




firstline[®]

The best read veterinary team journal. Bam.

Whom  should I ask? p28

Fearless rehab
p14

Human trends
pawing into
pet nutrition
p18

When the
groomer
becomes the
dentist
p20

Vet confessions:
Clients are
so weird ...
p7

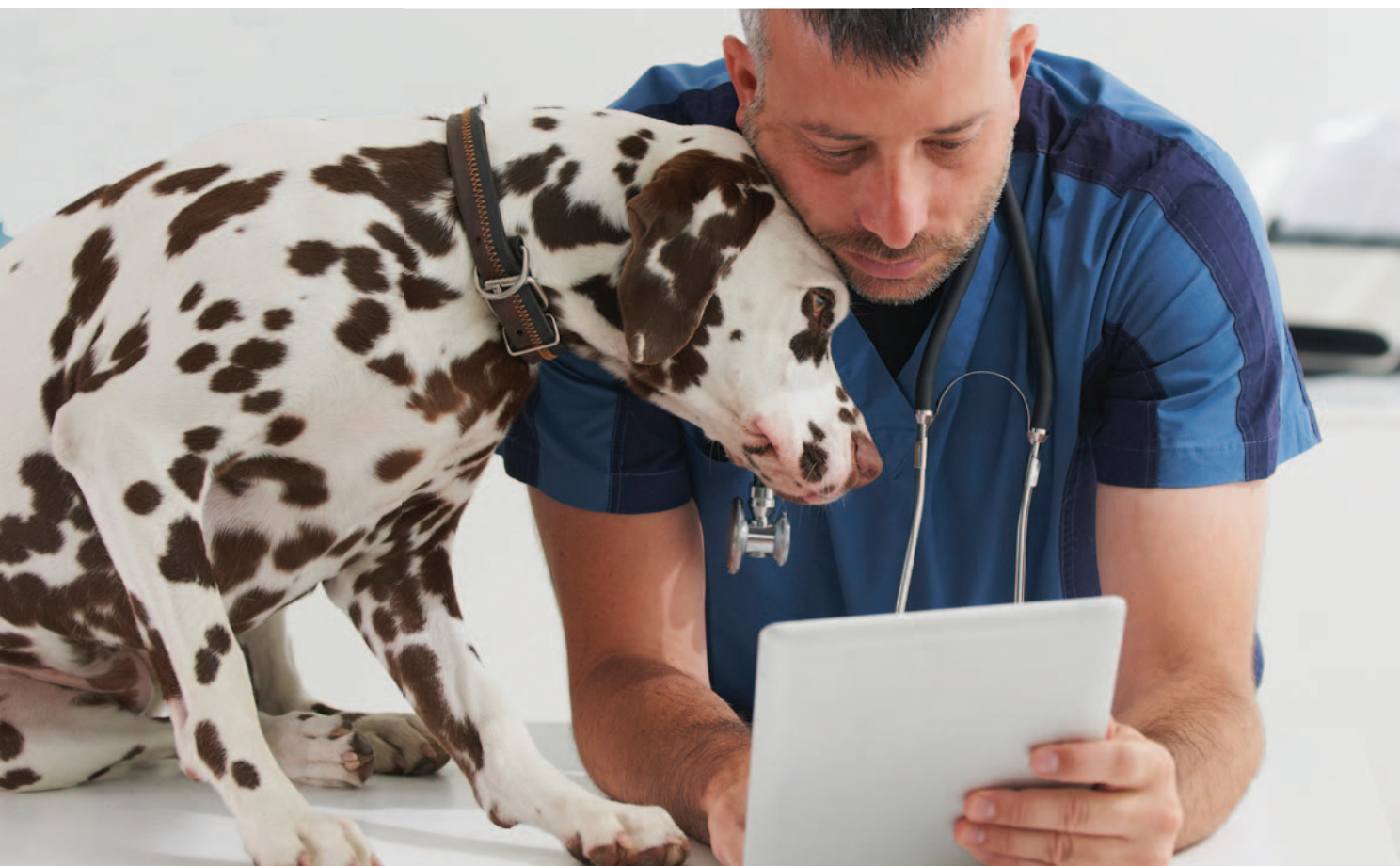
p10

LEARN
TO COPE
WITH
ANESTHETIC
LOSS


fetch
dvm360
CONFERENCE

Why so many
terms for
technician? p2

**WITH CARECREDIT, COST WON'T COME BETWEEN
YOU AND YOUR RECOMMENDED CARE.**



The CareCredit credit card gives clients a way to pay for all the care you recommend. CareCredit can be used for everything from exams and lab tests to surgery, pet food, medicine and parasite control.* In fact, 76% of cardholders said financing is a tool that helps them with unplanned healthcare expenses.¹

Already enrolled? Call 800-859-9975, option 1, then 6, to learn how CareCredit can help more pets get the care they need. **To get started with CareCredit, call 844-812-8111** and ask for the one-time enrollment fee of \$59 by November 30, 2018.



*Subject to credit approval.

1. Path To Purchase Research, Veterinary Category, conducted on behalf of CareCredit by Rothstein Tauber, Inc., 2016.
©2018 CareCredit

FIRST2018VA

Why so many terms for veterinary technician?

2

4

- > Help clients pay
- > How many pets is too many?
- > Vet confessions
- > How to enter an exam room

Fearless rehab



14

Human trends pawing into pet nutrition

18



When the groomer becomes the dentist

20



10

BAD to the bone

22



Vet techs rule: Whom should you ask?

28

8 Three paths to calmer pets

16 Bundle to boost compliance





firstline[®]

Healthy team members = healthy pets

Why so many terms for veterinary technician?

The Veterinary Nurse Initiative aims to streamline, unify professional designation nationwide.

By Brent Dickinson

No doubt you've heard about the ongoing debate over whether to switch the term from "veterinary technician" to "veterinary nurse." If you think the question is one of vanity or some sort of professional land grab, consider what Ken Yagi, BS, RVT, VTS (ECC, SAIM), had to say at last month's Fetch dvm360 conference in Kansas City. Yagi explained that the move would lessen the burden on states by creating common terminology for policies and procedures and make governance easier.

Sound complicated? It definitely is. Yagi explains that the National Association of Veterinary Technicians in America is working in conjunction with the American Veterinary Medical Association and other officials to codify language and viewpoints for the purpose of creating a unified stance.

He predicts the process may take five to 10 years. Watch the full video report from Fetch dvm360 conference at dvm360.com/VNI.



Join us at the Fetch dvm360 conference in San Diego, Dec. 13-16. Visit fetchnvdm360.com/kc to learn more or to register.

AIR IMAGES/SHUTTERSTOCK.COM

CREATIVE

Editor/Team Channel Director | **Portia Stewart**
portia.stewart@ubm.com

News Channel Director | **Kristi Reimer Fender**

Business Channel Director | **Brendan Howard**

Medicine Channel Director | **Mindy Valcarcel**

Content Marketing Director | **Adrienne Wagner**

Senior Content Specialist | **Jennifer Gaumnitz**

Associate Content Specialists | **Katie James, Sarah Dowdy**

Assistant Content Specialist | **Hannah Wagle**

Clinical Techniques Course Manager | **Jennifer Vossman, RVT, CMP**

Digital Content Director | **Jessica Zemler**

Digital Design Director | **Ryan Kramer**

Multimedia Producer | **Troy Van Horn**

Marketing Copywriters | **Ericka Cherry, Gabrielle Roman**

Associate Art Director | **Nichollette Haigler**

EDITORIAL ADVISORY BOARD

Our board members provide critical insights into the challenges veterinary team members face every day, and they help *Firstline* provide content that is relevant and useful to all practice team members.

Sharon DeNayer | Jennifer Graham

Bash Halow, CVPM, LVT | Shawn McVey, MA, MSW

Ciera Sallese, CVT, VTS | Kyle Palmer, CVT

Nancy Potter | Oriana D. Scislowicz, BS, LVT, APHR

Sales

Sales Director | **David Doherty**

913-871-3870 | david.doherty@ubm.com

Account Manager | **Angie Homann**

913-871-3917 | angie.homann@ubm.com

Account Manager | **Kelly Main**

(913) 871-3872 | kelly.main@ubm.com

Account Manager | **Emma Pierce**

(913) 871-3873 | emma.pierce@ubm.com

Account Manager | **Terry Reilly**

913-871-3871 | terry.reilly@ubm.com

Account Manager | **Heather Townsend**

913-871-3874 | heather.townsend@ubm.com

Sales Coordinator | **Anne Belcher**

913-871-3876 | anne.belcher@ubm.com

UBM ANIMAL CARE

Vice President & Managing Director | **Christie McFall**

Vice President, Business Solutions | **Mark Eisler**

Executive Creative Director | **Marnette Falley**

Medical Director | **Theresa Entriaken, DVM**

Fetch dvm360 Director | **Peggy Shandy Lane**

Business Manager | **Chris Holston**

UBM AMERICAS, LIFE SCIENCES GROUP

Executive Vice President &

Senior Managing Director | **Tom Ehardt**

Subscriber Services: Visit dvm360.com to request or change a subscription, or call our Customer Service Department toll-free at 888-527-7008. **Reprints:** Call 877-652-5295 ext. 121, or write to bkolb@wrightsmedia.com. Outside the US, UK, direct dial 281-419-5727 ext. 121. **Books and Resource Guides:** Visit industry.matter.com. **List Rental Sales:** Call Anne Belcher at 913-871-3876, or write anne.belcher@ubm.com. **Editorial Offices:** UBM Animal Care, 11140 Thompson Ave., Lenexa, KS 66219; 913-871-3800. **Websites:** dvm360.com; fetchnvdm360.com; UBMAmericas.com, ubm.com.

Firstline (Print ISSN: 1095-0613, Digital ISSN: 2150-6574) is published 6 times/year as combined issues in Jan/Feb, March/April, May/June, July/Aug, Sept/Oct & Nov/Dec by UBM LLC, 131 W. First St., Duluth, MN 55802-2065. Subscription rates: one year \$21.00, two years \$36.50 in the United States & Possessions; \$31.50 for one year, \$57.00 for two years in Canada and Mexico; all other countries \$42.00 for one year, \$78.00 for two years. Single copies (prepaid only) \$10.00 in the United States; \$14.00 in Canada, Mexico, and \$16.00 in all other countries. Periodicals Postage Paid at Duluth, MN and additional mailing offices. POSTMASTER: Please send address changes to Firstline, P.O. Box 6086, Duluth, MN 55806-6086. Canadian GST number: R-124213133RT001. PUBLICATIONS MAIL AGREEMENT NO. 40612608. Return Undeliverable Canadian Addresses to: IMEX Global Solutions, P.O. Box 25542, London, ON N6C 6B2, CANADA. Printed in the U.S.A. © 2018 UBM. All rights reserved. No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical including by photocopy, recording, or information storage and retrieval without permission in writing from the publisher. Authorization to photocopy items for internal/educational or personal use, or the internal/educational or personal use of specific clients is granted by UBM for libraries and other users registered with the Copyright Clearance Center, 222 Rosewood Dr. Danvers, MA 01923, 978-750-8400 fax 978-646-8700 or visit <http://www.copyright.com> online. For uses beyond those listed above, please direct your written request to Permission Dept. fax 732-647-1104 or email: Jiljyn.Frommer@ubm.com. UBM Life Sciences provides certain customer contact data (such as customers' name, addresses, phone numbers, and e-mail addresses) to third parties who wish to promote relevant products, services, and other opportunities that may be of interest to you. If you do not want UBM Life Sciences to make your contact information available to third parties for marketing purposes, simply call toll-free 866-529-2922 between the hours of 7:30 a.m. and 5 p.m. CST and a customer service representative will assist you in removing your name from UBM Life Sciences's lists. Outside the U.S., please phone 218-740-6477. Firstline does not verify any claims or other information appearing in any of the advertisements contained in the publication and cannot take responsibility for any losses or other damages incurred by readers in reliance on such content. Firstline cannot be held responsible for the safekeeping or return of unsolicited articles, manuscripts, photographs, illustrations, or other materials. Address correspondence to Firstline, 11140 Thompson Ave., Lenexa, KS 66219; (913) 871-3800; email firstline@ubm.com. To subscribe, call toll-free 888-527-7008. Outside the U.S. call 218-740-6477.



Get unstuck.

You'll find the inspiration you
need at every Fetch dvm360 conference.

When the daily grind gets to be too much, come to Fetch dvm360 conference to find that light at the end of the tunnel and learn to love your job again.

What does that look like?

- 😊 Sessions that cover both hard-hitting clinical and soft skills
- 😊 High-energy keynotes that lift you up and refill your energy meter
- 😊 Exciting new solutions that look forward to what you can change in practice



San Diego, December 13-16, 2018
Baltimore, May 2-5, 2019
Kansas City, August 23-26, 2019

Register today.

Go to fetchdvm360.com to learn more.



PEARLS

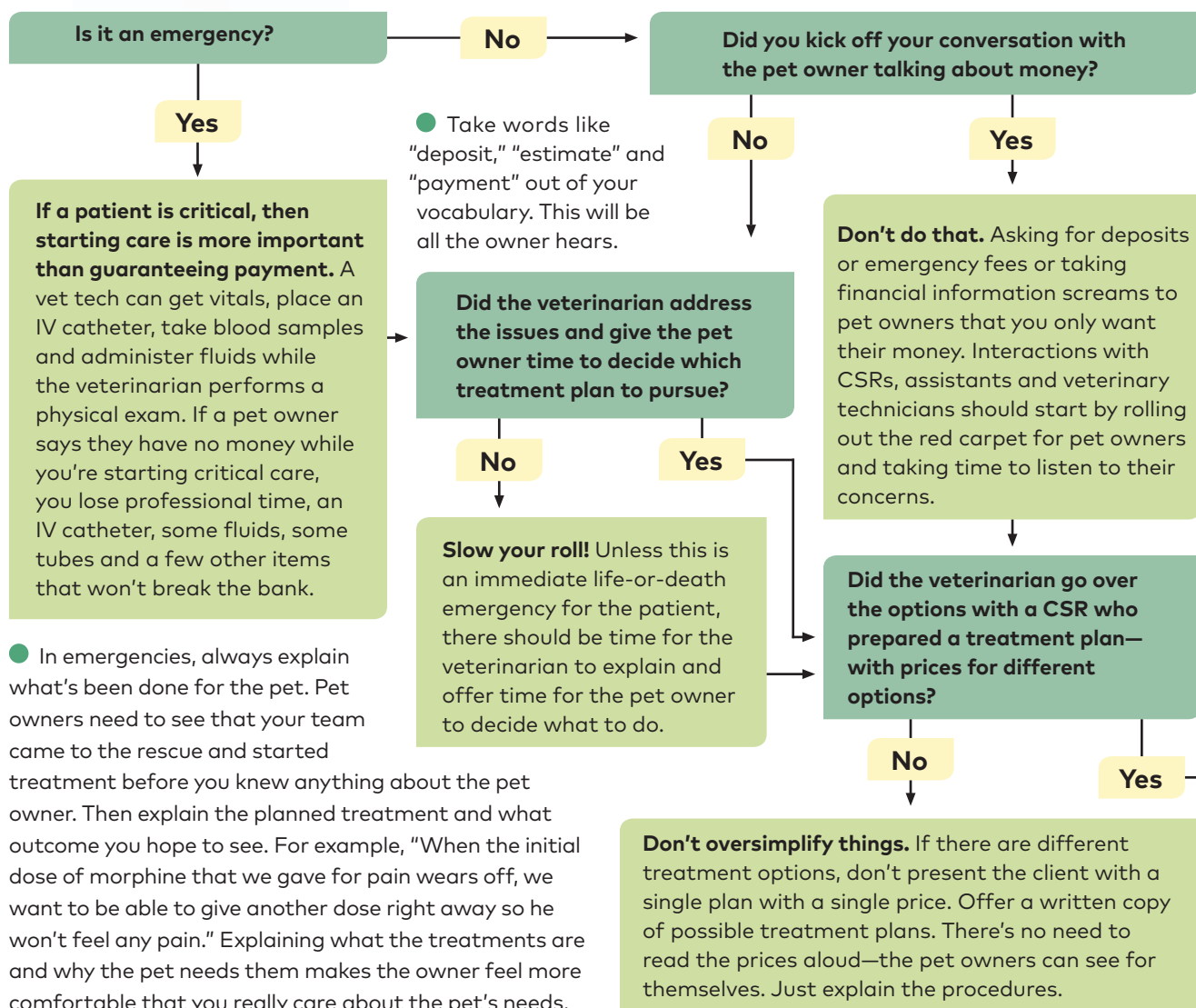
(Lustrously good advice and tips)



A journey to talking money without ticking off pet owners

Veterinary practice team: What new approaches could your client service representatives (CSRs) and others try?

By Naomi Strollo, RVT



Get the pet owner's signature and notify the technician and/or veterinarian so they can start treatment. **Do the amazing work you do!**

● Especially in emergencies, when you reach the end of the consent form with prices, and pet owners see a price range, they can get angry. Try saying, "This consent allows us to perform the treatments I just discussed. The range is in case something happens and we're not able to reach you and your pet needs further unexpected treatments. We just need your permission to continue the best care even while you're not here." This lets pet owners know you're only going to use the cushion if they're unreachable.

Choose your words carefully:

"This is the recommended treatment by the veterinarian. I understand you weren't expecting this today. How would you like us to proceed?" Let the pet owners make the decision, not you.

Take away the possibility of an audience. A private exam room avoids a scene and also gives pet owners privacy to be honest and admit without public shame that their funds are limited.

Sometimes you do everything right, but a pet owner still can't or won't pay for treatment.

Pull out the plan B estimate, and go over it. If a procedure, product or service can be marked off the list, do it. There's no need to try to make a pet owner feel guilty. Here's what that sounds like: "If we remove this injection, can we proceed with the rest of the plan?" No? Remove another line and continue that way.

But is it about money?

Yes

No

Don't assume price is the problem. If pet owners aren't happy after a treatment plan explanation, they may just be distraught over their pet. Don't be surprised if pet owners' first questions are about future care their pet needs. If the CSR can't comfortably answer their medical questions, don't sweat it. Bring in a veterinary technician.

Ask whether the pet owners are unable to leave a financial consent today or unable to consent to all the treatments.

If the problem is just signing financial consent today, then explain what your team can do based on your hospital's policy on payment options. Inform them that without financial consent the practice can't continue treatment. This shows that you care and you gave the owners time, but you can't continue without financial consent. If treatment is to continue, explain that the pet owners should remain in the building to continue care. They can find or phone family members or friends, or explore other payment options. But remember, their financial consent is allowing your team to continue treatment.

Are you talking this over in a private exam room?

No

Yes

Is the pet owner upset?

Yes

Is this an emergency?

No

No

Yes

Did the pet owner agree to a treatment plan?

Are there multiple treatment options?



ASK KATIE

Q: We have a really generous employee discount for personal pets (50 percent off of services, and food and medications at cost). Several employees have taken on multiple pets since joining us. What's the best way to address the "too many pets" issue?

How many pets is too many?

A: We are an industry of compassionate pet lovers, and when being offered a nice discount, it seems as though we can afford more pets. The reality is that if those employees weren't working at your clinic, they wouldn't be able to afford all the animals they have. And frankly, it's not a clinic's responsibility to pay for its employees' pets.

I recommend setting a limit on the number of pets that an employee can have "enrolled" in the discount program. Require employees to declare which pets they want to receive the discount for; services for all other pets are at regular price.

It's important for me to point out as well that the IRS caps employee discounts at 20 percent. Any discounted amount in excess of that would be considered income for employees, and they could be taxed on that income. You may want to revamp your policy to include this change as well, just to keep the clinic and the employee out of hot water.

Katie Adams, CVPM, is director of curriculum development at veterinary education provider Ignite Veterinary Solutions based in Austin, Texas.

Got a question for Katie? Email us at firstline@ubm.com.



How to enter an exam room

Everyone who works with patients in the veterinary clinic has loads of information to impart to clients. Facts, recommendations and opinions are dispensed all day long, all for the benefit of pets. But you could be saying more to your clients—and strengthening your bond with them—without uttering another word.

This is according to Fetch dvm360 conference speaker Dani McVety, DVM. In addition to educating veterinary professionals at Fetch and co-owning Lap of Love Veterinary Hospice and In-Home Euthanasia, Dr. McVety is a certified body language instructor. And she says you can telegraph so much just by the way you walk into an exam room.

Here she has three tips for bolstering your body language and sending all the right messages.

1. Go hands-free

Though the tools of the trade can constitute a literal handful of items such as patient files, Dr. McVety says these articles can serve as a distraction, or worse, a shield.

"If you do walk in with a chart, put that down as quickly as possible so that your introduction is very engaging," she says.

2. Flash the right smile

Naturally you want to appear friendly and glad to see client and patient, but this doesn't mean pasting on a Cheshire grin. Dr. McVety recommends appearing pleasant and then genuinely happy after introductions.

"That purposeful and delayed smile lets the family feel like their name is the thing that had you smile," she says.

3. Get in the right spot

Again, keeping close to pet and owner displays your commitment to the current appointment, Dr. McVety says. This can be done by getting on the floor with the patient or staying on the same side of the exam table as the client.

"Try to minimize the amount of things between you and the family," she says. "That's how someone feels like they have your full and complete attention."

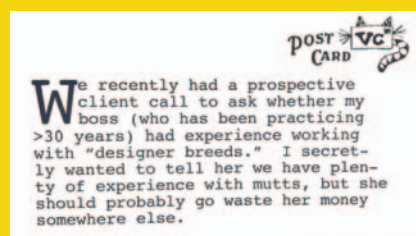
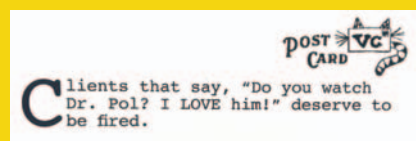
Dr. McVety says the effect of these practices is that your clients feel as though you've really listened to them and given them extra attention. "They feel the appointment lasts twice as long as it actually does," she says.

Watch the video for more:
dvm360.com/enterexam

Vet confessions: Clients are so weird ...

We know, we know, people are weird. Here are two of the weirder (and sadder) interactions that happen within the four walls of a veterinary practice.

Read more at
dvm360.com/weirdclients



Do you have a tip to share? Email your great idea to firstline@ubm.com. We'll pay \$50 for every idea we publish.

Three paths to calmer pets

Experiencing fear and stress while you're trying to figure out how to relieve your veterinary patient's fear and stress is ... redundant. Don't sweat. We have three places to start on your path to calming pets.

READ WORDS OF WISDOM, STRAIGHT FROM THE EXPERTS

Fear, anxiety and stress (FAS) can be debilitating for pets and pet owners alike. Learning how to navigate a pet's stressors can boost your veterinary clientele—and put you, team members, clients and animals at ease with each visit.

That's where *From Fearful to Fear Free: A Positive Program to Free Your Dogs from Anxiety, Fears, and Phobias* comes in. "We, as veterinarians and as pet owners, can no longer ignore FAS but instead must realize that emotional distress is not only damaging in itself, but it also causes physical damage to pets and undermines their health, happiness and longevity," Marty Becker, DVM, writes in the introduction.

This book covers the subject of FAS in detail and guides readers through dealing with a pet's body language, vocalization and changes in behaviors, allowing you to make more accurate diagnoses and take preventive actions against triggers or fallout from healthy habits.

BE THE TEAM THAT CHANGES EVERYTHING FOR PETS

With the mission to "prevent and alleviate fear, anxiety and stress in pets by inspiring and educating the people who care for them," the Fear Free Certification program is here to help you turn whatever frowns your practice has upside down—for team members, clients and, most important, patients.

"Veterinarians, veterinary nurses and other veterinary professionals are the true pet health experts—and we'd like to keep it that way," the Fear Free Certification website states. "Fear Free visits mean teams see their patients more often, and pet owners seek advice from a trusted source."

The Fear Free Certification program consists of eight modules, each ending with an exam you must pass before you move onto the next. When you complete all of the modules, you'll receive your Fear Free Certificate. You'll also receive an annual membership for the certification program that you can renew each year.

TAKE A COURSE AT LSHU

Take classes from the comfort of your veterinary practice to gain Low Stress Handling Certification. With Low Stress Handling University courses, you can learn strategies to create a low-stress environment—not to mention how to handle animals in a less stressful manner.

Gaining Low Stress Certification can take you one step closer to perfecting your (already close to perfect, we're sure) practice. "Knowing how to handle patients in a Low Stress way can determine whether or not you have a one-time patient or a long-term client," the Low Stress Handling website states. "A parent wouldn't be OK with a pediatrician who grabs their child roughly, yells at them and struggles with them to take a shot. Why would a pet parent be any different?"

Through their course material, you can gain Silver-Level, Gold-Level or Instructor-Level certification.

FOLLOW THE FEAR FREE PATH

Learn more about these products at dvm360.com/fearfreepaths.





BECAUSE OF VETMEDIN

For 10 years, VETMEDIN has given dogs with CHF the opportunity for better days and longer lives.¹

With ongoing research and innovative support tools, we're determined to keep making a difference.

See the stories and join the celebration at DecadeOfVetmedin.com.



LINDA AND BUFFY
12 YEARS CONNECTED

IMPORTANT SAFETY INFORMATION: Use only in dogs with clinical evidence of heart failure. The safety of VETMEDIN has not been established in dogs with asymptomatic heart disease or in heart failure caused by etiologies other than atrioventricular valvular insufficiency or dilated cardiomyopathy. Please refer to the package insert for complete product information or visit www.vetmedin.com.

Reference: 1. Lombard CW, Jöns O, Bussadori CM; for the VetSCOPE Study. Clinical efficacy of pimobendan versus benazepril for the treatment of acquired atrioventricular valvular disease in dogs. *J Am Anim Hosp Assoc*. 2006;42(4):249–261.

Please see Brief Summary on page 10.

VETMEDIN is a registered trademark of Boehringer Ingelheim Vetmedica GmbH, licensed to Boehringer Ingelheim Vetmedica, Inc.
© 2018 Boehringer Ingelheim Vetmedica, Inc. PET-0199-VETM0317 18257

vet**edin**[®]
(pimobendan) CHEWABLE
TABLETS

A heart's best friend



Vetmedin[®] (pimobendan) Chewable Tablets

Cardiac drug for oral use in dogs only

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

Description: Vetmedin (pimobendan) is supplied as oblong half-scored chewable tablets containing 1.25, 2.5, 5 or 10 mg pimobendan per tablet. Pimobendan, a benzimidazole-pyridazinone derivative, is a non-sympathomimetic, non-glycoside inotropic drug with vasodilative properties. Pimobendan exerts a stimulatory myocardial effect by a dual mechanism of action consisting of an increase in calcium sensitivity of cardiac myofilaments and inhibition of phosphodiesterase (Type III). Pimobendan exhibits vasodilating activity by inhibiting phosphodiesterase III activity. The chemical name of pimobendan is 4,5-dihydro-6-[2-(4-methoxyphenyl)-1H-benzimidazole-5-yl]-5-methyl-3(2H)-pyridazinone.

Indications: Vetmedin (pimobendan) is indicated for the management of the signs of mild, moderate, or severe (modified NYHA Class II, III, or IV) congestive heart failure in dogs due to atrioventricular valvular insufficiency (AVVI) or dilated cardiomyopathy (DCM). Vetmedin is indicated for use with concurrent therapy for congestive heart failure (e.g., furosemide, etc.) as appropriate on a case-by-case basis.

^a A dog with modified New York Heart Association (NYHA) Class II heart failure has fatigue, shortness of breath, coughing, etc. apparent when ordinary exercise is exceeded.

^b A dog with modified NYHA Class III heart failure is comfortable at rest, but exercise capacity is minimal.

^c A dog with modified NYHA Class IV heart failure has no capacity for exercise and disabling clinical signs are present even at rest.

Contraindications: Vetmedin should not be given in cases of hypertrophic cardiomyopathy, aortic stenosis, or any other clinical condition where an augmentation of cardiac output is inappropriate for functional or anatomical reasons.

Warnings: Only for use in dogs with clinical evidence of heart failure. At 3 and 5 times the recommended dosage, administered over a 6-month period of time, pimobendan caused an exaggerated hemodynamic response in the normal dog heart, which was associated with cardiac pathology.

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

Precautions: The safety of Vetmedin has not been established in dogs with asymptomatic heart disease or in heart failure caused by etiologies other than AVVI or DCM. The safe use of Vetmedin has not been evaluated in dogs younger than 6 months of age, dogs with congenital heart defects, dogs with diabetes mellitus or other serious metabolic diseases, dogs used for breeding, or pregnant or lactating bitches.

Adverse Reactions: Clinical findings/adverse reactions were recorded in a 56-day field study of dogs with congestive heart failure (CHF) due to AVVI (256 dogs) or DCM (99 dogs). Dogs were treated with either Vetmedin (175 dogs) or the active control enalapril maleate (180 dogs). Dogs in both treatment groups received additional background cardiac therapy.

The Vetmedin group had the following prevalence (percent of dogs with at least one occurrence) of common adverse reactions/new clinical findings (not present in a dog prior to beginning study treatments): poor appetite (38%), lethargy (33%), diarrhea (30%), dyspnea (29%), azotemia (14%), weakness and ataxia (13%), pleural effusion (10%), syncope (9%), cough (7%), sudden death (6%), ascites (6%), and heart murmur (3%). Prevalence was similar in the active control group. The prevalence of renal failure was higher in the active control group (4%) compared to the Vetmedin group (1%).

Adverse reactions/new clinical findings were seen in both treatment groups and were potentially related to CHF, the therapy of CHF, or both. The following adverse reactions/new clinical findings are listed according to body system and are not in order of prevalence: CHF death, sudden death, chordae tendineae rupture, left atrial tear, arrhythmias overall, tachycardia, syncope, weak pulses, irregular pulses, increased pulmonary edema, dyspnea, increased respiratory rate, coughing, gagging, pleural effusion, ascites, hepatic congestion, decreased appetite, vomiting, diarrhea, melena, weight loss, lethargy, depression, weakness, collapse, shaking, trembling, ataxia, seizures, restlessness, agitation, pruritus, increased water consumption, increased urination, urinary accidents, azotemia, dehydration, abnormal serum electrolyte, protein, and glucose values, mild increases in serum hepatic enzyme levels, and mildly decreased platelet counts.

Following the 56-day masked field study, 137 dogs in the Vetmedin group were allowed to continue on Vetmedin in an open-label extended-use study without restrictions on concurrent therapy. The adverse reactions/new clinical findings in the extended-use study were consistent with those reported in the 56-day study, with the following exception: One dog in the extended-use study developed acute cholestatic liver failure after 140 days on Vetmedin and furosemide.

In foreign post-approval drug experience reporting, the following additional suspected adverse reactions were reported in dogs treated with a capsule formulation of pimobendan: hemorrhage, petechia, anemia, hyperactivity, excited behavior, erythema, rash, drooling, constipation, and diabetes mellitus.

Effectiveness: In a double-masked, multi-site, 56-day field study, 355 dogs with modified NYHA Class II, III, or IV CHF due to AVVI or DCM were randomly assigned to either the active control (enalapril maleate) or the Vetmedin (pimobendan) treatment group. Of the 355 dogs, 52% were male and 48% were female; 72% were diagnosed with AVVI and 28% were diagnosed with DCM; 34% had Class II, 47% had Class III, and 19% had Class IV CHF. Dogs ranged in age and weight from 1 to 17 years and 3.3 to 191 lb, respectively. The most common breeds were mixed breed, Doberman Pinscher, Cocker Spaniel, Miniature Toy Poodle, Maltese, Chihuahua, Miniature Schnauzer, Dachshund, and Cavalier King Charles Spaniel. The 180 dogs (130 AVVI, 50 DCM) in the active control group received enalapril maleate (0.5 mg/kg once or twice daily), and all but 2 received furosemide. Per protocol, all dogs with DCM in the active control group received digoxin. The 175 dogs (126 AVVI, 49 DCM) in the Vetmedin group received pimobendan (0.5 mg/kg/day divided into 2 portions that were not necessarily equal, and the portions were administered approximately 12 hours apart), and all but 4 received furosemide. Digoxin was optional for treating supraventricular tachyarrhythmia in either treatment group, as was the addition of a β -adrenergic blocker if digoxin was ineffective in controlling heart rate. After initial treatment at the clinic on Day 1, dog owners were to administer the assigned product and concurrent medications for up to 56±4 days.

The determination of effectiveness (treatment success) for each case was based on improvement in at least 2 of the 3 following primary variables: modified NYHA classification, pulmonary edema score by a masked veterinary radiologist, and the investigator's overall clinical effectiveness score (based on physical examination, radiography, electrocardiography, and clinical pathology). Attitude, pleural effusion, coughing, activity level, furosemide dosage change, cardiac size, body weight, survival, and owner observations were secondary evaluations contributing information supportive to product effectiveness and safety. Based on protocol compliance and individual case integrity, 265 cases (134 Vetmedin, 131 active control) were evaluated for treatment success on Day 29. At the end of the 56-day study, dogs in the Vetmedin group were enrolled in an unmasked field study to monitor safety under extended use, without restrictions on concurrent medications.

Vetmedin was used safely in dogs concurrently receiving furosemide, digoxin, enalapril, atenolol, spironolactone, nitroglycerin, hydralazine, diltiazem, antiparasitic products (including heartworm prevention), antibiotics (metronidazole, cephalaxin, amoxicillin-clavulanate, fluoroquinolones), topical ophthalmic and otic products, famotidine, theophylline, levothyroxine sodium, diphenhydramine, hydrocodone, metoclopramide, and butorphanol, and in dogs on sodium-restricted diets.

Manufactured for:

Boehringer Ingelheim Vetmedica, Inc.

St. Joseph, MO 64506 U.S.A.

Vetmedin[®] is a registered trademark of Boehringer Ingelheim Vetmedica GmbH licensed to

Boehringer Ingelheim Vetmedica, Inc.

Copyright © 2017 Boehringer Ingelheim Vetmedica, Inc. or an affiliated company. All Rights Reserved.

448005-00

Revised 01/2017



By Portia Stewart

The death of a veterinary patient can lead to guilt, grief and even secondary trauma. Fetch dvm360 conference speakers Tasha McNerney and Dr. Hilal Dogan offer support to reduce the clinical risks and manage the repercussions when a patient dies under anesthesia.

"If you've never had an anesthetic loss, you're not doing enough

anesthesia." It's a chilling statement, one Tasha McNerney, CVT, CVPP, VTS (anesthesia and analgesia), heard from a mentor early in her career. At the time she said she was taken aback by the idea, but after 15 years in the profession—and hearing countless technicians share stories of how they lost a patient and now fear anesthesia—she's on a mission to help team members accept loss and embrace anesthesia again.

In a special joint session with Hilal Dogan, BVSc, CCTP, "Coping with anesthetic loss," at Fetch dvm360 conference, McNerney shared some startling statistics about anesthetic deaths in pets. According to research published in the journal *Anesthesia and Analgesia*, "cumulative incidences of anaesthetic and sedation-related death were reported to be 0.17% in dogs and 0.24% in cats" versus 0.01% to 0.02% in people.¹

To reduce the risks of anesthetic loss, McNerney says it's critical to ask these questions before anesthesia:

- What monitors do you have available?
- Who is monitoring the pet under anesthesia?
- Do you feel comfortable communicating with your doctors when you see a problem?

McNerney says it's also important to know the patient's ASA status—American Society of Anesthesiologists (ASA) Physical Status Scale—before drugs are on board.

McNerney says kitties have more complications than dogs—about twice as frequently—and most occur during the post-operative period.

Before you anesthetize any pet, McNerney says you need to explain the type of anesthesia being used—whether it's sedation or general anesthesia—and the risks associated with anesthesia. It's also important to require pet owners to sign a release form.

The two riskiest times for anesthetic loss occur during induction and recovery, McNerney says, when the patient is less likely to be connected to monitoring.

Any chance your practice still uses mask or tanking induction? McNerney's suggestion: Unplug your unit, take it to the roof of your practice and chuck it off. This equipment, she says, increases the potential for problems.

One of your best tools during anesthesia? Your team. "Never be left alone to induce or recover a patient," McNerney says.

With this grounding in prevention, it's time to talk about what happens when the

worst happens: a patient dies. Dr. Dogan, a Certified Clinical Trauma Professional (CCTP), says it's important to understand secondary trauma. Simply put, it's the trauma that you observe and take on yourself. It was first identified in nurses, emergency responders, therapists and other healing professions, and Dr. Dogan says we're now beginning to recognize that veterinary professionals are at risk for secondary trauma as well.

Mirror neurons in our brain fire to reflect the actions or feelings of others, Dr. Dogan explains. "When we observe others, neurons fire in patterns that would fire if we were doing the action or having the feelings ourselves."

What it means for veterinary professionals: Witnessing death—and the pet owner's grief response—have the potential to create trauma that carries lasting effects.

Trauma can change your brain, specifically in the cerebral cortex, hippocampus and corpus callosum, Dr. Dogan explains, which can result in poor judgment, compromised memory and a shift in how the person pays attention and behaves.

Signs of unresolved trauma include:

- hypervigilance
- fear
- avoidant behavior
- chronic exhaustion
- guilt
- sleeplessness
- anger and cynicism
- physical ailments

The first steps to addressing this

type of vicarious trauma are to be self-aware of your risk and to be brave to confront it, Dr. Dogan says. "Different strategies work for different people, so be open to trying different things."

"Different strategies work for different people, so be open to trying different things."

Hilal Dogan, BVSc, CCTP

The good news, Dr. Dogan says, is that you can heal with an action-oriented approach to build resilience. The brain's neuroplasticity means you can form new patterns and weaken old habits—essentially rewiring the brain. She recommends these tools:

- Set personal goals.
- Work on boosting your internal locus of control.
- Seek activities to boost your self-esteem and self-efficiency.
- Develop your ability to adapt to pain.

Losing a patient under anesthesia can be a devastating experience for veterinary professionals. But recovery is possible, Dr. Dogan says, when you build your self-awareness, focus on a balance of self-care and work, and connect with peers to avoid a sense of isolation.

Reference

1. Bille C, Auvigne V et al. Risk of anaesthetic mortality in dogs and cats: an observational cohort study of 3546 cases. *Vet Anaesth Analg* 2012 Jan;39(1):59-68.

How to: Up your anesthesia game as a veterinary technician

'That's just the way we've always done it' is a bad basis for anesthetic protocols.

Fetch dvm360 conference speaker Tasha McNerney, BS, CVT, CVPP, VTS (anesthesia and analgesia), spends a lot of time training and consulting at clinics, so she's had the chance to see many veterinary teams in action. Based on her real-world observations, here are three things she wishes vet techs would stop doing right now.

1. Stop stressing out your patients (and yourself)

There's more than one way to get results in the clinic. And if your way is a dreadful pain, it's time to switch things up. McNerney gives the example of placing an IV catheter in a large dog.

"With the Fear Free movement and all kinds of low-stress handling techniques and resources, we owe it to our patients, as well as ourselves, to make this experience the least stressful as possible," she says.

McNerney urges you to seek out guidance for these techniques, and remember that in certain cases it's perfectly acceptable to sedate patients before stressful procedures.

2. Take it easy with the atropine

The use of atropine is an appropriate measure for anesthetic and other emergencies, McNerney says, but adding the drug to a patient's pre-med protocol by rote motion isn't necessary.

"If you're still including atropine in your pre-med just because 'that's the way we've done it for 20 years,' get with the times," she says.

McNerney implores you to do your research. It will reveal the dangers of atropine overuse, she says.

3. Don't be afraid of dexmedetomidine

"Look on the label," McNerney says.

Dexmedetomidine provides for more than just sedation, and the drug works well in concert with other medications.

"When you combine dexmedetomidine and opioids into your pre-med, you get great sedation and great analgesia," she says.

Watch the video at dvm360.com/upyourgame to learn more. Then join us at Fetch dvm360 conference in San Diego to learn from McNerney in person. Visit fetchdvm360.com/sd for more information.



300 MILLION REASONS

...to use Rescue™ Disinfectants.

An animal's sensitivity to harsh chemicals is 10,000x greater than ours. That's why Rescue™ has been formulated to be odor-free as well as gentle on users, equipment and the planet – but powerful enough to **kill Parvovirus in as little as 1 minute.**

It's the best alternative to the legacy disinfectants that can cause nose blindness which can add to the fear, anxiety, and stress of a veterinary visit.



Available in Multiple Formats & Sizes

RescueDisinfectants.com

Fearless rehab *for recuperating pets*

Fear, anxiety and stress walk into any veterinary setting alongside pets. Here's how to reduce pets' stress during rehabilitation.

By Kim Raible, LVT, CCRP

Whether the patient is Pete, the dauntless doxie with intervertebral disk disease, or Dolly, the sweet tripod lab who's learning to walk on three legs, pets are referred for rehabilitation therapy for many reasons. While your primary goal is often minimizing the pet's physical discomfort, it's equally important to recognize the patient's behavioral needs and to provide care in a pain-free, fear-free manner.

Most dogs and cats demonstrate significant levels of fear, anxiety and stress (FAS) when they enter a veterinary practice, and that includes a physical rehabilitation setting. Some pets experience elevated FAS in response to environmental elements. Patients who have historically had a negative experience at a veterinary practice may experience elevated FAS in anticipation of another bad experience.

Elevated FAS can provoke pain

and induce instantaneous and chronic physiologic effects that span multiple body systems. Because of the patient's perception and the known pathological effects that fear and stress have on the body, you need to identify these triggers and make modifications to offer a lower-stress experience.

Be prepared

Most animals associate a veterinary facility with fear, discomfort and pain. Because of this, it's important to anticipate the special needs of each patient before they enter the treatment facility. Send your clients a behavior questionnaire to complete and submit at least 24 hours before their appointment.

This information, coupled with a thorough clinical history, helps the team and therapist to better prepare for patient arrival. Preparations may include light and sound modification, reduced human and animal traffic, non-

slip flooring, supportive bedding and ambulation assistance. These are just some of the measures you need to take for every patient to ensure a successful first start.

Behavior awareness

The patient's emotional state is essential to properly evaluate, treat and foster the patient-therapist relationship. Because animals can't verbally express what's wrong or how they feel, it's that much more important to understand and recognize their body language. This language indicates their level of pain, stress, discomfort and general acceptance.

Be aware of the pet's body language to avoid inadvertently delivering threat signals or stress triggers. Triggers may include loud talking, quick movement, direct staring or frontal leaning. Also be mindful of your patient's critical space and watch for potential warning signs at all times for your own safety.

CARDIOLOGY

September 2018
dvm360.com/cardiologytoolkit

Social media

Ready-to-post info
for clients 7

When having a big heart is a bad thing

Dobermans and dilated
cardiomyopathy.....9

The heart of it

Client communication tips
and tools for CHF 12

One fright, one less heartbeat

Fear, anxiety and cardiology
concerns in pets.....13

Top 10 common arrhythmias

A cheat sheet for your ECG
machine16

For the team

The 'thrill' of arrhythmias
.....18

Murmurs: Loud and clear

Tips on finding locations
..... 21

Hacks!

dvm360 readers offer their
best tips from the heart
.....24



Cough! Gasp!

**'Is it my heart or
my lungs, doc?' p2**

BECAUSE OF VETMEDIN

“ I have clients who notice a great response with VETMEDIN. Their animal feels perkier at home, they're brighter, their heart failure is well-controlled, they really feel like themselves. Or they feel like a puppy again, a lot of people say. Which I think is what we all want for our pet.”

—Dr Danielle Laughlin
Cardiologist

Blue Pearl Specialty + Emergency Pet Hospital
Sandy Springs, GA

See more stories at
DecadeOfVetmedin.com.

DR LAUGHLIN
VETMEDIN PRESCRIBER
FOR 6 YEARS



This testimonial is provided by an actual veterinarian who prescribes VETMEDIN and has been compensated for providing this statement. Individual results may vary. VETMEDIN can only be prescribed by a licensed veterinarian. Please consult a veterinary professional before starting treatment with VETMEDIN.

IMPORTANT SAFETY INFORMATION: Use only in dogs with clinical evidence of heart failure. The most common side effects reported in field studies were poor appetite, lethargy, diarrhea, dyspnea, azotemia, weakness, and ataxia. If side effects should occur, pet owners should contact their veterinarian. The safety of VETMEDIN has not been established in dogs with asymptomatic heart disease or in heart failure caused by etiologies other than atrioventricular valvular insufficiency or dilated cardiomyopathy. VETMEDIN should not be given in case of hypertrophic cardiomyopathy, aortic stenosis, or any other clinical condition where an augmentation of cardiac output is inappropriate for functional or anatomical reasons. The safe use of VETMEDIN has not been evaluated in dogs younger than 6 months of age, dogs with congenital heart defects, dogs with diabetes mellitus or other serious metabolic diseases, dogs used for breeding, or pregnant or lactating bitches. Please refer to the package insert for complete product information or visit www.vetmedin.com.

Please see Brief Summary on page 23.



Cough! Gasp!

'Is it my heart or my lungs, doc?'

When a veterinary patient presents with coughing, you know you must distinguish between a cardiac or respiratory cause. Which is it? This veterinary cardiologist helps you sort through your differentials.

By Sarah J. Wooten, DVM

If you've spent any time in small animal private practice, then you've dealt with coughing, geriatric small-breed dogs and understand that these cases can be diagnostic conundrums. There's a murmur. There are crackles, but the dog is also wheezing. Is it cardiac? Is it respiratory? Is it both? If both, which do you treat? Fetch dvm360 speaker Nicole Culwell, DVM, MS, DACVIM, a veterinary cardiologist at MedVet Dallas, is on hand with practical tips to help you sort out heart versus lung problems in both cats and dogs.

Be a breelist and an ageist

Even before you enter the exam room, the patient's chart will give you clues, Dr. Culwell says. Don't pigeonhole yourself, but know which heart and lung diseases are common in the breed or species you are treating. The patient's age can also give you a hint as to whether the condition is congenital or acquired.

Has history repeated itself?

That all-important patient history. You need to know if the problem is acute or chronic, what therapies have been tried, and the patient's response to that therapy. In dogs, Dr. Culwell says, respiratory disease is usually chronic and episodic, and cardiac disease is usually associated with an acute onset of coughing unless there's chronic

compression of the left mainstem bronchus. Intermittent and transient cyanosis is associated with respiratory disease, while cyanosis in congestive heart failure is present only with severe pulmonary edema.

In cats, cardiac and respiratory disease are almost always of acute onset because our feline friends don't follow any textbook rules. Cats confound pet owners

because they hide disease, and coughing can look like retching or be followed by vomiting. The most common causes of coughing in cats are asthma, bronchitis and parasitic disease, says Dr. Culwell. Cats almost never cough with cardiac disease unless they have a chylous pleural effusion.

Examine all the things

A complete physical examination will give you clues or it may give you the answer. Even if you can't touch the pet (e.g. the cat that's close to death anytime you take it out of the oxygen cage) and can only get a visual examination, that can still help you. Here's what to look for:

Sort out stertor versus stridor. Remember, stertor indicates the nasal cavity—anything above the larynx—while stridor indicates a problem in the laryngeal area, neck or cervical trachea. Dr. Culwell says inspiratory issues without stridor are usually due to intrathoracic causes such as pneumonia or congestive heart failure, while an expiratory push means lower airway such as



asthma (cats) or collapsing airway disease (dogs).

Weigh in on weight. The body condition score can also help point you in the right direction, says Dr. Culwell. Most normal to obese patients present with respiratory disease. Thin or emaciated canine patients should cause you to consider late-stage cardiac disease because of cardiac cachexia.

Meditate on the membranes. With cardiac disease, mucous membranes can be normal or demonstrate prolonged capillary refill time or pallor. With respiratory disease, mucous membranes can be normal or intermittently cyanotic.

Catch the patient's breath. Thoracic auscultation can give you all sorts of clues. Remember that wheezes indicate lower airway disease, while focal crackles can be secondary to pneumonia, pneumonitis from heartworm disease or congestive heart failure. If your patient has a murmur and crackles, don't immediately assume cardiac disease is the

culprit. If a small-breed geriatric dog presents with dyspnea and you're going to blame it on cardiac disease, then Dr. Culwell says that dog must have a loud murmur. If it ain't loud, look for another cause. She says that if a patient presents with crackles in the lungs and a sinus arrhythmia, then think respiratory disease with high vagal tone.

To make things more difficult, large breeds, such as Dobermans, often don't have crackles despite severe dyspnea secondary to pulmonary edema. And, once again, cats don't follow any rules. A third of cats with hypertrophic cardiomyopathy will not have a murmur, and it's not uncommon for older cats to present with nonpathologic gallop cardiac rhythms, Dr. Culwell says.

Other physical exam hints.

Looking for more clues? Dr. Culwell says pulse derangements, abdominal ascites or jugular distention all point to the heart.

'Your pet needs radiographs'

Thoracic radiographs are essential for the diagnosis

When to try a therapeutic trial with furosemide

Per Dr. Culwell, a furosemide trial might be just what you, the doctor, ordered in these cases:

- > Fragile patients—if you suspect cardiac disease but can't get a cat to the radiograph table without it decompensating, then it's time to try furosemide and an oxygen cage.
- > Inconclusive radiographs
- > While waiting on a radiography consultation
- > Client financial constraints—however, if you go this route, your client needs to know that furosemide dries out respiratory secretions, and it may improve a cough that needs different treatment, so they may be back in a couple of days to get radiographs anyway.

or exclusion of congestive heart failure. Left atrial enlargement, pulmonary venous congestion and pulmonary perihilar infiltrates (caudal dorsal in dogs, patchy or ventral in cats) are the hallmark signs of cardiac disease. Dr. Culwell's tips:

- > You can't call it off of a lateral view, so don't even think about saving money by scrimping on radiographs. Two views are the standard of care.
- > Be a stickler for inspiratory films, which are necessary for accurate diagnosis. If you have a panting dog that's

not dyspneic, try putting a muzzle on it to get it to slow down its breathing so you can take a picture.

- > Butorphanol is good for facilitating radiographs in fractious or fearful animals. Alfaxalone is a good choice for those fractious cats.
- > Are your radiographs inconclusive? Try again after furosemide therapy (see the sidebar, previous page).
- > Lateral views are not helpful to see left atrial enlargement in cats.
- > A valentine-shaped heart is seen with left-side enlargement in cats.

> A ruptured cordae tendinae will fake you out! It presents acutely. On radiographs, the heart size can be normal without left atrial enlargement. These patients may need an echocardiogram for definitive diagnosis.

The ultimate goal—achieving that sigh of relief

Hopefully, these insights into coughing patients from Dr. Culwell will help you face these cases with a little more *heartfelt* hope while breathing a little easier.

Thoracic imaging tips!

Rachel Pollard, DVM, PhD, DACVR, an associate professor and researcher at the University of California, Davis School of Veterinary Medicine, has great tips for obtaining and interpreting thoracic series in coughing dogs. For her, three views—right and left lateral and dorsoventral (DV) projections—are standard for all patients undergoing thoracic studies. Why is three the magic number? Including both lateral projections is the most comprehensive way to check for lesions, and the left lateral projection, in particular, aids in the detection of pulmonary nodules and dependent pneumonia in the patient's right side. The DV projection, according to Dr. Pollard, allows the heart to be in its normal anatomic position and is easier for the animal, minimizing restraint needs and personnel

exposure. If you want to confirm whether or not you've seen a pulmonary lesion on the DV view or if pleural effusion is making it difficult to see the heart, you can add a fourth view: ventrodorsal (VD).

Here are a few more quick tips!

1. Aspiration pneumonia is not usually associated with pleural effusion in dogs.
2. Dogs with pleural effusion do not tend to pocket the fluid in one location (unlike cats).
3. Pulmonary abscesses cannot be adequately controlled by antibiotic treatment alone, especially in the presence of a foreign body.
4. It can be normal for air to be present in the esophagus of a sedated animal.

Posts and tweets on: Heart disease

Topics like congestive heart failure are difficult to explain to veterinary clients. We wrote out some social media posts to give you a hand.

If you find yourself overthinking your explanations for heart disease or breaking out a thesaurus to translate those hard-to-understand clinical terms into ones laypeople will understand, stop right there. These posts were made for you. Use them to tweet and write posts to keep your clients informed and, most importantly, keep them in touch with you and your veterinary clinic regarding their pet's health.

READY-TO-USE SOCIAL MEDIA POSTS



A look on the inside: Fluid leaks into the lungs with left heart failure and into the abdomen with right heart failure. In the lungs, fluid fills the tiny sacs where only air should normally be—this makes exchanging oxygen more difficult, which means your pet has to take more breaths. This increases the breathing rate and effort, and sometimes causes a cough. If you notice your pet having trouble breathing or coughing, make an appointment with us to get her checked out!



Do you know the signs of congestive heart failure? Here's what you need to look for:

- > Increase in breathing
- > New cough or increase in frequency of cough (dogs only)
- > Excessive panting or wheezing
- > Restlessness
- > Decreased appetite
- > Lethargy
- > Weakness
- > Collapse or fainting

If you see any of these problems, make time with us to get your fur baby looked at!



DYK? When the heart experiences congestion, it's much like a traffic jam. The blood—traffic—can't move forward like it usually does, so it builds up behind the problem area. This congestion builds up in the lungs if the left heart is failing and in the body if the right heart is failing.



READY-TO-USE TOOLS TO POST

Talking to your client about heart disease is great, especially if they retain all of the information you give them. But sometimes stuff slips through the cracks. Shout it out on social media to keep it top of mind for pet owners. Here are a couple of posts for go-to tools veterinary clients can use.



Stay on top of the possibility of heart disease by knowing the kinds of disease and the signs your pet may have with them by checking out this handy chart from CVCA – Cardiac Care for Pets (Psst! Vets! You can find the chart at dvm360.com/cardiologytoolkit.)



We know you didn't go to veterinary school, so when it comes to topics like congestive heart failure, fancy clinical terms might not make sense. Still, it's important to know what's happening—and what to look for—in your pet's body when he or she runs the risk of heart failure. Check out this handout, where we lay it all out for you. (Hey vets! Download it for use at dvm360.com/cardiologytoolkit.)





Dilated cardiomyopathy:

When having a big heart is a bad thing

Study suggests that heart enlargement may be a predictor of sudden cardiac death in Doberman pinschers with dilated cardiomyopathy.

By Kathryn Primm, DVM

While cardiac disease can affect many breeds of dogs, dilated cardiomyopathy (DCM) is a breed-associated risk for Doberman pinschers and is the most common cardiac disorder from which the breed suffers.¹⁻³ Because the prognosis for affected dogs is typically poor,^{4,5}

veterinarians like to know as much as they can about how to treat, manage and prepare owners for what's to come. Keep in mind that Dobermans are overrepresented for the disorder and make an excellent study group, but they are not the only type of dog breed that suffers from DCM.

Quick overview of DCM

Dogs in early stage one of this disease show no clinical signs, and there are no reliable tests to diagnose it at this point in progression. Stage two is one in which the owner doesn't perceive clinical signs, but a veterinarian can diagnose it using electrocardiography, Holter monitoring and

other biomarkers.^{4,6-9} At this stage, ventricular arrhythmias and/or systolic dysfunction are usually evident, and one third of the patients at this stage die of sudden cardiac death (SCD). If a dog survives long enough, the disease will eventually progress to stage three, which is characterized by congestive heart failure.⁴ Approximately one-third of dogs with stage-three disease also die of SCD.^{4,10}

Not much research has been done to evaluate factors that might influence prognosis or provide avenues to help avoid SCD. Ventricular tachycardia is thought to be a risk factor for acute death in Dobermans.^{5,6} Ventricular late potentials detected by signal-averaged electrocardiography may have prognostic value.¹¹ Cardiac enlargement could also play a role in SCD.¹²

Finding the beat

This study sought to create a framework for prediction of probable cardiac death and thereby determine which patients might benefit most from treatment options and help avoid unnecessary medications, since many cardiac drugs have negative side effects. The study looked at electrocardiogram (ECG) variables and Holter-ECG monitor variables, as well



as blood tests such as cardiac troponin (cTnI) and N-terminal prohormone of brain-natriuretic peptide (NT-proBNP) to try to find predictors of cardiac death.

The study group consisted of 95 affected Dobermans. Forty-one died within three months of their last cardiac examination (SCD group) and were compared with the 54 affected dogs that were still alive one year after study completion. ECG variables and cTnI and NT-proBNP were compared for both groups.

The study found that dogs suffering from an enlarged heart (as calculated by left ventricular end-diastolic volume (LVEDV)/body surface area) was the variable with the most significant prognostic potential in predicting SCD. Other variables (tachycardia, increased cTnI) were not significant themselves, but when combined in a diagnostic tree, could be additional prognostic indicators for risk assessment.

Exam-room application

If you're managing a caninpatient with DCM in

your hospital, this study's results indicate that the "easiest" tests, such as NT-proBNP and cTnI, are less able to predict SCD than heart enlargement (as assessed by LVEDV/body surface area).

If you are unable to obtain and calculate this value, it may be worth your while to refer to someone who can, as the findings are statistically significant. However, measurement of NT-proBNP and cTnI concentrations could be additional important variables to help predict cardiac enlargement.

Kaiser L, Holler PJ, Simak J, et al. Predictors of sudden cardiac death in Doberman pinschers with dilated cardiomyopathy. *J Vet Intern Med* 2016;30:722-732. Go to dvm360.com/cardiologystoolkit for a link to the full study.

References

1. Wess G, Schulze A, Butz V, et al. Prevalence of dilated cardiomyopathy in Doberman Pinschers in various age groups. *J Vet Intern Med* 2010;24:533-538.
2. O'Grady MR, Horne R. The prevalence of dilated cardiomyopathy in doberman pinschers: a 4.5 year follow-up (abstract). *J Vet Intern Med* 1998;12:199.
3. Calvert CA. Dilated congestive cardiomyopathy in Doberman pinschers. *Compend Contin Educ Vet Pract* 1986;8:417-430.

4. O'Grady MR, O'Sullivan ML. Dilated cardiomyopathy: an update. *Vet Clin North Am Small Anim Pract* 2004;34:1187-1207.
5. Calvert CA, Hall G, Jacobs G, et al. Clinical and pathologic findings in Doberman pinschers with occult cardiomyopathy that died suddenly or developed congestive heart failure: 54 cases (1984-1991). *J Am Vet Med Assoc* 1997;210:505-511.
6. Calvert CA, Jacobs G, Pickus CW, et al. Results of ambulatory electrocardiography in overtly healthy Doberman Pinschers with echocardiographic abnormalities. *J Am Vet Med Assoc* 2000;217:1328-1332.
7. Singletary GE, Morris NA, Lynne O'Sullivan M, et al. Prospective evaluation of NT-proBNP assay to detect occult dilated cardiomyopathy and predict survival in Doberman Pinschers. *J Vet Intern Med* 2012;26:1330-1336.
8. Wess G, Simak J, Mahling M, et al. Cardiac troponin I in Doberman Pinschers with cardiomyopathy. *J Vet Intern Med* 2010;24:843-849.
9. Wess G, Butz V, Mahling M, et al. Evaluation of N-terminal pro-B-type natriuretic peptide as a diagnostic marker of various stages of cardiomyopathy in Doberman Pinschers. *Am J Vet Res* 2011;72:642-649.
10. Calvert CA, Pickus CW, Jacobs GJ, et al. Signalment, survival, and prognostic factors in Doberman pinschers with end-stage cardiomyopathy. *J Vet Intern Med* 1997;11:323-326.
11. Calvert CA, Jacobs GJ, Kraus M. Possible ventricular late potentials in Doberman pinschers with occult cardiomyopathy. *J Am Vet Med Assoc* 1998;213:235-239.
12. Calvert CA, Meurs KM. Cardiomyopathy in Doberman Pinschers. In: Bonagura JD, Twedt DC, eds. *Current veterinary therapy*. St. Louis: Saunders Elsevier; 2009;800-803.

Getting to the heart of it

Client communication tips from Megan King, VMD, DACVIM (cardiology)

As veterinary professionals, teaching our pet parents about heart disease and congestive heart failure in at-risk patients is an important part of our job. Why? Understanding what's happening with advancing heart disease and heart failure makes understanding the clinical signs of congestive heart failure easier. The time you spend educating clients will not only help improve the pet's life but will build a stronger veterinarian-client-patient relationship.

What to say

Heart disease and the mention of heart failure are frightening to our pet parents. Our goal is to educate them. I often start with saying just that. As the pet parents, we want them to understand what's happening, know what to look for and know when they need to act.

I typically start by explaining that the heart is a pump, and this pump circulates blood to the lungs and throughout the body. As heart disease progresses slowly over time, the pump is no longer able to do its job properly. The heart is still doing its best, but its performance is less than ideal.

This decreased performance causes congestion, or a pressure build up. I often use

the analogy of a traffic jam. If the blood—or traffic—cannot move forward as it usually does, it build ups behind the problem area. This congestion builds up in the lungs if the left heart is failing and in the body if the right heart is failing.

When the pressure builds up enough, fluid will leak out. Fluid leaks out into the lungs with left heart failure and into the abdomen with right heart failure.

In the lungs, this fluid fills the tiny sacs where normally only air should be. This fluid makes exchanging oxygen more difficult. The pet has to take more breaths to absorb the same amount of oxygen. This increases the breathing rate and effort, sometimes causing a cough.

Although simplified, this explanation works very well with pet parents. Often the proverbial “light bulb” will go off in their heads, as they now understand why we're looking for changes in breathing when their pet has heart disease.

I don't have time for this!

Sure, a veterinary practice is a busy place, but it's still possible to build more in-depth conversations into general practice. This is a perfect way to leverage veterinary nurses. They can spend that extra time

explaining more details with concerned pet parents.

In this age of advancing veterinary medicine, it's a good idea to refer to a board-certified cardiologist when you suspect heart disease or congestive heart failure is a concern, if possible.

Specialists have the luxury of more time available for each pet and can continue the education you've started. We're an information resource for our community of primary care veterinarians and can shoulder the burden of complicated case management.

Congestive heart failure for dummies

Discussing cardiac disease can be like speaking a different language for your clients. Put things into terms they can understand—this handout will get you started.



Scan this code to download the handout on this page! (Or go get all the resources in this toolkit at dvm360.com/cardiologytoolkit.)





One more fright, one less heartbeat

This cardiologist wants to prove that the intense effects of the fight-or-flight "sympathetic storm" in pets from scary veterinary visits can wear out their hearts before their time.

By John Lofflin

The feelings are familiar to anyone who has ever been caught in the crosshairs of danger: Palms bleed sweat. Muscles twitch. Heart rate soars. If the danger is real, this fight-or-flight reaction may save your life.

If this is just another stress-induced false alarm, however, the experience known as the "sympathetic storm" may actually be stealing valuable heartbeats from your life.

The human animal isn't the only animal hard-wired

for flight or fight. What happens when those storm clouds come rolling toward the Chihuahua on your exam table?

That's what Professor Emeritus Robert Hamlin, DVM, PhD, DACVIM, wants to know. As one of the world's premier cardiology researchers, Dr. Hamlin has spent his career studying the heartbeats of animals. He arrived at The Ohio State University in 1958, and he's still there today, teaching, practicing in the clinic and researching.

In what he calls his last research phase, fight-or-flight heartbeats have become his compelling interest.

A finite number of heartbeats

Start with this widely accepted idea, he says: Each of us, including our pets and clients, are endowed at birth with a certain finite number of heartbeats. Any time stress makes our hearts charge hard, it's stealing from that number. Anything

that unnecessarily triggers the sympathetic storm—a veterinarian approaching a dog with a rectal thermometer, for instance—contributes, he thinks, to both morbidity and mortality.

If the research supports this theorem, the implications for veterinary practice could be revolutionary. This is Dr. Hamlin's research mission.

"If we can show through these studies that stress leads to both morbidity and mortality, then from a scientific perspective, the profession will know the

importance of reducing stress in a pet's life, or, to whatever extent is possible, in the life of a service dog," Dr. Hamlin says. "Of course, we sense it now, and we have a good deal of evidence. But knowing scientifically will bolster the notion of removing as much stress as possible from situations where stress is unavoidable, like the clinic or hospital visit."

The damage of a sympathetic storm

Dr. Hamlin thinks the evidence that stress during a sympathetic storm is injurious to the cardiovascular system is clear:

"One of the most serious situations for the heart is when it suffers an

oxygen debt, when it consumes more oxygen than is delivered to it by the coronary circulation. This creates an energetic imbalance that may result in reduced force of contraction. So, the heart pumps less blood, stiffens and does not fill well, which creates a disturbance in rhythm that may result in sudden death.

"When the heart rate speeds, then it consumes more oxygen, it spends less time relaxed. And because most oxygen is delivered when the heart is relaxed, the increase in heart rate aggravates energetic imbalance by increasing oxygen demands and decreasing oxygen delivery—a double whammy! Heart rate is accelerated during a sympathetic storm, manifested by elevated circulating adrenalin and by increased stimulation of cardiac acceleratory nerves. Not only does this result in energetic imbalance, but the storm is also deleterious because it increases oxygen demand by increasing contractility and hindrance



to ejection—a quadruple whammy!"

If stress for both the human animal and the animals they love is an enemy of the healthy heart, it makes sense, Dr. Hamlin says, to eliminate as much unnecessary stress as possible.

"When it comes on in a sustained manner, I don't think it does anybody any good," he says. "If we love our animals, why would we put them in a situation that produces stress and increases morbidity and mortality? Can I quantify it yet? I cannot. This question can only be answered by a long-term epidemiological study, which has not yet been commissioned."

When the storm is in your practice

Stressful clinic visits create a second serious problem, he contends. Think of it as white-coat syndrome for animals. Just as physicians have learned to factor exam room stress into their human data, veterinarians who don't may be making unrealistic diagnoses from exam table data.

"You're going to get an elevated heart rate that's

going to affect the animal and give you a wrong impression about the state of the animal," he says.

Stress in the clinic does two things, he argues: "It injures the animal, and it gives you a false impression of what the physiological state is."

Dr. Hamlin's current study, which is being conducted by a former student of his in Brazil, seeks to measure the heart rates of animals at home when they aren't stressed, in the hospital cage and on the exam table.

"So far," he says, "we've seen that when they're on the exam table, their heart rates are significantly higher. So, if our mission is to improve the duration and quality of life of our patients, I think we've got to modify our veterinary hospitals and modify our approach to practice."

That means, he says, doing everything possible to calm the sympathetic storm before its dramatic physiological effects are unleashed.

"The only time a sympathetic storm is good for you," Dr. Hamlin says, "is to fight or flee."

How pet owners can help the vet team manage pets with heart disease

Veterinary cardiologist Dr. Sonya Gordon discusses an easy but important way owners of pets with heart disease can catch early signs that their pets might need more intervention.

Encourage pet owners to learn how to count their pet's breathing rate while the pet is quietly sleeping. Every time the pet breathes in and out, have clients keep count. A rate of less than 30 breaths per minute is normal. But pets with heart disease tend to breathe faster than that. For more tips, visit dvm360.com/cardiologytoolkit.

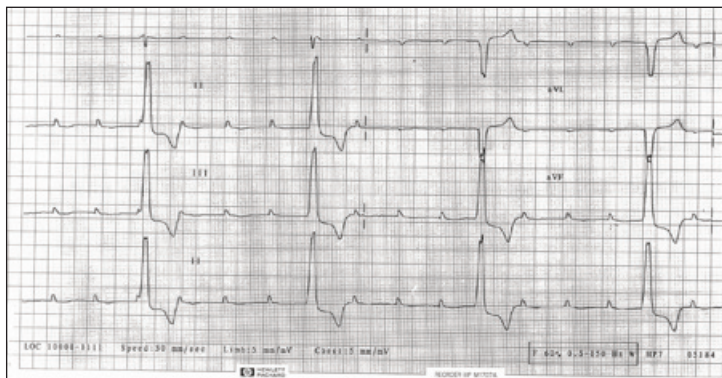
Meet the **top 10 most common arrhythmias** in veterinary patients

This cheat sheet next to your ECG machine can cut down on your differential deliberation.

By dvm360 staff

Whit Church, DVM, DACVIM (cardiology), a veterinary cardiologist at Desert Veterinary Medical Specialists in Gilbert, Arizona, is here with a quick list of the top 10 causes of arrhythmias you'll see during an electrocardiographic examination. Dr. Church's advice: Post this list by your ECG machine, and you'll be whittling away your rule-outs in no time flat—and avoiding the flatlining, of course.

First, Dr. Church says you can cut the top 10 in half based on the patient's heart rate. If the rate is < 70 beats/minute, you know you're dealing with a bradyarrhythmia. If the heart rate is above 160 to 180 beats/minute, look to the top 5 tachyarrhythmia rule-outs.



Third-degree atrioventricular block. (Figures courtesy of Dr. Whit Church)

With no further ado, here are the top 10:

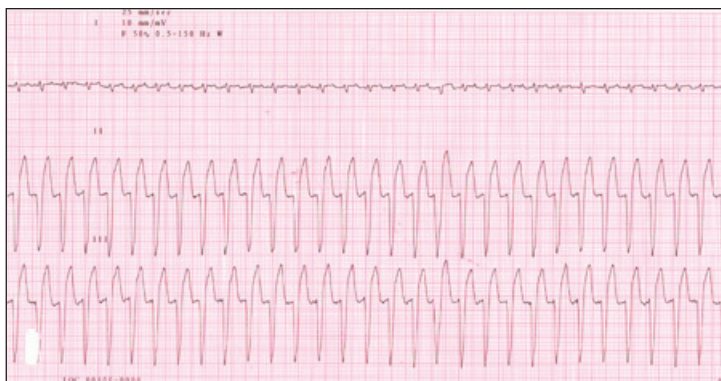
Bradyarrhythmias

1. Sinus bradycardia
2. Atrioventricular block
3. Sick sinus syndrome
4. Atrial standstill
5. Persistent atrial standstill

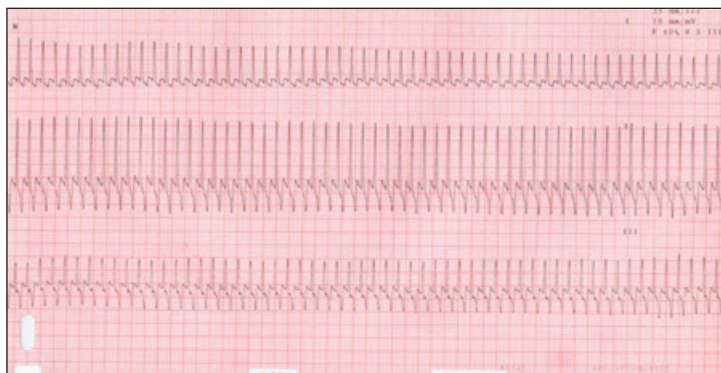
Tachyarrhythmias

1. Sinus tachycardia
2. Ventricular tachycardia
3. Supraventricular/atrial tachyarrhythmia
4. Atrial fibrillation
5. Atrial flutter*

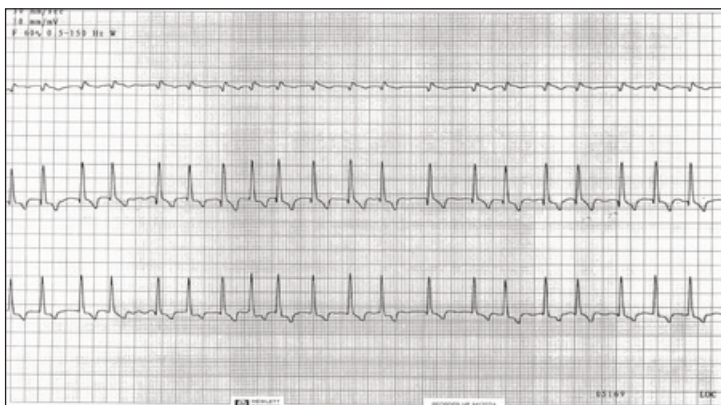
*(Another bonus on the tachyarrhythmia list is that atrial flutter is uncommon, says DrChurch, so you usually have only four conditions to consider.)



Ventricular tachycardia



Supraventricular tachycardia



Atrial fibrillation

ECG readings in 4 steps

1. Get a heart rate.
2. Find a normal beat (P-QRS-T) on the ECG strip—"It's easy because it's alphabetical," jokes Dr. Church.
3. Compare all the other beats to what you think is normal.
4. Determine whether the QRS interval is using the His-Purkinje system (fast) or conducting cell-to-cell (slow).

More on His-Purkinje from Dr. Church: The His-Purkinje are the nerves of the heart. Cell-to-cell conduction relies on gap junctions so one cell can talk to the cells next to it and pass the message onward. That obviously takes longer, so the QRS complex looks wider on the ECG. Typically, if the QRS involves the His-Purkinje, then it is narrow and comes from the atrium, and if the QRS is wide, it comes from the ventricle.

For the team: The 'thrill' of arrhythmias

By Oriana D. Scislowicz, BS, LVT

In the veterinary environment, most team members are familiar with finding a heart murmur in a patient. But what is a heart murmur, and how serious is this condition? What can you do to advocate for the best cardiac care for your patient?

Understanding murmurs

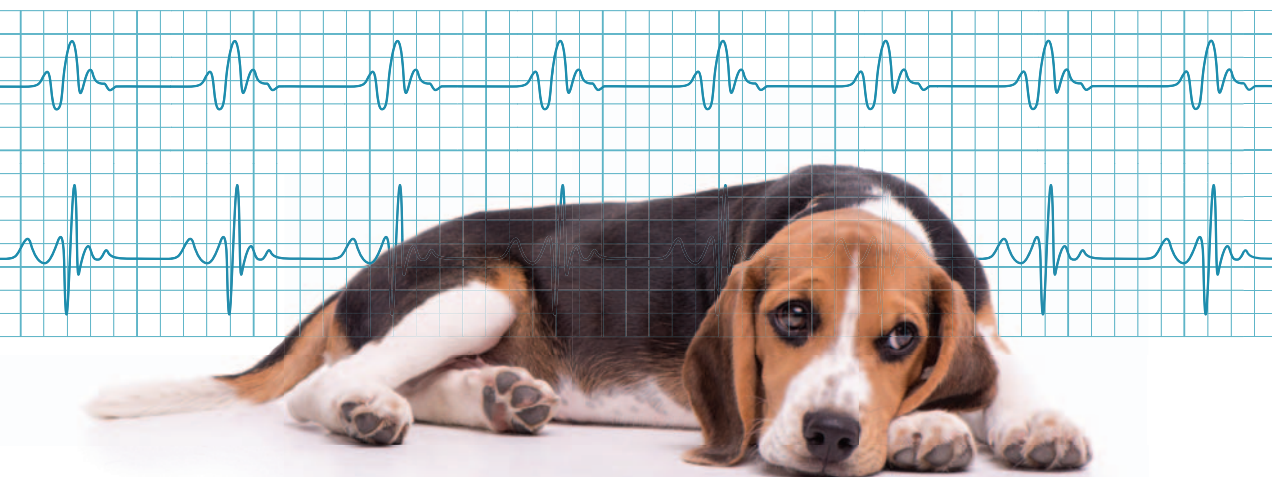
Murmurs are heard by the veterinarian or technician during the

auscultation portion of a physical examination. When listening to the heart with a stethoscope, the practitioner should take their time to avoid missing more subtle sounds. The auscultation should be performed in a quiet environment with minimal background noise. First, the precordium, or the outside of the thorax over the heart space, is palpated. Next the apical impulse (the heartbeat

How to hear and feel your way to understanding how your doctor diagnoses murmurs in veterinary patients.

against the chest wall) is located, usually felt on the left hemithorax at around the fifth to sixth intercostal space. The veterinarian or technician should also palpate the precordium for palpable thrills, which can feel like a buzzing on your fingers, and often indicates a very strong murmur.

When we listen to the patient's heart, we divide the sounds into transient sounds and



murmurs. Transient sounds encompass normal, as well as abnormal, sounds within the heart. The "lub" and "dub" we hear are the first and second heart sounds, which are heard in all animals and considered to be normal. Additional sounds are considered abnormal and referred to as arrhythmias.

For the purposes of this piece, we will focus on murmurs and what they sound like. When a murmur is heard during auscultation, there is an extra swishing sound caused by turbulent blood flow within the heart. The turbulence creates vibrations that can be heard, and sometimes felt as a thrill. In a normal heart, we do not hear this extra "swishing" noise since blood is flowing in a smooth, unidirectional fashion.

Murmurs are graded by intensity with a scale from 1-6, one indicating the least severe, and six being the most severe. Grade 1 murmurs may take several minutes to hear, and even with an experienced ear,

may be missed. Grade 2 murmurs are softer, focal murmurs that are more difficult to locate. Grade 3 is intermediately loud and heard in more than one location. Grade 4 murmurs are louder, and easier to hear anywhere on the thorax. Grade 5 murmurs are loud, but also include a palpable thrill. Grade 6 murmurs are the loudest, include a palpable thrill, and can be heard even with the stethoscope not flush with the body wall. It is important to note that while most murmurs are indicative of some form of cardiac disease, the murmur intensity does not directly correlate with the severity of disease.

The murmur's link to cardiac disease

As mentioned earlier, a murmur does often signal the presence of cardiac disease, however the seriousness of the disease can vary greatly. We'll go through some of the more common causes of a murmur and what they can mean for the patient.

> Mitral valve regurgitation

is the most common murmur heard, especially in cats and small breed dogs.¹ The murmur will be heard over the left apex of the heart, with variable loudness. Causes can include endocarditis, dysplasia, endocardiosis or volume overload.

- > Tricuspid valve regurgitation murmurs are very similar to mitral regurgitation in their quality, pitch and timing. However, they are usually loudest in the right hemithorax. An echocardiogram is the best way to differentiate between tricuspid and mitral valve regurgitation since they can be very difficult to differentiate upon auscultation alone.
- > Subaortic and pulmonic valve stenosis can both be heard at the left heart base. It can be hard to differentiate between the two on auscultation alone. Both conditions are caused by a congenital heart defect. Subaortic valve stenosis is more

commonly seen in Golden retrievers, Newfoundlands, boxers, as well as other large breeds. Bulldogs, terriers, Labrador retrievers and boxers are more likely to exhibit pulmonic valve stenosis.² The outcome can range greatly from a murmur alone, to an arrhythmia, to congestive heart failure. Some visible signs in these patients may include abdominal distention, exercise intolerance and/or dyspnea.

- > Patent ductus arteriosus (PDA), murmurs are continuous and heard in the left axillary region. This is also a congenital defect, and often can be diagnosed by auscultation. Heart failure can be a sequela to PDAs, in which the patient may appear weak, cough and/or have shortness of breath.
- > Loud murmurs heard in the right basilar region are consistent with ventricular septal defects. Patients with ventricular septal defects may have dyspnea, exercise intolerance, fainting and/or cough.

Why is consultation with a board-certified cardiologist so important?

A board-certified cardiologist has not only graduated from veterinary school, but also has three to five years of cardiac-specific training through a residency and internship and undergoes two years of extensive examinations. With this vast knowledge, these veterinary cardiologists are able to perform the most thorough echocardiogram and cardiac examination and provide the most optimal outcome for your cardiac patient.

With the utilization of echocardiography, the cardiologist is able to evaluate the size of the heart, thickness of the heart walls, pumping capacity, abnormalities in blood flow, valves, and/or the pericardium.

Most cardiac diseases are able to be diagnosed with the use of echocardiography by a board-certified cardiologist. Moreover, many patients can be successfully managed by a specifically tailored medication plan.

Your role

Since finding a heart murmur can point toward a multitude of disease processes, it is very important to be proactive when educating a client. The sooner a definitive diagnosis is made, the quicker the patient can be treated and potential furthering of cardiac disease can be managed and slowed down. Many patients do not show significant signs of heart disease until it has advanced to a much more severe state. Encourage your clients to pursue consultation with a board-certified cardiologist early on in the disease process, and they will thank you for giving them the gift of many more quality years with their loved one.

References:

1. Leaky valve disease of older dogs: degenerative atrio-ventricular (mitral and tricuspid regurgitation) valve disease. Cornell University: College of Veterinary Medicine. Cornell University Hospital for Animals, 2014.
2. Ware WA. Congenital cardiovascular diseases. In: *Cardiovascular disease in small animal medicine*. London: Manson/The Veterinary, 2007, 228.



Murmurs: Loud and clear

Veterinary professionals, lend me your ears while I talk about the sound of heart murmurs and their locations.

By H. Edward Durham, CVT, LATG, VTS (cardiology)

To start with the basics, murmurs are the sound of turbulent blood flow in the cardiac structures and are the most common abnormal cardiac sounds you'll hear. Blood flow moves in a laminar fashion—as in, a smooth unidirectional motion—in a normal heart. Murmurs are indicative of turbulent blood flow in the heart and are typically longer in duration. The normal

heart sounds are transient sounds, as they're called, and short in duration. Some abnormal transient sounds are clicks and gallops, but they are not murmurs.

We're in for a bit of turbulence, folks

Turbulence is created when the blood moves in multiple directions at varying velocities all at once. The turbulence creates vibrations, which you can

hear with a stethoscope or, in extreme cases, you can feel with your fingers as a palpable thrill. The grade of the murmur isn't always correlated with the severity of the disease. Radiographic and echocardiographic examinations are necessary for a complete diagnosis and prognosis. However, accurate isolation and identification of the murmur can limit the list of rule-outs.

Paint a better picture to help veterinarians

Knowing how to describe what you hear is the first step to take when it comes to murmurs. Location, timing (systolic, diastolic or continuous), and loudness are all great descriptors to use for murmurs, and by using this scheme, you're able to tell the veterinarian you hear a grade-3 systolic murmur that's heard best over the mitral valve. Or you could describe the same murmur as a left apical grade-3 systolic murmur—both are correct, since they describe where you heard the murmur (left side over the mitral valve or left apex), the loudness (grade 3) and the timing (systolic). Loudness is graded on a 1-6 scale, with 6 being the loudest.

Location, location, location

The location of a murmur is described as either right or left hemithorax and by valve area of the point of maximal intensity (PMI). The PMI is the location where a murmur is heard the loudest. This term is often mistakenly used to

mean the apex beat.

A simplified method of describing PMI location is to identify a murmur ventral to the costochondral junction (the mitral valve area) as apical and one that is dorsal to the costochondral junction (the aortic and pulmonic valve regions) as basilar and the side of the chest (right versus left).

Are you still all ears? Good. Now go forth and use your new knowledge. Before you go, just remember to always listen

carefully to every patient—especially the normal ones—to improve your skills and become a pro.

H. Edward Durham Jr., CVT, LATG, VTS (cardiology), is senior veterinary technician in anesthesia at Ross University School of Veterinary Medicine and editor and author of Cardiology for Veterinary Technicians and Nurses. He is also a charter member of the Academy of Internal Medicine for Veterinary Technicians and until recently served on its executive board as the director at large—cardiology.



Unclog your congestive heart failure protocols using **dvm360 hacks**

Have a change of heart—or your standard operating procedures—when it comes to helping patients with this debilitating cardiac disease.

These tips were gathered from your colleagues as a part of dvm360's survey Clinical Updates: Practice Hacks.



Take-home tools

"To get owners to accurately and reliably obtain the resting respiratory rate, we provide a detailed handout with a log and also ask them to download the Cardalis heart disease monitor app." (Also see the respiratory rate app at yourdogsheart.com.)



Educating clients

"As weird as it sounds, I compare hearts to elastic waist bands on underwear—eventually the elastic stretches and contracts so many times it wears out and the waist gets loose and thinner. People get that visual, and then it's easier to explain how drugs can help."

"I explain the heart is like a swimming pool pump, and then I explain how each drug will help the heart work more effectively in those terms."

"Since some pets are asymptomatic, we show clients radiographs of their pets compared with a normal heart."

"We show our clients the ECG strips. Visual aids really drive the point home."

"Since many small breeds develop CHF and also reverse sneeze, we have the client look at the pet's mouth if they are uncertain: Open mouth = gasping; closed mouth = OK."



For fragile felines

"To minimize stress for our delicate feline patients, we often have the owner administer an anxiolytic at home before bringing the cat in, depending on the

patient's status, degree of heart disease, other concurrent medications and systemic diseases. We offer house calls as well for fragile cases if imaging is not needed for that visit."

Vetmedin® (pimobendan) Chewable Tablets

Cardiac drug for oral use in dogs only

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

Description: Vetmedin (pimobendan) is supplied as oblong half-scored chewable tablets containing 1.25, 2.5, 5 or 10 mg pimobendan per tablet. Pimobendan, a benzimidazole-pyridazinone derivative, is a non-sympathomimetic, non-glycoside inotropic drug with vasodilative properties. Pimobendan exerts a stimulatory myocardial effect by a dual mechanism of action consisting of an increase in calcium sensitivity of cardiac myofilaments and inhibition of phosphodiesterase (Type III). Pimobendan exhibits vasodilating activity by inhibiting phosphodiesterase III activity. The chemical name of pimobendan is 4,5-dihydro-6-[2-(4-methoxyphenyl)-1H-benzimidazole-5-yl]-5-methyl-3(2H)-pyridazinone.

Indications: Vetmedin (pimobendan) is indicated for the management of the signs of mild, moderate, or severe (modified NYHA Class II^a, III^b, or IV^c) congestive heart failure in dogs due to atrioventricular valvular insufficiency (AVVI) or dilated cardiomyopathy (DCM). Vetmedin is indicated for use with concurrent therapy for congestive heart failure (e.g., furosemide, etc.) as appropriate on a case-by-case basis.

^a A dog with modified New York Heart Association (NYHA) Class II heart failure has fatigue, shortness of breath, coughing, etc. apparent when ordinary exercise is exceeded.

^b A dog with modified NYHA Class III heart failure is comfortable at rest, but exercise capacity is minimal.

^c A dog with modified NYHA Class IV heart failure has no capacity for exercise and disabling clinical signs are present even at rest.

Contraindications: Vetmedin should not be given in cases of hypertrophic cardiomyopathy, aortic stenosis, or any other clinical condition where an augmentation of cardiac output is inappropriate for functional or anatomical reasons.

Warnings: Only for use in dogs with clinical evidence of heart failure. At 3 and 5 times the recommended dosage, administered over a 6-month period of time, pimobendan caused an exaggerated hemodynamic response in the normal dog heart, which was associated with cardiac pathology.

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

Precautions: The safety of Vetmedin has not been established in dogs with asymptomatic heart disease or in heart failure caused by etiologies other than AVVI or DCM. The safe use of Vetmedin has not been evaluated in dogs younger than 6 months of age, dogs with congenital heart defects, dogs with diabetes mellitus or other serious metabolic diseases, dogs used for breeding, or pregnant or lactating bitches.

Adverse Reactions: Clinical findings/adverse reactions were recorded in a 56-day field study of dogs with congestive heart failure (CHF) due to AVVI (256 dogs) or DCM (99 dogs). Dogs were treated with either Vetmedin (175 dogs) or the active control enalapril maleate (180 dogs). Dogs in both treatment groups received additional background cardiac therapy.

The Vetmedin group had the following prevalence (percent of dogs with at least one occurrence) of common adverse reactions/new clinical findings (not present in a dog prior to beginning study treatments): poor appetite (38%), lethargy (33%), diarrhea (30%), dyspnea (29%), azotemia (14%), weakness and ataxia (13%), pleural effusion (10%), syncope (9%), cough (7%), sudden death (6%), ascites (6%), and heart murmur (3%). Prevalence was similar in the active control group. The prevalence of renal failure was higher in the active control group (4%) compared to the Vetmedin group (1%).

Adverse reactions/new clinical findings were seen in both treatment groups and were potentially related to CHF, the therapy of CHF, or both. The following adverse reactions/new clinical findings are listed according to body system and are not in order of prevalence: CHF death, sudden death, chordae tendineae rupture, left atrial tear, arrhythmias overall, tachycardia, syncope, weak pulses, irregular pulses, increased pulmonary edema, dyspnea, increased respiratory rate, coughing, gagging, pleural effusion, ascites, hepatic congestion, decreased appetite, vomiting, diarrhea, melena, weight loss, lethargy, depression, weakness, collapse, shaking, trembling, ataxia, seizures, restlessness, agitation, pruritus, increased water consumption, increased urination, urinary accidents, azotemia, dehydration, abnormal serum electrolyte, protein, and glucose values, mild increases in serum hepatic enzyme levels, and mildly decreased platelet counts.

Following the 56-day masked field study, 137 dogs in the Vetmedin group were allowed to continue on Vetmedin in an open-label extended-use study without restrictions on concurrent therapy. The adverse reactions/new clinical findings in the extended-use study were consistent with those reported in the 56-day study, with the following exception: One dog in the extended-use study developed acute cholestatic liver failure after 140 days on Vetmedin and furosemide.

In foreign post-approval drug experience reporting, the following additional suspected adverse reactions were reported in dogs treated with a capsule formulation of pimobendan: hemorrhage, petechia, anemia, hyperactivity, excited behavior, erythema, rash, drooling, constipation, and diabetes mellitus.

Effectiveness: In a double-masked, multi-site, 56-day field study, 355 dogs with modified NYHA Class II, III, or IV CHF due to AVVI or DCM were randomly assigned to either the active control (enalapril maleate) or the Vetmedin (pimobendan) treatment group. Of the 355 dogs, 52% were male and 48% were female; 72% were diagnosed with AVVI and 28% were diagnosed with DCM; 34% had Class II, 47% had Class III, and 19% had Class IV CHF. Dogs ranged in age and weight from 1 to 17 years and 3.3 to 191 lb, respectively. The most common breeds were mixed breed, Doberman Pinscher, Cocker Spaniel, Miniature/Toy Poodle, Maltese, Chihuahua, Miniature Schnauzer, Dachshund, and Cavalier King Charles Spaniel. The 180 dogs (130 AVVI, 50 DCM) in the active control group received enalapril maleate (0.5 mg/kg once or twice daily), and all but 2 received furosemide. Per protocol, all dogs with DCM in the active control group received digoxin. The 175 dogs (126 AVVI, 49 DCM) in the Vetmedin group received pimobendan (0.5 mg/kg/day divided into 2 portions that were not necessarily equal, and the portions were administered approximately 12 hours apart), and all but 4 received furosemide. Digoxin was optional for treating supraventricular tachyarrhythmia in either treatment group, as was the addition of a β -adrenergic blocker if digoxin was ineffective in controlling heart rate. After initial treatment at the clinic on Day 1, dog owners were to administer the assigned product and concurrent medications for up to 56±4 days.

The determination of effectiveness (treatment success) for each case was based on improvement in at least 2 of the 3 following primary variables: modified NYHA classification, pulmonary edema score by a masked veterinary radiologist, and the investigator's overall clinical effectiveness score (based on physical examination, radiography, electrocardiography, and clinical pathology). Attitude, pleural effusion, coughing, activity level, furosemide dosage change, cardiac size, body weight, survival, and owner observations were secondary evaluations contributing information supportive to product effectiveness and safety. Based on protocol compliance and individual case integrity, 265 cases (134 Vetmedin, 131 active control) were evaluated for treatment success on Day 29. At the end of the 56-day study, dogs in the Vetmedin group were enrolled in an unmasked field study to monitor safety under extended use, without restrictions on concurrent medications.

Vetmedin was used safely in dogs concurrently receiving furosemide, digoxin, enalapril, atenolol, spironolactone, nitroglycerin, hydralazine, diltiazem, antiparasitic products (including heartworm prevention), antibiotics (metronidazole, cephalexin, amoxicillin-clavulanate, fluoroquinolones), topical ophthalmic and otic products, famotidine, theophylline, levothyroxine sodium, diphenhydramine, hydrocodone, metoclopramide, and butorphanol, and in dogs on sodium-restricted diets.

Manufactured for:

Boehringer Ingelheim Vetmedica, Inc.
St. Joseph, MO 64506 U.S.A.

Vetmedin® is a registered trademark of Boehringer Ingelheim Vetmedica GmbH licensed to Boehringer Ingelheim Vetmedica, Inc.

Copyright © 2017 Boehringer Ingelheim Vetmedica, Inc. or an affiliated company. All Rights Reserved.

449005-00

Revised 01/2017



Evaluation basics

Before the pet's visit, prepare the evaluation space to meet the patient's and client's needs. For example, you'll want to keep appropriate treats readily available for positive reinforcement and distraction as needed.

When you introduce the pet to the evaluation space, allow the patient to acclimate to the area. Spend time talking with the pet owner about the pet's condition while the patient observes its surroundings and you. This builds the client-therapist relationship and helps you obtain valuable hands-off gross exam findings about the patient's physical and mental status in a low-stress way.

Don't begin the evaluation by approaching the patient. Let the

patient approach you, see your movements and understand your intention. Employ touch gradient to introduce your presence and allow the patient to settle and relax. When the pet accepts your proximity and passive touch, offer treats and verbal praise to positively reinforce these behaviors. Remember to back off if the pet communicates warning signals and proceed only as the patient will tolerate your care.

Use this method during the initial evaluation and throughout the course of therapy. Be constantly aware of the patient's perception about its space and any exchanges that occur. Strive to associate the patient's experience with positive markers, and be prepared to modify therapies based on both physical

and behavioral responses. This thoughtful approach will lead to a happy and more willing patient that will ultimately allow progressive rehabilitation efforts.

Successful physical rehabilitation originates from accurate patient assessment and appropriate behavior management. Because fear and stress negatively impact the body, it's our professional responsibility to minimize the effects of FAS to support the patient's healing process from start to finish.

Kim Raible, LVT, CCRP, is a technician at Cary Street Veterinary Hospital in Richmond, Virginia, with 20 years of career experience spent dedicated to the pursuit and implementation of high quality standards in patient care. Her primary area of interest is in mind and body wellness, and she is Fear Free certified.



How bundling preventives can **boost compliance** (and profits)

Within one year, compliance for heartworm and flea and tick prevention at our veterinary practice went from 39 to 62 percent.

By Meghan Bingham, CVPM

When my practice first started selling afoxolaner, I noticed that our clients' flea and tick preventive compliance grew. The bad news? The boost seemed to come at the expense of heartworm preventive compliance.

I knew something needed to change, so recognizing that high-quality preventives are expensive, I created a discounted bundle-and-save package to encourage clients to purchase heartworm and flea and tick preventives, rather than one or the other. I offered a flat fee on the packages so clients could choose whichever heartworm and flea and tick preventives they were most likely to administer regularly. I knew it was a risk, but I believed that conveying the importance of complete parasite protection—even, initially, at the sake of our bottom line—would show clients how much we believed in protecting their pets.

With my fingers crossed, I began monitoring our compliance numbers and profit margins. Within three months, compliance

for heartworm and flea and tick preventives grew from 39 to 44 percent. A year later, it was at 62 percent, and now we consistently fluctuate between 69 and 72 percent. Our volume more than makes up for our lower profit margins.

My team has been very receptive to the change. The receptionists no longer see clients cringe at the price of preventives, and the doctors can still recommend whichever preventive is best for the pet without having to talk about which one costs the least. But most important, clients see that we really are trying to help them help their pets—they know it's not just about making a sale.

Our goal is always to protect more

pets, and bundling lets us do that. Affordable protection = better compliance = more pets protected = better medicine = more revenue for the clinic.

Meghan Bingham, CVPM, is practice manager at West Alabama Animal Clinic in Houston and 2018 dvm360/VHMA Practice Manager of the Year contestant.



Got student debt?

We can help!



TOGETHER, WE ARE
EMPOWERING
A HEALTHY TOMORROW

Full-time Banfield DVMs are immediately eligible to enroll in our Student Debt Relief Pilot Program.

Text “**DVMjobs**” to **97211** to learn more!

Banfield.com/Careers



#BanfieldLife



Banfield[®]
PET HOSPITAL

Human trends pawing their way into pet foods

Have you noticed that pet foods are starting to look and sound like your own favorite cuisine? There's a reason for that.

By Sarah Mouton Dowdy

Pets are people too—at least that's how most of the human population is trending, according to Harris Poll survey findings released in 2016. A whopping 95 percent of respondents said they consider their pets to be a part of the family—that's seven percentage points higher than in 2007.

Perhaps nowhere is this shift

more apparent than in the pet food industry. At the recent Petfood Forum in Kansas City, Missouri, Natasha Davis, client service manager at GfK, a market research institute, shared four human food trends that are finding their way into the pet food industry (and just might find their way into your veterinary clinic in the form of client questions).

1. Biohacking

On *Forbes'* list of the "10 food trends that will shape 2018," biohacking comes in at No. 5, and it's popping up in pet foods too. Biohacking, according to the *Forbes* piece, "breaks all the rules to create a science for more individualized nutrition and products." Think DNA kits that help people determine



what food is best for their cholesterol, gut health, immune system, metabolism and so on (the company Habit is just one example) as well as restaurants with nutritionists on staff who can counsel patrons on choosing the best foods for their unique needs.

According to Davis, biohacking is entering the pet food realm in the form of meal enhancers. While Davis says the vast majority of meal enhancers are labeled as "general health," more specific categories are emerging that target allergies, skin health, gastrointestinal health, oral and dental health and weight control.

2. Popular human ingredients

Human ingredients that have recently risen in popularity due to their health benefits are popping up in prominent places on pet food packaging, says Davis, and it's not always because the ingredients are necessarily new to the food's recipe. Many pet food companies are simply capitalizing on the fact that a long-ignored ingredient, such as turmeric, is suddenly a selling point because of its associated health benefits. Honey and coconut are two other popular health-conscious human ingredients that are gracing pet food packaging, Davis says.

3. Protein bars

Much like their human owners, more pets are on the go, says Davis. Pets are joining their people on vacations, at the office and on errands, and this has created a demand for convenient, on-the-go pet nutrition (think Clif Bars for dogs), and the pet food industry is listening. PowerBark and TurboPUP are just two of the companies offering protein bars for pups.

4. Sustainably and ethically sourced

People don't just want food that's good for them—they want food that's good for the environment as well, says Davis, and the same principle applies to the pet foods they purchase. That's why we're seeing pet foods with highly conspicuous "certified humane," "certified sustainable seafood," "certified organic," "farm to bowl" labels and the like.

What's next? If this list is any indication, your best bet is to keep an eye on your local grocery store aisles and Starbucks menu.

Does Your Credit Card Terminal Print Receipts?

GO PAPERLESS & STORE YOUR TRANSACTIONS ONLINE



- CAPTURE DIGITAL SIGNATURES
- SEARCH WITH EASE
- REFUND WITH A CLICK

Go Paperless Today!

[PAYJUNCTION.COM/FIRSTLINE](https://payjunction.com/firstline)

 PayJunction®  888.444.5722



When the groomer becomes the dentist

Your veterinary client opted for "dental treatment" at the groomers. Say what?

By Hannah Wagle

"Thanks for calling Cares Veterinary Clinic. This is Amy. How can I help you today?"

"Hi Amy. This is Mrs. Weathers. I've been referred to you for Felix's dental health."

"OK, great! Where does Felix normally receive dental care, and who referred you to us?"

"Felix usually gets his dental care at the groomer, but she said I should bring him in for a veterinary appointment."

Record scratch.

Don't stare dumbfounded at the phone for too long. Mary Berg, BS, RVT, RLATG, VTS (dentistry), president of dental counseling service Beyond the Crown Veterinary Education in Lawrence, Kansas, says this scenario is happening more and more often. "For the most part, it's

not what it sounds like," she says. "Most groomers will do no more than a tooth brushing—that's not considered a dental treatment by any expanse of the imagination."

What's worrisome, however, is when it is more than a complimentary tooth brushing. "My concerns stem from the fact that some groomers are doing anesthesia-free dentistry—as in tooth cleaning with more than a tooth brush," Berg says. "This means there's no anesthesia, no training. The dog is awake the whole time. This can cause more damage and put the groomer and the pet at risk for injury."

And aside from possible pain and injury that can occur when groomers wield dental tools, Berg says she's also concerned because groomers are not trained to

perform dentistry. After all, good dental care is about more than pretty white teeth—it's about cleaning below the gum line. These are jobs best left to trained and licensed veterinarians and veterinary technicians, who are supervised by practicing veterinarians.

So what can and should groomers watch out for when it comes to pets' teeth? "The No. 1 thing to watch for is really bad breath," Berg says. "That signals oral infection—the two go hand in hand. It's not just doggy breath, it's a decaying smell that means infection."

Along with noting a dog's halitosis, Berg says that groomers can also point out issues that any pet owner could recognize. "If they do look at teeth, they could look for red swollen gums and tartar accumulation. While it might not necessarily signify disease, it does mean the pet could have gingivitis. A loose or fractured tooth could also be something easily noticeable."

"When you're looking at a dog or cat, you should look at the oral cavity rather than the teeth. What's going on below? If you can't answer that, you shouldn't be responsible for the pet's dental treatment in the first place."

When it comes to referring to a veterinarian, Berg says that's better than the alternative: treating the teeth themselves. "Brushing teeth with an oral infection is going to cause more pain than just recommending a professional dental cleaning," she says. "Maybe I'm a cynic, but I get concerned when they'd rather treat the pet themselves than refer."

Bottom line? "When you're looking at a dog or cat, you should look at the oral cavity rather than the teeth. What's going on below? If you can't answer that, you shouldn't be responsible for the pet's dental treatment in the first place."



Don't say "dental disease"

When it comes to oral health, veterinary dental technician Mary Berg says you should ditch the term "dental disease" and use stronger words that convey the seriousness of the condition to pet owners. "I'm a big fan of using oral infection, because that's what it is. And using the word 'infection' is something that clients can understand," she says.



We make wound care easy.



Day 1



Day 20

Paws, claws, hoofs or talons- RediHeal Wound Care offers better, faster, more scar-free healing in a wide variety of tissue applications- without steroids, antibiotics or alcohol. If you're looking for an alternative to other wound care technology, look no further.

Heal wounds of all types 30-50% faster, with little to no scarring and reduced infection potential.

Buy through your distributor or shop online.

avalonmed.com • 888.289.1890





Meet the **mutt-ley crew** of bad dog behaviors

Let's learn what Elvis Presley, Steppenwolf and George Thorogood can teach us to coach pet owners through their precocious pooches' bad manners.

By Sherrie Yuschak, RVT

Bad boys (and girls) may be dreamy in the movies, but they're not so easy to live with. Barking, jumping up and resource guarding are three terrors of doggie manners. When pet owners notice these bad-boy behaviors in their doggy darlings, they can be understandably frustrated. They also may not know how they've unwittingly contributed to their roguish pup's brutish manners. And they become the unwitting villains when they respond by yelling and bopping a pet on the nose with a newspaper. Let's look at how to boot these bad behaviors and replace them with better ones.

Learn the trigger warnings

First, it's necessary to help clients identify the stimuli that trigger undesired behavior. Then make a plan to manage and avoid the triggers and limit the behavior in the future.

You can immediately reduce everyone's stress level by creating management plans to provide relief until the dog can learn alternative behaviors.

Out with the bad ...

Teach the dog a replacement behavior. When a client complains their dog is jumping up, I like to ask, "What behavior would you like your dog to do instead? Let's teach him to do that!" The best alternate behaviors are the ones that can't physically be performed at the same time as the undesired behavior. For example a dog can't sit and jump up at the same time. When training a dog, always use positive reinforcement training methods so there's no fear or anxiety. Practice when the dog is calm and focused. Once the dog quickly and repeatedly executes the new behavior, gradually add in the trigger.

Keep heart in mind

Consider that the dog's emotions affect her behavior. If the triggers cause her to become highly aroused due to anxiety, frustration, fear or joy, then it's very difficult for her to learn a new behavior. Exercises that encourage relaxation are helpful, as are properly used games such as tug that practice gradually increasing excitement then returning to calm.

Remember that some dogs

struggle with an abnormally quick hyper-arousal and a prolonged recovery. These dogs may benefit from supplements or medications combined with a behavior modification plan. A behavior consultation with an experienced veterinarian or board-certified veterinary behaviorist is warranted. This will also ensure medical ailments or confounding behavior abnormalities aren't contributing to the presenting complaints.

Remember enrichment

Problem behavior often occurs when a dog's needs aren't adequately met. Clients may underestimate how much boredom, frustration, excess energy or loneliness contribute to their dog's negative behavior. Suggest increasing physical exercise such as walks, interactive play like fetch or hide-and-seek, chewing, playing with another dog, swimming or dog sports. Mental stimulation can include food puzzles, scent games, training and slow walks for sniffing. Human interaction is also critical to a dog's well-being, and each dog should receive focused one-on-one attention every day.



Now that we've covered the general rules to managing pet's—and pet owners'—unruly behaviors, let's look at how to handle the bad boys of behavior.

Behavior complaint: "My dog barks at the window when other dogs pass by."

This is the Elvis Presley of dog behaviors, with the characteristic lippy sneer. As Presley croons in the song *Trouble*, "I was born standing up and talking back." When pet owners are frustrated by all the "talking back" their pets are doing at the window, suggest these prevention and management strategies.

1. Change the environment and remove the triggers:

- > Use opaque window film, remove viewing perches, block window access and add white noise or calming music.
- > Move the dog's crate to a quiet area away from the window.
- > Create a quiet relaxation space in another room.

2. Train the pet owner:

- > Avoid punishment such as yelling, throwing things at the dog or using a squirt bottle.
- > Be proactive, not reactive. Identify common barking periods such as after school or work.
- > Distract the dog away from the window during high-traffic times. Use food puzzles, walks or play.

3. Teach replacement behaviors:

- > Recall away from the window on cue.
- > Bark and stop barking on cue.
- > Lie calmly on a mat.
- > Play quietly with a food puzzle game or chew toy.

Note: Barking can be especially problematic for apartment dwellers. Clients may feel desperate to try risky options such as electronic bark collars. But stopping the barking through punishment without addressing the dog's arousal can cause other unwanted behaviors due to anxiety and frustration.

Behavior complaint: "My dog jumps up onto guests."

Like Steppenwolf, these distant canid cousins were born, born to be

be wild. And visiting guests may be less appreciative of the wild welcomes these wolfish door greeters give. Suggest these prevention and management strategies.

1. Change the environment and remove the triggers:
 - Disconnect doorbells or cover the button with tape.
 - Post a note asking guests to text instead of knocking.
 - Ask guests to come through the side or back door.
 - Address initial excitement. Avoid letting the dog greet the guest until everyone enters and settles.
2. Train the pet owner:
 - Avoid punishment such as yelling, pushing or pulling the dog and giving leash corrections.
 - Be proactive, not reactive. Identify high-traffic times such as after school, before dinner or weekends.
 - Keep supplies ready, including a crate or mat, frozen food puzzles, chew toys, treats and a leash.
3. Teach replacement behaviors:
 - Go to a mat, lie down, stay there and work on a puzzle.
 - Go to a crate or another room, lie down, stay there and work on a puzzle.
 - Go outside in the fenced yard and work on a puzzle or play.
 - Re-enter the guest area once calm and on leash, and sit for petting.

Note: Many dogs will jump up onto certain people—especially kids or guests—but not their owners. Often it's because of inadvertent and intermittent reinforcement: Guests talk to and pet the dog

when he jumps up. This rewards the jumping up behavior. Practice, preparation and coaching your guests how to interact with your dog will help.

Behavior complaint: "My dog growls when other dogs or people approach his food or toys."

Much like George Thorogood, these pups are bad to the bone (and bad with the bone, too. See what we did there?). *B-b-b-b-a-d*. But they can learn better behavior if you suggest these prevention and management strategies.

1. Change the environment and remove the triggers:
 - Remove preferred hiding spots for guarded objects, such as blankets, pillows and dog beds.
 - Block access to potential objects like baby gates or closed doors. Place trash under the counter and keep kid's toys in a play area.
2. Train the pet owner:
 - Be proactive, not reactive. List what the dog guards and any common incidents—for example, the bathroom trash was dumped or the dog steals tissues.
 - Avoid punishment, such as yelling, chasing, cornering or forcefully removing the object.
 - Don't give the dog items he might guard—for example, no long-lasting chew toys, only treats that he can immediately consume.
3. Teach replacement behaviors:
 - Don't put your mouth on that when cued with the phrase, "leave it."
 - Pick up this item with your mouth

when cued with the phrase, "take it."

➤ Spit the item out of your mouth when cued with the phrase, "drop it."

Note: Puppies explore their environment with their mouth, and they frequently grab objects. Avoid prying the pup's mouth open to take away the objects, as this can cause guarding. Instead, offer the pup a treat or toy as a trade.

One final, important thought: Resource guarding in dogs can quickly escalate from stiff posturing to growling and then biting. Dogs that guard are experiencing anxiety, and this emotion needs to be addressed. Advanced behavior modification techniques by an experienced professional may be necessary.

Sherrie Yuschak, RVT, VTS (behavior), CPDT-KA, is member-at-large of the Academy of Veterinary Behavior Technicians. She is also the owner of Better Behavior Solutions and a clinical behavioral technician at North Carolina State University's College of Veterinary Medicine.

For a list of resources Yuschak recommends, visit dvm360.com/badbehaviorresources.



OH, BEHAVE!

Find great client handouts to help with behavior training at dvm360.com/clienthandouts.



**Get more
product information
*online***

Researching a purchase?

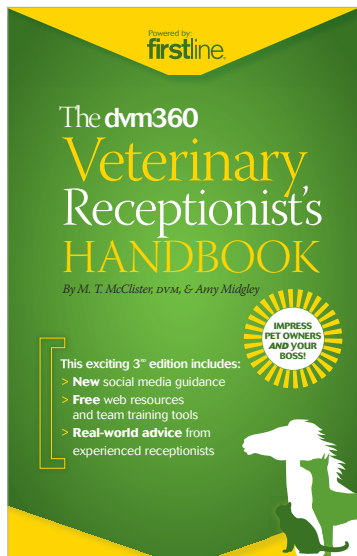
dvm360.com

offers hundreds more
product listings.

Just visit

dvm360.com/products

Make your practice's first impression even better.



order now
& save \$5!

\$44⁹⁹

use code
HANDBOOK
at checkout

go to industrymatter.com/handbook
or call **1-800-598-6008**



PET LOSS PRODUCTS & SERVICES

Toll Free: 866-PET-KNAP



Quilted fabric pet burial bags
for presentation, transportation,
burial and cremation

Veterinarians these are the **best**
alternative to a black bag or
cardboard box



Toll free **866-PET-KNAP**
Petknap, Inc.
www.petknap.com

TAGS

TAGS

- Available in Colored Aluminum, Brass or Stainless Steel
- Multiple Bell Shapes

\$10 Off

your order of 1,000 or
more Rabies Tags
Mention Coupon
Code: **VETTED18**

Call us at:

859-261-2035



National Band & Tag Company
INTERNATIONAL IDENTIFICATION INC.
Family Operated Since 1902

tags@nationalband.com
www.nationalband.com

DVM360.COM

**FIND IT
ALL
HERE!**

whom should I ask?

A DVM360 FLOWCHART

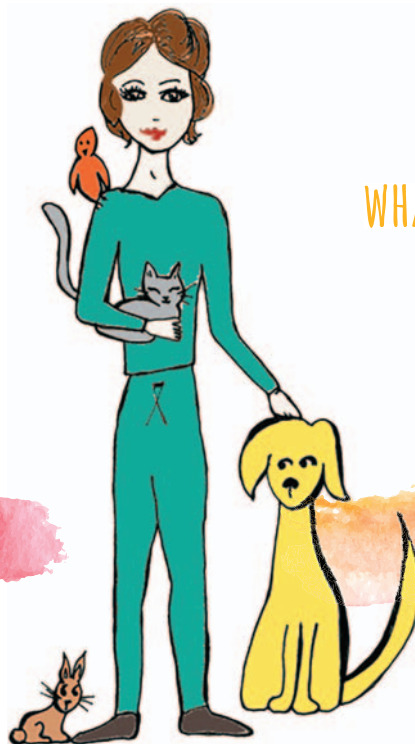
I WANT TO
KNOW...

RANDOM
MEDICAL FACTS

WHERE IS...
HOW DO I...
WHAT HAPPENED...

ASK A DOCTOR

ASK A TECH



Why is super-fun Fetch dvm360 speaker Michael Nappier, DVM, DABVP—assistant professor at the Virginia-Maryland College of Veterinary Medicine in Blacksburg, Virginia—talking up technicians in his assessment above? First, because they're awesome. Second, because he appreciates their crucial contributions in practice. Third, National Veterinary Technician Week is coming Oct. 14-20. Don't ignore your practice's RVTs, LVTs, CVTs, etc.! Visit dvm360.com/techweek for more tips and tools to appreciate your own hospital's veterinary nurses.

Vets Against Insanity



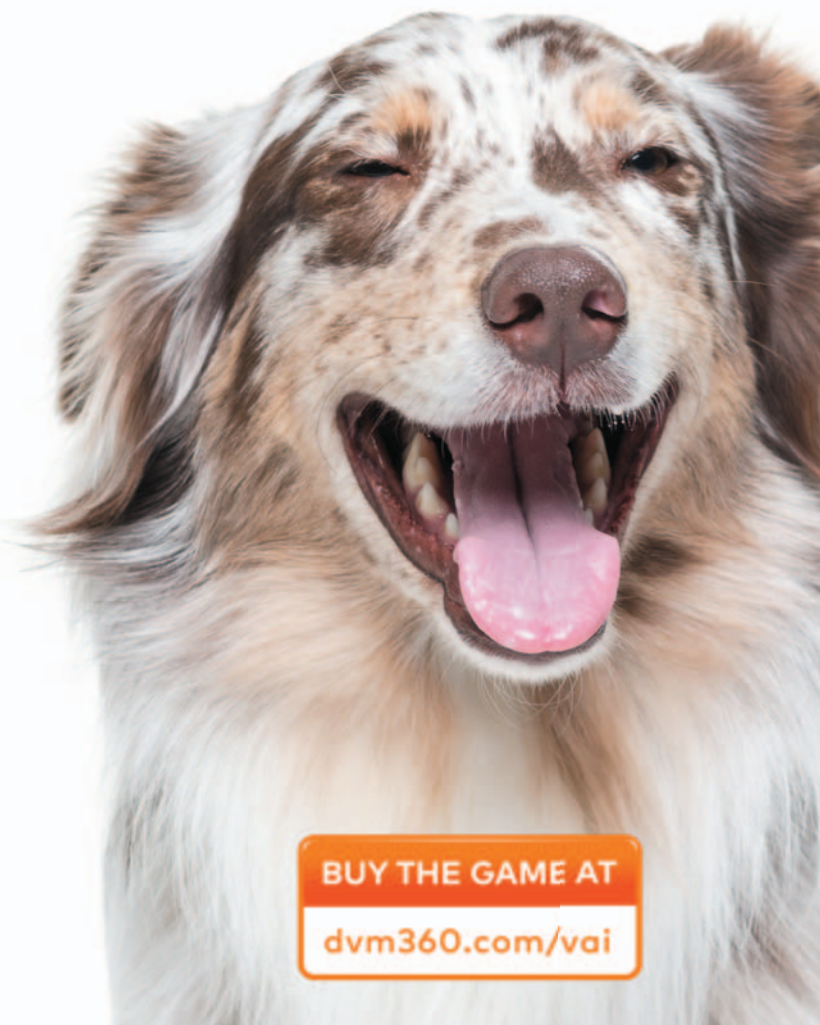
The *slightly* scandalous card game for veterinary professionals.

Practicing veterinary medicine is rewarding, important and often all-consuming. It can also be awkward, annoying and (on most days) downright disgusting. Sometimes, all you can do is laugh about it. Enter Vets Against Insanity: a fun, slightly scandalous take on the work and life of a veterinary professional.

Who should play:

- Veterinary professionals (can be various states of frustrated/happy/slightly drunk/completely sober/tired/overworked)
- Anyone who recently had to squeeze a dog's anal glands
- Everyone who has recently thought, "I'll have to laugh about this so I don't cry"

At its best, Vets Against Insanity is a hilarious tool designed to inspire veterinary professionals to take risks, laugh more, pursue personal development and enjoy more professional satisfaction and success.



BUY THE GAME AT
dvm360.com/vai

Warning: You can play with the regular folks in your life, but do you really want to deal with the blank stares you'll get after playing "radiolucent bladder stones"? To get your game now, go to dvm360.com/vai.



THE RISK IS OUT THERE.

THE CHOICE IS YOURS.

Make rabies prevention
a top priority.



WORLD'S LEADING RABIES VACCINE¹ FOR 30+ YEARS²
APPROVED FOR 6 SPECIES | AVAILABLE IN 1- AND 3-YR DOI.



¹ Data on file at Merial.

² Data on file at Merial.

Merial is now part of Boehringer Ingelheim.

IMRAB® is a registered trademark of Merial.
©2018 Merial, Inc., Duluth, GA. All rights reserved.
IMB16TRADEAD1 (09/17).

