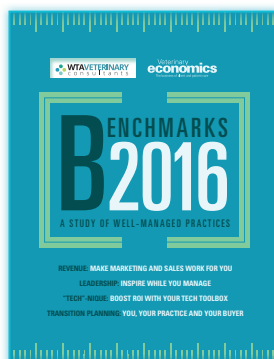


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# The good tidings of happy accidents

*"Oh my goodness, I'm sorry, she just can't help it right now—"*



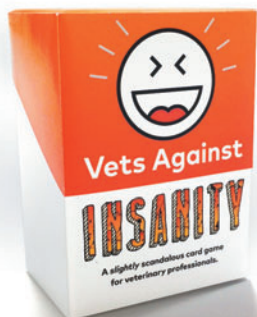
*"YES! A fecal sample!"*



This moment in the exam room is brought to you by one of our dvm360 team who took her dog to check out why it was experiencing diarrhea. Her humiliation when her dog had a messy accident right then and there evaporated because the vet was stoked to get such a fresh sample. A note from all of us at dvm360, *Vetted* and *Fetch*—we love you! Your enthusiasm for animal care keeps us focused on giving you a leg up when we can, apparently just like our pets.



# Vets Against Insanity



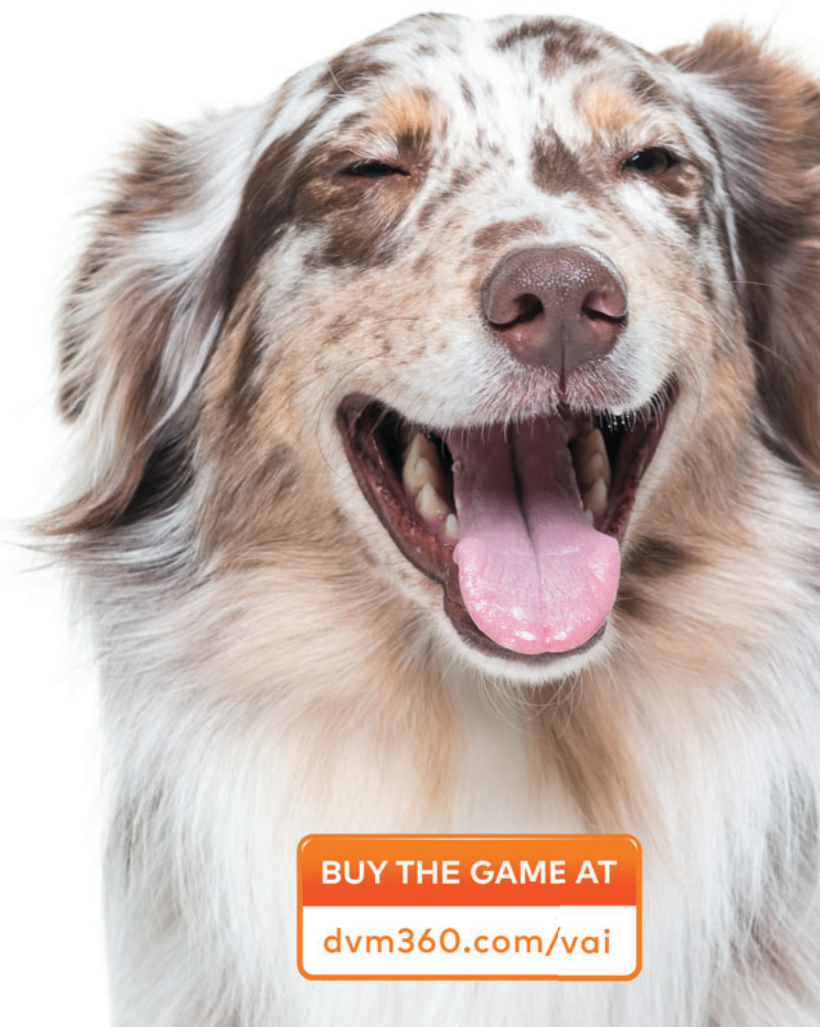
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