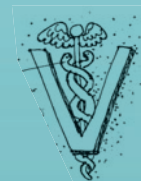


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TWICE THE FIGHT TO HELP REACH REMISSION

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How to manage the struggle of making life ... manageable

By Alane Cahalane, BSc, DVM, MA, DACVS

Fetch dvm360 Baltimore keynote speaker on taking chances, chasing joy and learning from others.

Take chances

The single most important career decision I made was moving to Hong Kong. That's not to say that I think every veterinarian in America needs to move to Asia, but everyone should take chances. It's a total cliché, but we only have one life, and some opportunities only whisper in our ear once. If you take a chance, choose the path less traveled. It might be scary sometimes, but I think it's so much more common to regret missed opportunities than to regret those we embark on. I moved to Hong Kong and, with great partners, started my own specialty hospital. Believe me, it gets stressful. But I feel so fortunate to be doing what I love in one of the most awesome cities in the world.

Accept imperfection

Making life manageable is a constant challenge that I struggle with. I grow tired of people telling me I should "make time for myself," because even that feels like a chore sometimes! I'm learning to accept that perfection is an impossibility. A good friend of mine uses the term "recovering perfectionist," and I think that's a perfect way to phrase it. I try to focus on prioritizing tasks when I know I can't get all of them done. Also, learn to say no.

What about chasing that joy and embracing lessons from others? See more from Dr. Cahalane at dvm360.com/lifemanaged.

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¹ Data on file.

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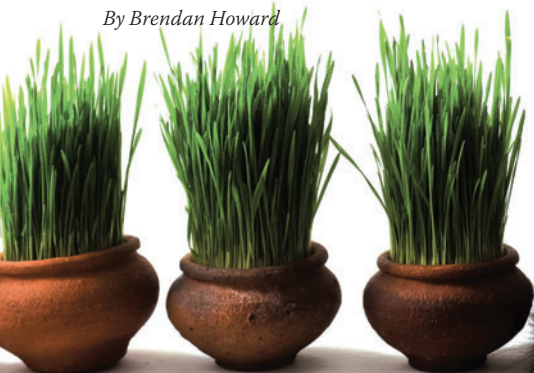
³ Data on file.

THE PICKS

(what we care about now)

5 ways wellness plans can work

By Brendan Howard



Consider a few best practices we gleaned from talking to folks at two current purveyors of wellness or preventive-care plans for private veterinary practices: VCP and Premier Pet Care Plan.

1. More than an afterthought

VCP's Jessica Goodman Lee speaks inspiringly of the power of a wellness plan: "When you realize that wellness plans are about changing the way we interact with pet owners and patients, it becomes clear that they're one of the most impactful and important initiatives a practice can undertake and is well worth the up-front time and effort."

2. Keep it simple at the start

Start with cats and dogs, break it down by age groups, and perhaps get most or all of your patients managed in five or six plans.

WANT MORE DETAILS?

See the whole story at dvm360.com/5waystowell.

3. Get payments managed from the very beginning

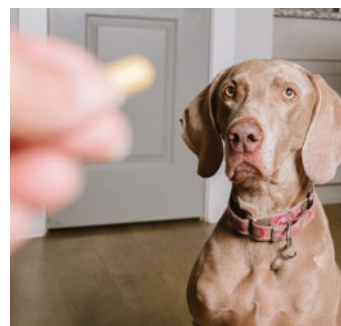
For wellness plans, you can require a full annual payment when clients sign up, but that takes away an advantage of wellness plans: monthly (or quarterly) installments.

4. Don't get caught up in "complain and blame"

Is the philosophy of wellness plans—providing a baseline of annual wellness care in the form of physical exams, diagnostics and more—something you're trying? If so, come up with a plan, stick to it, and be ready to share great results and remind people why you're doing it: improving patient care.

5. Show me improved pet care!

A wellness plan should be integrated into your practice software and tracking so you can show client compliance on parasite preventives, diagnostics and regular wellness trips to the veterinarians increasing. Plug into your PIMS to check the numbers.



Going beyond NSAIDs for OA

Is your veterinary clients' curiosity inflamed by the desire for options to treat osteoarthritis in their pets? Do they want more than nonsteroidal anti-inflammatory drugs (NSAIDs) and other pain drugs to help dogs in pain? We have a handout at dvm360.com/OAsupplements you

can, well, hand out to your veterinary clients to explain the benefits. But which ones might you consider recommending? In the handout, David Dycus, DVM, MS, CCRP, DACVS-SA, says there are three key players for dogs to help support and protect joint cartilage:

- > Glucosamine
- > Low-molecular weight chondroitin sulfate
- > Essential fatty acids

They are often accompanied by additional beneficial ingredients, like avocado and soybean oil, green tea and curcumin (that's the spice in curry!). Who knew pain management could be so tasty?

Another supplement option, should you want to take a roll at it: cannabidiol (CBD). Read more about



this option at dvm360.com/citaloncbd.



Prescribe

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- ✓ Safe for puppies as young as 8 weeks of age weighing 4 lbs or more
- ✓ Over 140 million doses of afoxolaner have been prescribed¹
- ✓ And it's the only flea and tick control product indicated for the prevention of *Borrelia burgdorferi* infections as a direct result of killing *Ixodes scapularis* vector ticks

NexGard[®]
(afoxolaner) Chewables

What one little chew can do

¹Data on file.



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.NexGardClinic.com.

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Please see Brief Summary on page 06.

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

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

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

In the US field study, one dog with a history of seizures experienced a seizure on the same day after receiving the first dose and on the same day after receiving the second dose of NexGard. This dog experienced a third seizure one week after receiving the third dose. The dog remained

enrolled and completed the study. Another dog with a history of seizures had a seizure 19 days after the third dose of NexGard. The dog remained enrolled and completed the study. A third dog with a history of seizures received NexGard and experienced no seizures throughout the study.

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 Meril, Inc.

Duluth, GA 30096-4640 USA

Made in Brazil.

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THE PICKS

Can you get this cat's urinary tract back on the right track?

By Jessica Romine, DVM, DACVIM

A 7-year-old male neutered domestic shorthaired cat presented for evaluation of chronic hematuria and recurrent urinary tract infections.

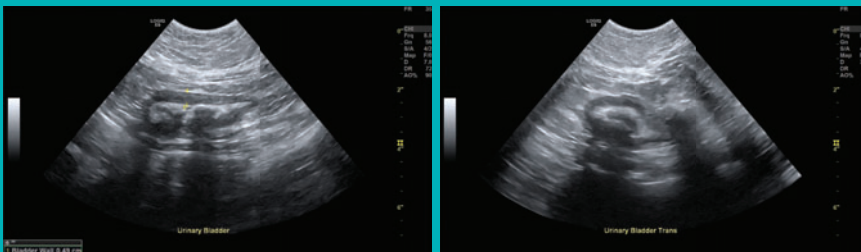
The back story

The cat had undergone a perineal urethrostomy surgery four years prior to presentation. Previously, the cat had developed a multi-drug-resistant *Staphylococcus pseudintermedius* infection that was cleared with chloramphenicol. Clinical signs consisting of hematuria, dysuria and stranguria

began to recur four months prior to presentation and had shown only transient improvement with orbifloxacin, cefovecin, buprenorphine and robenacoxib.

Current findings

The results of a complete blood count and a serum chemistry profile were normal, and a urinalysis identified a urine specific gravity of 1.030, a pH of 8.5, marked cocci (> 40/hpf), 4+ magnesium ammonium phosphate crystalluria, > 100 RBCs/hpf and 10 to 15 WBCs/hpf.



Quiz time!

What is your diagnosis based on this history and ultrasonographic images of the urinary bladder?

- a. Stricture of the perineal urethrostomy stoma
- b. Encrusting cystitis
- c. Lymphosarcoma of the urinary bladder
- d. Feline lower urinary tract disease (feline idiopathic cystitis)

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Quiz over!

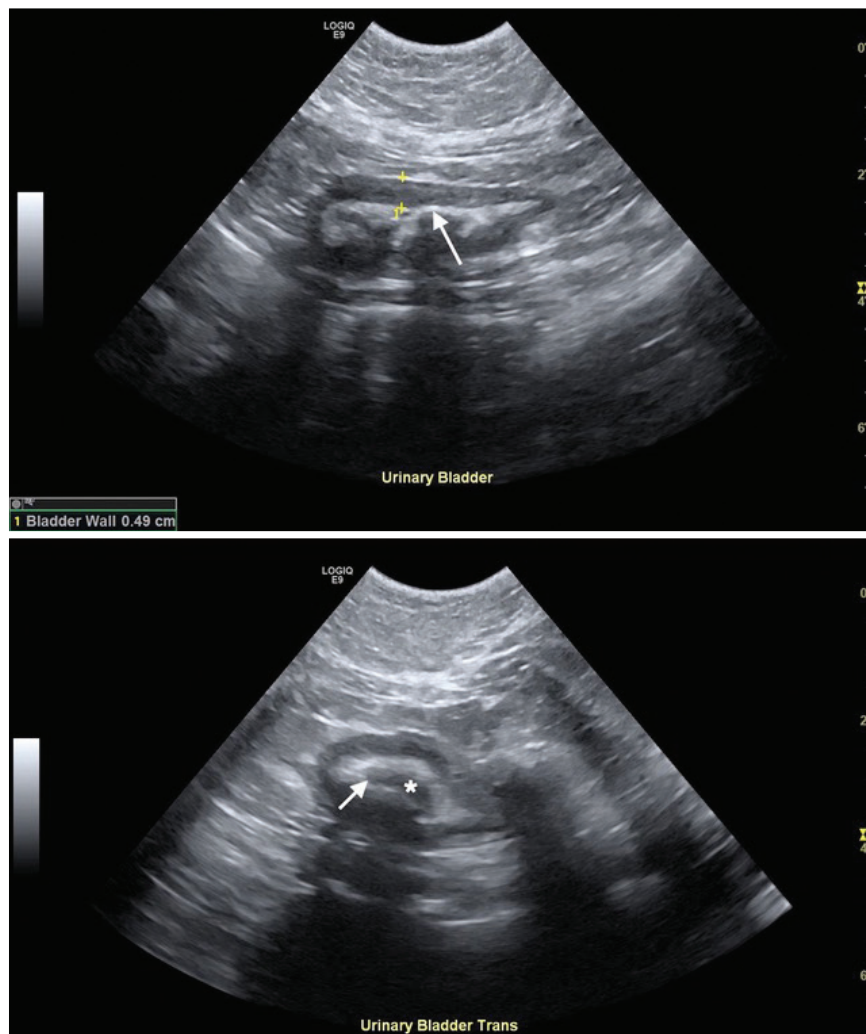
What is your diagnosis based on this history and ultrasonographic images of the urinary bladder?

Did you pick **b. Encrusting cystitis**? Right on!

The cat's urinary bladder is very small with minimal lumen present and the cranioventral wall is thickened, hypoechoic and irregular. There is mineral adhered to the surface of the entire urinary bladder wall. These findings are consistent with *Corynebacterium*-induced encrusting cystitis. [Psst! Key to the figures: Hyperechoic adherent mineral covering enter luminal mucosa (arrow). Asterisk denotes small lumen.]

A direct urine culture yielded only *Enterococcus faecalis*, but a deep bladder wall culture yielded *Enterococcus* species, *Escherichia coli*, and *Corynebacterium urealyticum*. The cat was initially treated with chloramphenicol, but after becoming azotemic, he was hospitalized on intravenous fluids and amikacin (the only other available antibiotic options based on extended-spectrum culture), and underwent cystotomy for bladder wall débridement. Urinary signs resolved one week after surgery and remained resolved three months later.

Encrusting cystitis is a syndrome that is classically associated with urease-positive bacteria, primarily *Corynebacterium urealyticum*, which forms crusts and plaques of mineralized material on the mucosa of the urinary tract; alkaline urine and struvite crystals are typical findings on urinalysis.¹ Radiographically, encrusting cystitis usually appears as a diffuse heterogeneous mineral-



ization of the urinary bladder wall,¹ and the ultrasonographic findings typically include diffuse urinary bladder wall thickening and non-gravity-dependent mineral debris, as observed in this case.^{1,2}

Ultrasonographic identification of a diffusely thickened bladder with adherent mineralized material, a high

pH, and struvite crystalluria should prompt an extended-duration culture for *Corynebacterium* species. [Get more insight and full reference citations at dvm360.com/UTQuiz.]

Dr. Romine is a small animal internal medicine specialist at BluePearl Veterinary Partners in Southfield, Michigan.

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- ✓ Effective protection that blocks *Borrelia burgdorferi* while it's still in the tick²

¹ Grosenbaugh DA, De Luca K, Durand P-Y et al. Characterization of recombinant OspA in two different *Borrelia* vaccines with respect to immunological response and its relationship to functional parameters. *BMC Veterinary Research*. 2018;14:312. <https://doi.org/10.1186/s12917-018-1625-7>. Accessed November 7, 2018.

² Rice Conlon JA, Mather TN, Tanner P. Efficacy of a nonadjuvanted outer surface protein A, recombinant vaccine in dogs after challenge by ticks naturally infected with *Borrelia burgdorferi*.* *Vet Ther*. 2000;1(2):98-107.



Brace yourself: A tool you can borrow from orthodontists

A social media dream—imagine the exposure!

Montage has a built-in camera, making it a useful marketing tool for social media. Patients can take a photo using Montage, click save and then send it to themselves. Montage will put a watermark on the photo using the practice's URL or logo before sending the image. Once the client receives their picture, they'll share it. Poss reports that the average share on Facebook is **444** impressions.

This tech company has been outfitting orthodontists' offices with an interactive digital bulletin board for years. Can it help your clients bite into all your services? *By Anissa Fritz*

Does that old crusty bulletin board in the hallway of your clinic spark joy? We're guessing ... not. And yet, it's a primary client communication tool inside your practice walls—when they're perhaps at their most open to receiving your messages.

Here to shake things up is Montage, an interactive display system by Solutions By Design, allowing

veterinary practices to go the distance with client education, clinical displays, and practice marketing and branding.

William Poss, president of the company, recalls how the Montage idea—originally developed for human orthodontic clinics—spread to veterinary medicine. By happenstance, Poss' own veterinarian (and close friend) was in the Solutions By Design office and remarked on how much a product like this was needed in vet med. Poss realized she was right.

"It's a way better fit for the veterinary world, because there's more education and so many more topics to cover in animal health than just teeth," he says.

So what exactly can this technology do for you? In vet practices,

Montage can be used in a number of ways. In the reception area, a touch-screen monitor encourages clients to interact with the many educational and informational widgets. And in the exam room, a wall-mounted display can be used for client education and clinical case presentations.

Poss says the most popular feature among veterinarians is the clinical case presentation. "There's a whole library of anatomically correct illustrations," he says. "These are cool because the doctor can draw with their fingers, make diagrams and notes on the board and then email or text [the image] instantly." Product sheets, notes and any other illustrations or drawings can also go straight from Montage's board to phone or email.

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Help cats with **Conn's syndrome** hold their heads high

What you need to know when it comes to recognizing, diagnosing and managing this endocrine disease in cats.

By Audrey K. Cook, BVM&S, Msc Vet Ed, DACVIM, DECVIM, DABVP (feline)

Aldosterone is secreted by the zona glomerulosa of the adrenal cortex and is the endpoint of the renin-angiotensin-aldosterone system (RAAS). It promotes sodium reclamation from the renal filtrate, increasing extracellular fluid volume and blood pressure. Hyperkalemia also triggers aldosterone release; secretion is inhibited by the natriuretic peptides and by hypokalemia.¹

Primary hyperaldosteronism (PHA; aka Conn's syndrome) is the inappropriate release of aldosterone by one or both adrenal glands and is the most common cause of endocrine hypertension in people. Bilateral idiopathic hyperplasia accounts for more than 60% of human cases, and a unilateral adenoma is identified in about 35%.² PHA is uncommonly reported in cats and dogs and is traditionally associated with a functional adrenocortical tumor.^{3,4} However, PHA with bilateral hyperplasia of the zona glomerulosa was described in cats with chronic kidney disease, hypertension and hypokalemia.⁵

Clinical signs

Most cats with PHA are > 10 years of age.³⁻⁵ Very few canine cases have been

reported, but all were > 10 years old.⁶⁻⁸

Most patients present with signs related to systemic hypertension, hypokalemia, or both. Hypertension may cause vision loss or acute neurological compromise; ocular lesions such as hyphema, mydriasis, anisocoria, retinal hemorrhage or detachment may be noted. Hypokalemia will result in muscle weakness; this may initially manifest as an intermittent plantigrade stance or difficulty jumping but will progress to collapse as potassium concentrations drop below 2.5 mmol/L. Cats with severe hypokalemia have cervical ventroflexion and feel 'floppy' when handled. (See a list of differential diagnoses for weakness and cervical ventroflexion in cats and more at dvm360.com/Conns.)

Polyuria and polydipsia are also routinely reported and appear to be the most common clinical complaint in dogs with PHA.⁶⁻⁸

Routine laboratory findings

Hypokalemia may be marked or borderline. Serum sodium concentration are often normal, as the excess sodium is



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CLIENT HANDOUT

14 *(relatively)* inexpensive things that help pets live longer, healthier lives

By Dean Scott, DVM

It often seems that veterinarians and the profession in general are being accused of only pursuing the almighty dollar. I'm not sure when people started thinking that a veterinarian took a vow of poverty, but even ignoring that, the reality of running a medical practice or small business involves costs—costs for electricity, rent, equipment, maintenance, payroll, etc. Yet some veterinary clients routinely balk at what are actually modest prices, especially compared with the same skill set and expertise as human medical practice.

With that in mind, I will now share with you—for your clients and mine—a list of tried-and-true ways that (mostly) cost \$0 to not spend money at a local veterinary practice as well as paths to spend less keeping a pet healthier over a lifetime.



Download the handout at dvm360.com/expensetips.

accompanied by water. A metabolic alkalosis may be noted due to exchange of sodium for hydrogen ions in the distal nephron. Creatinine kinase (CK) concentrations are increased in patients with overt myopathy. Serum creatinine and urea nitrogen concentrations may be increased; interestingly, concurrent serum phosphorus concentrations may be borderline low.

Urine is often poorly concentrated; this is due to a combination of hypertension, renal compromise and hypokalemia (low potassium causes a secondary nephrogenic diabetes insipidus). Proteinuria may be noted and should be quantified by measurement of the urine protein:creatinine ratio.

The results of a complete blood count are expected to be essentially normal, although dogs may manifest a stress leukogram. Concurrent renal disease may result in anemia, particularly in cats.

Imaging

Abdominal ultrasonography should be performed in any patient with a clinical suspicion of PHA. PHA is traditionally associated with a unilateral adrenal mass, although a small number of cats with bilateral tumors have been described.³ However, bilateral hyperplasia may not be easily detected during abdominal ultrasonography.⁵ Conversely, finding an adrenal mass is not sufficient to diagnosis PHA, as it may be nonfunctional, or secreting catecholamines (a pheochromocytoma), cortisol or sex hormones. Cats with tumors secreting both progesterone and aldosterone have been reported, with a confusing constellation of clinical signs; similarly, a multifunctional cortical tumor has been reported in a dog.⁶

Thoracic radiographs may identify metastatic lesions or evidence of cardiomegaly.

Diagnosis

Baseline aldosterone measurement.

Serum aldosterone concentrations should be interpreted in light of the concurrent potassium status, as hypokalemia should suppress aldosterone release. Generally speaking, a single aldosterone measurement > 1,000 pmol/L is enough to establish a diagnosis in a euvoletic patient with an adrenal mass, but further testing will be necessary if resting aldosterone concentrations are not dramatically elevate.

Plasma renin activity and aldosterone:renin ratio.

Comparison of serum aldosterone concentrations to plasma renin levels is ideal, as this helps to differentiate PHA (low renin) from secondary hyperaldosteronism (increased renin).¹ Unfortunately, measurement of plasma renin activity is not routinely available for veterinary patients.

Urine aldosterone:creatinine ratio.

This test has recently been proposed as a suitable screening test for PHA in cats. It's superior to simply measuring aldosterone in serum or plasma, as it reflects events over several hours and not just one time point.⁹ However, the reference range is quite wide, and the test may lack sensitivity when used alone.

Fludrocortisone suppression test.

Failure of an exogenous aldosterone analogue (i.e., fludrocortisone) to suppress aldosterone production suggests autonomous or inappropriate secretion and supports a diagnosis of PHA.^{9,10} The protocol is as follows:

1. Determine the baseline urine aldosterone:creatinine ratio.
2. Administer fludrocortisone for four days (0.05 mg/kg orally twice daily).
3. Determine the urine aldosterone:creatinine ratio.

Failure to suppress aldosterone production (defined as > 50% decrease in urine aldosterone:creatinine ratio) indicates PHA.

Management Hypokalemia.

Hypokalemic animals can become acutely compromised with cardiac arrhythmias and compromised ventilation.¹¹ Even if the patient is substantially dehydrated, it's more important to manage the hypokalemia than replace crystalloid losses. Bear in mind that even modest amounts of volume restoration may markedly exacerbate hypokalemia and result in death. The best way to provide potassium is by an infusion of potassium chloride (KCl); this is caustic to veins but is well-tolerated if diluted appropriately. Most clinicians regard 0.5 mEq/kg/hr as the maximum rate of administration of parenteral potassium. Oral potassium supplementation can be started concurrently and repeated every four to six hours until serum concentrations are back in the reference range. Fluid losses can be cautiously replaced over 24 hours using an appropriate replacement fluid such as lactated Ringer's solution (LRS).

Chronic management includes oral potassium supplementation (2 mEq/kg orally twice

daily), along with spironolactone (starting at 2 mg/kg orally twice daily). This agent is an aldosterone receptor antagonist and directly inhibits the action of the hormone. It should be used cautiously in azotemic patients.

Hypertension. Prompt control of systemic hypertension is essential to protect the retina, central nervous system and kidney. Amlodipine is a good choice if spironolactone alone is not effective; angiotensin-converting enzyme inhibitors (e.g., enalapril) are unlikely to be helpful, as renin is suppressed.

Surgical. In patients with a nonmetastatic unilateral adrenal mass, adrenalectomy is the treatment of choice. Reported outcomes are fairly positive, although a high level of surgical expertise and careful postoperative management is needed.^{3,4,12}

Dr. Audrey K. Cook is co-chief of the Medicine Section at Texas A&M's Department of Small Animal Clinical Sciences.



References can be found online at dvm360.com/Conns. And don't forget to help Simpson!



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4 veterinary experts' imaging tips

Here's help from some of our favorite veterinary radiologists for zeroing in on important imaging findings.

To enhance the chances you'll get diagnostic answers from your radiographs, here are some top tips from a series of exceptional veterinary radiologists.

Get those radiographs, and don't forget this view ...

—Maria Evola, DVM, MPH, DACVR, North Carolina State University

If I had one tip to give for the acute abdomen or a vomiting patient it would be to take a left lateral projection. I really love left lateral projections because they put gas (which is a naturally occurring contrast medium that's already present in the stomach) in the pylorus, the pyloric antrum and sometimes the proximal duodenum as well. It can really help to highlight foreign material, especially in the pyloric antrum,

by surrounding that foreign material with gas. It's a really good way, before we do anything else, of just ensuring that the stomach looks very normal. So if I have a right lateral projection and an orthogonal view of the patient who is vomiting, one of the first things I'll recommend is obtaining a left lateral projection and just making sure that there's not something that we can see already without doing any other advanced imaging.

You got the radiographs but you're a little unsure. Should you consult a specialist? Yes, but don't forget this ...

—Rachel Pollard, DVM, PHD, DACVR, University of California-Davis

I think that telemedicine is taking off in all aspects of veterinary

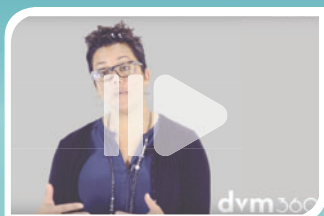
practice. But in imaging it really is changing the way that veterinarians can access specialists. So I am very excited about the trend toward more telemedicine. If I could give a pointer to people who are sending cases in to radiologists it would be to please fill out the history yourself. Don't ask someone unfamiliar with the case to provide the background data. A pertinent history can help a radiologist prioritize differentials for you in a much more useful way, and that's going to give you the best patient care possible.

About those notations in your patient history ...

—Eli Cohen, DVM, DACVR, North Carolina State University

Speaking from a teleradiologist's or a support service's perspective, the important thing to know is why

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you're doing the radiographs. In other words, taking 20 radiographs of the entire musculoskeletal system without localizing the lesion inherently decreases the predictive value of that test.

So clinical history is vital for an expert to pull upon. And we know from eye tracking studies that it will physically change the way your eye searches the image, depending on what you're looking for. Being told that here is a radiograph, say of a limb with no known lameness, can physically change the way you search that limb, as opposed to saying there's a lameness centered at the scapulohumeral joint. It will change how much we scrutinize, how much time we scrutinize and whether we recommend additional tests, which is not solely based on the imaging but is as much based

on the clinical history and what we're looking for. So it's really, really important to provide that information, whether it's to yourself, your colleague or a radiologist, so they can do their best job and achieve the best outcome for the patient.

The radiograph is all scrutinized and it didn't show anything. What do you tell the client? "I have great news!"

—Betsy Charles, DVM, MA

What I often hear from veterinarians or when talking to students is, "Ah, I don't see anything on the radiograph." And we don't communicate that that's actually a good thing that we don't see any evidence of a foreign body. We don't see any evidence that would explain what is causing this

patient's vomiting or diarrhea or whatever the clinical presenting signs might be. And we have to go that next step and say, "That's great news." And then we need more information. Saying, "We didn't find anything" communicates that we did something that maybe we didn't need to do. I would rather you say, "This gave us really great information because we know that we can rule out some things. It can't rule out everything. But we can minimize some of our differentials based on this diagnostic exam."

Now let's talk digital radiography. Worried it will lose its luster? Anthony Pease, DVM, MS, DACVR, gives five tips on how, like fine diamonds, it can hold its value for years at dvm360.com/gems.



3 reasons to join me in owning

A path to build wealth. A willingness to learn to be a better delegator and leader. A calling to provide a healthy place for veterinary professionals to bloom. That's all possible as the owner of a veterinary hospital.

By Julie Reck, DVM

If you've cracked a veterinary publication in the last decade, there's a good chance you've seen headlines like these: *"Corporate veterinary practice is overtaking independent owners"* *"Mental well-being of veterinary professionals falling while depression, suicide rates climb"* *"Veterinary practice ownership declines—is gender shift to blame?"*

These trends are important, but maybe it's time to look for chances to shift our perspectives and course-correct to reverse them.

A career-shaping discovery

When I'm asked about the journey that led me to open my practice

seven years ago, I typically begin by admitting that I "inadvertently" discovered the financial opportunities provided by practice ownership.

In 2010, I was operating a rapidly growing pet hospice veterinary service. I considered adding veterinarians to this mobile service, but my home could no longer handle housing the medical supplies or my receptionist/technician employee. I started looking through local ads of small practices for sale in the Carolinas, with the thought that they would be affordable options to act as a hub for my pet hospice service.

As I researched the practice valuation process, I "inadvertently"

discovered that through practice ownership you can collect the salary of a practicing veterinarian, the salary of a business owner and own an appreciating asset to be sold, in some cases, for the amount that the practice generates per year in gross revenue. For instance, if a profitable two-doctor practice is generating \$1.5 million per year in revenue, it could be potentially worth that or even more when listed for sale.

I vividly remember reaching this conclusion while sitting alone on the living room couch, and as soon as my husband came home from work I started to explain my discovery. I was a bit shocked that I had to "in-

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advertently" discover this immense wealth-building opportunity available to any veterinary professional willing to take the plunge into practice ownership. I found myself asking, "Where was this information in vet school, and why aren't practice owners and vet publications highlighting this fantastic opportunity?"

More flexibility, not less

Asking these questions led to a deeper understanding of how uncomfortable we are as a profession discussing profit and personal wealth development. Many of us also watched previous generations of practice owners work tirelessly as full-time veterinarians and business owners, forced to lose so much time away from family and personal lives.

We are a profession that has become female-dominated, and many, including myself, have also taken the plunge into parenthood. The reality is that motherhood is a hands-on event, to say the least. It quickly becomes clear to a new mom just how much those beautiful, little souls need you day in, day out.

With no one talking about wealth-building in practice ownership and everyone talking about how much stress and sacrifice come with the role, it's no wonder we see the headlines we do time and time again. But it's here that we're doing ourselves and our profession an injustice. Practice ownership is the opportunity for the utmost freedom and work-life balance in veterinary medicine. By cultivating leadership and employee engagement, you get the option to work as little or as much in your prac-

tice as you desire.

Want to attend those field trips and parent-teacher conferences, all while building a healthy college fund for those little ones? Then trust me, practice ownership is a road you want to consider.

Leadership skills make life easier

People say, "Practice ownership is only for certain personalities," or "I went to school to learn medicine not take on a business role." We sell ourselves short again if we limit our perspective to our current level of personal development.

The truth is that every veterinarian has the capacity to consider practice ownership, just as every self-sufficient adult has the capacity to consider becoming a parent. We understand that upon entering parenthood we will know very little about bringing a new life into the world, but we commit ourselves to learning and developing into the best parents possible for our children. Parenthood is a big consideration, and you choose to take it on or skip it. The choice to enter practice ownership should be made the same way. Before you tell yourself that you're incapable of being a practice owner, ask yourself, "Am I committed to developing my leadership ability to reach my greatest potential?"



Owning helps me help others

As we look to change the rising trend of depression, professional dissatisfaction and suicide rates in veterinary medicine, one way to help is by taking on the role of practice owner. It may seem strange, but to explain why, I want to turn to 12-step programs.

With addiction levels on the rise, many of us have friends and family members who have sought the help of 12-step programs. Each step is important, but most experts agree that if an addict completes steps one to 11, but not the 12th, then they're at risk for relapse. The 12th step is an act of service to help a fellow addict or alcoholic. It's the act of service and fully committing

"By cultivating leadership and employee engagement, you get the option to work as little or as much in your practice as you desire."

to support a fellow person that provides the fulfillment that the addict was seeking in the first place.

I admitted earlier that it was the discovery of the financial opportunities that motivated me to pursue practice ownership. It took me five years of owning a practice and a near-death experience during the birth of my son to awaken me to explore the other areas that practice ownership could be fulfilling. My near-death experience drastically altered my interests, and I fell in love with the role and responsibility of creating an environment that allowed fellow veterinary profession-

als to thrive. It's certainly fulfilling to heal a patient, but it's hard to put into words the fulfillment you get when a fellow veterinary professional tells you how much they love their job and the environment you're charged with creating. With practice owners prioritizing the importance of establishing environments that foster community, positivity and trust, I believe we can heal this profession one practice at a time.

Am I 'obnoxiously optimistic'?

My pursuit of extraordinary profits generated in a positive practice environment that prioritizes and nurtures the development of its staff is admittedly "obnoxiously optimistic." But if you're anything like me, then you're tired of reading the same headlines discussing trends continuously until they become truths.

Was reading this article the moment you found yourself sitting on the couch "inadvertently" discovering the wealth-building capability of practice ownership? Maybe you told yourself you were incapable of owning a practice without ever asking yourself the right questions. Or did you find yourself unsure of how to make a difference as just one person in this large profession where so many are hurting?

If you're ready to consider your own "obnoxiously optimistic" journey, don't dismiss practice ownership. Start exploring.

Julie Reck, DVM, owns Veterinary Medical Center of Oak Mill in Oak Mill, South Carolina.

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HOSPITAL DESIGN

Grand plans for a *grand* space



Big ideas for a large veterinary hospital paid off for an Illinois architecture firm, whose designs earned one of two 2019 Hospital of the Year awards, this one for more than 8,000 square feet. *By Maureen McKinney*

Architect Michael Matthys, VP of LindenGroup Architects in Orland Park, Illinois, was instrumental in creating a multiple-award-winning space for Coyne Veterinary Center in Crown Point, Indiana. In addition to other building awards, the hospital earned a coveted 2019

dvm360 Hospital Design Competition Hospital of the Year for 8,000 square feet or more. If you're up for building big, glean a few tips from Matthys about some of the design choices made for this 15,633-square-foot, state-of-the-art general practice.

In the zone

Site selection was a struggle, to say the least, but the firm's design-build team worked through the zoning process with practice management and city officials. The first site selected for the new building was denied zoning due to proximity to residential areas. "The development team engaged with the city's planning department, mayor and district councilman to find a site that would work," Matthys says.

Zoning challenges continued, as

the design team had to respond to design standards for the selected area that called for colonial-style architecture. "To meet those challenges, Dr. Coyne and the design team pushed the limits of the stylistic standard focusing on quality building materials," Matthys says.

Tip: Don't get discouraged. Even award winners run up against City Hall sometimes.

An eye-catching roofline

A multilayer roof coupled with a façade of glass, brick and stone add architectural interest to both the exterior design and the interior spaces. "From the onset of this project a major goal was to create an eye-catching design along the highway that would be noticed," Matthys says.

Tip: When you're thinking about



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architectural features that will potentially wow clients for years to come, be thoughtful about the cost-benefit ratio: expensive aesthetic versus new clients over time who will see and admire your vision.

Bonding room pays off big

The reception area in Coyne Veterinary Center houses a unique space intended to help homeless pets get adopted. Developed from Coyne's partnership with nearby animal shelters, the bonding and viewing room puts adoptable pets front and center. "Allowing families to meet homeless pets from the community shelters has been a great success," Matthys says. "The bonding room provides a quiet space that is soundproofed with our typical exam room sound wall, which includes in-wall Roxul Mineral Wool Sound Insulation installed up to the roof deck."

Tip: Think of ways your building can highlight for clients your love of animals that reaches beyond your clientele into the world. (It helps to make things fun, too.)

Transparency + privacy = great exam spaces

For the 11 exam rooms surrounding the L-shaped reception area, the firm chose aluminum doors with large frosted windows and a transom: "Frosted doors provide added light and offer a feeling of transparency while also affording privacy," reads the contest entry.

Why this design choice? "Our veterinary projects often end up with exam rooms internal to the building," Matthys says. "We look for creative ways to bring natural light into these spaces."

Tip: Think about ways to get light into spaces, and consider whether you're ready for more transparency



One of the 11 exam rooms at the Coyne Veterinary Center in Crown Point, Indiana. Frosted doors allude to transparency while also providing privacy.



Coyne Veterinary Center's reception area has space dedicated to helping homeless pets find homes.

in your new hospital: Do you just want to take all the animals to "The Back," or would you like to do more to show new and regular clients the amazing medicine you practice?

Sign, sign, everywhere a sign

Branding signage throughout the practice was created with dimensional letters cut from half-inch-thick acrylic sheets. Room signage integrates Coyne's logo, while boarding and playrooms are identified with cut vinyl applied to glass.

Selecting the practice's signage

was a collaborative effort between the practice's internal development team and the design-build team. "Font sizes and placement of signage is considered early in the design process and coordinated with the architectural drawings and preliminary renderings," Matthys says.

Tip: Signage and interior decoration are often afterthoughts after long, costly builds. But the right fonts, colors and plan for directing traffic through your hospital are things every pet owner and team member will appreciate.

HELPFUL STUFF

Get on the ball!

Insights on how to spot good candidates for rehab and where to get training so you can start improving mobility and comfort in all your patients.

Veterinary physical rehabilitation needs are all around.

Where might you find patients that could benefit from physical rehabilitation? In all the physical exams that you do, says Matthew Brunke, DVM, DACVSMR, CCRP, CVPP, CVA. He has been a frequent speaker on physical rehabilitation at Fetch dvm360 conference. But you'll find him engaged in the topic all over, including at Ross University School of Veterinary Medicine on St. Kitts for the West Indies Veterinary Conference last November.

During one of his sessions at St. Kitts, Dr. Brunke said all patients on long-term osteoarthritis medicine and those with obesity, intervertebral disk disease (IVDD) or fibrocartilaginous embolism (FCE) can benefit. "And doing

a full physical examination on every patient will yield more patients for the rehab service," he said.

One key in discerning which patients could feel a lot better from a little attention: "It's very important to know what is normal so that you know what is abnormal," said Dr. Brunke. "Studies have shown up to 20% of all dogs have arthritis. That, along with obesity and neurological conditions, provides an ample supply of patients that could benefit from rehab."

So where to get the training on all the details so you can dive into rehab? Dr. Brunke recommends the certification programs at the University of Tennessee or the Canine Rehabilitation Institute. These programs can train veterinarians and technicians.

For those looking for more advanced training, veterinarians can also do a residency with the American College of Veterinary Sports Medicine and Rehabilitation, and technicians can opt for a VTS in rehabilitation.



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Oh, the Places You'll Go

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3 dental products to keep those teeth squeaky clean

National Pet Dental Health Month came and went, and you've had a couple of months to recover from all those conversations about the need for good dental care in pets. But it is, of course, a continuous issue. Want a way to get pet parents to dig their teeth into dental disease prevention? Here are three products Dr. Jan Bellows says you can recommend to improve the likelihood of healthy teeth (and see more at dvm360.com/dentalidos).



C.E.T. VeggieDent Chew (Virbac)

These treats remove plaque or tartar mechanically—rubbing and scrubbing it away.



MAXI/GUARD Oral Cleansing Wipes (Addison Biological Laboratory) with zinc

These medicated wipes not only remove plaque sitting on the teeth but also help prevent buildup.



Vetradent Water Additive (Dechra)

You've heard the phrase, "Just add water," but for this dental product, dog owners just have to add to water to reduce the accumulation of plaque, tartar or both. Lap up those healthy teeth!

HELPFUL STUFF

Dog park do's and don'ts:

What pet owners need to know before joining in the fun

Help your veterinary clients prevent pet and person injuries with these tips and this handy client handout. *By Heather Biele, DVM*

It's fairly common for clients to come to you for advice about squashing their dog's storm phobia or housetraining a new pup, but what about dos and don'ts for trips to the dog park? While some dog owners may proactively look for guidance in the area of socializing and canine aggression, it's not uncommon for others to think a trip to the dog park doesn't require much forethought or preparation—and that's where trouble can arise.

"Aggression is not uncommon at a dog park," says Dr. Wayne

Hunthausen, a pet behavior consultant and owner of Westwood Animal Hospital in Westwood, Kansas. "It's certainly something pet owners need to be educated about. There are things they can do to prepare at the park—and even before."

The first thing clients need to know is there's always some risk in taking their dog to a dog park—whether it's risk of injury, infectious disease, fighting or biting. Talk to pet owners about their dog's temperament, age and size, and determine whether the dog is ready to be introduced to other dogs and people. "Not all dogs are 'dog park dogs,'" says Dr. Hunthausen. "Some are too afraid or don't know how to play or are too aggressive."

Another important point to emphasize to owners is that dogs need to be current on their vaccinations,

flea and intestinal parasite preventives before going to the dog park. Also, consider advising pet owners to have more fecal examinations performed on their dog if they make frequent visits to the park, as the risk of acquiring intestinal parasites is high.

And finally, make sure clients know how to recognize signs of aggression—and can control their dog if a troublesome situation should arise. Simple obedience commands, such as "come," "sit," "stay" and "leave it," are critical in a dog park environment. "Clients need to understand dogs' body language and be able to spot signs of fear or anxiety in their pet or someone else's," says Dr. Hunthausen. "If there's a problem, owners need to be able to intervene and make a situation safer."

SPREAD THE WORD

To download a client handout on dog park safety tips, head over to dvm360.com/dogparksafety.



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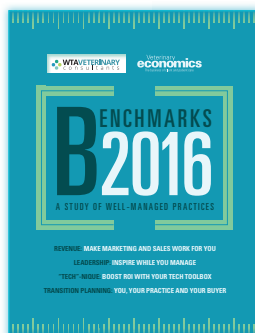


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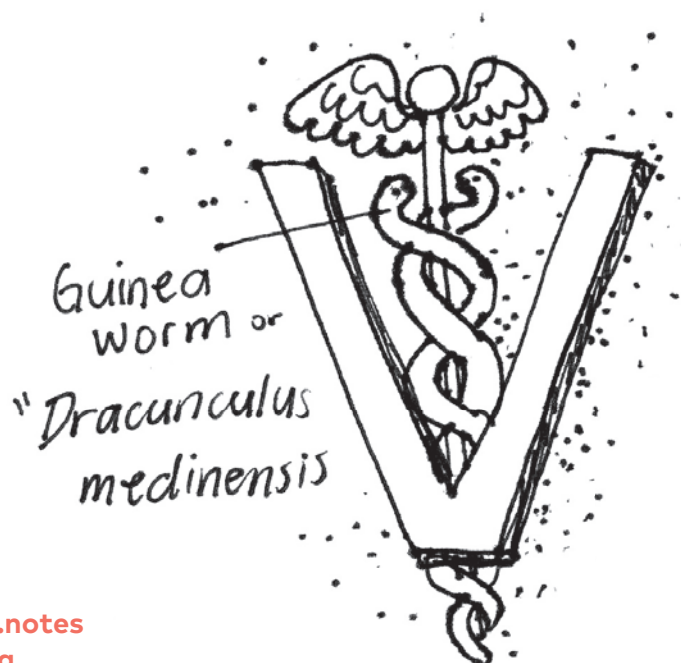
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A *sketch* of the profession

Take a peek at a veterinary colleague's notes—and learn a bit more about your profession while you're at it.

Veterinarian
from "VETERINARIOUS"
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@leatrize.vet.notes
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When you think back on vet school, you probably remember a lot. The sleepless nights, the intensive training, that one time you saw an entire equine digestive system on the floor and didn't think anything was weird about it (and probably didn't until you explained it to your non-veterinary friends later). What you might not remember, however, are the very origins of the veterinary profession. Here's a little reminder, straight from the notebook of veterinary student and artist Leatrize Gonzales. Follow Leatrize (and us!) on Instagram, and get a peek at a few more of Leatrize's notes at dvm360.com/vetnotes.

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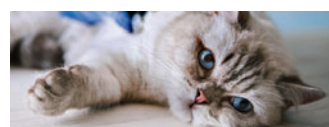
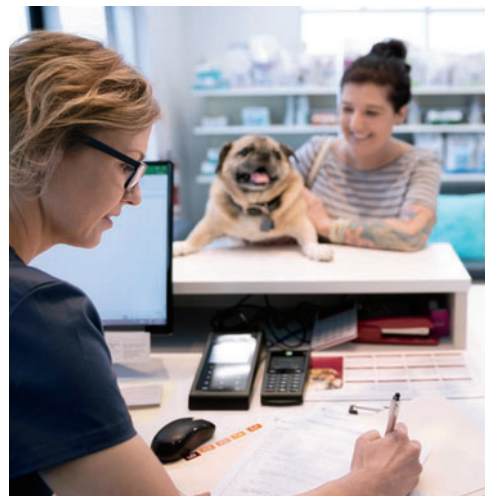
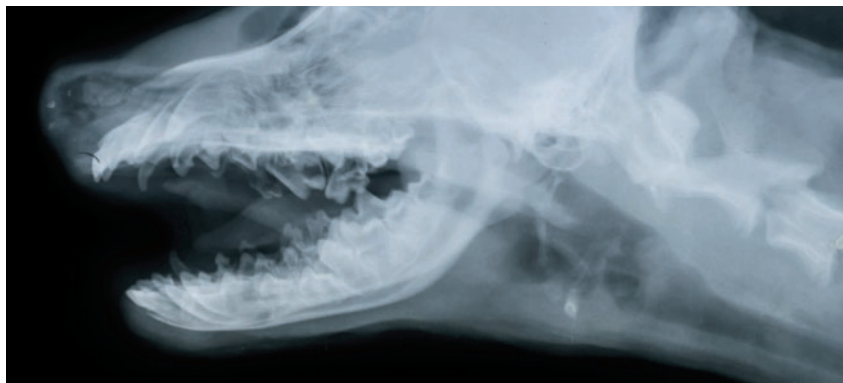
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