An OPEN LETTER *to* VETERINARIANS

from

BETHANY QUAM,

Group President at Blue Buffalo Co.

We're in this for pets.

You, because your love of animals and science was likely with you from a young age.

Us, because we were founded on a promise to a lovable Airedale named Blue who struggled with health issues.

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We also know this isn't the easiest of times for veterinarians. Your pressures are great. The stresses of life-and-death decisions are with you daily. Pet ownership is surging. Staff shortages make it harder. And the pandemic adds even more challenges.

We can't make everything right, but we can help. We have 19 million households who believe that when you love them like family, you feed them like family. We will remind them that their veterinarians take care of them like family, too.

In other words, we're in this together. It's time we truly worked together.

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We'll continue to add to our more than $30 million in funds raised for animal cancer research and treatment.

We'll give you more information about our industry-leading team of full-time nutritionists, food scientists and veterinarians and about our testing and quality assurance protocols as well and offer you more transparency into what we do and how we do it.

And we will pay off these words with our actions. This is just the beginning.

Together we can do more. Together we make the profession stronger.
Like you, we are committed and we care.

Together for pets. After all, it's why we're both here.

Sincerely,
Bethany Quam

Group President at Blue Buffalo Co.

dvm360®

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Practice management:

Improving your communication skills

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Identifying passion and purpose energizes your life

By discovering what you love, what you need to do, and why you need to do it, you can achieve personal and professional satisfaction.

By Julia Burke, Assistant Editor

Being a "heart-centered veterinarian" means fostering a peaceful mindset in which what you do is aligned with your values, desires, purpose, and passions, according to Patricia D. White, DVM, MS, DACVD, CPC. Regardless of your role in the veterinary industry, it's important to understand that relationships and communication are key to success in both your personal and professional life. By realizing that others have a need to be valued, seen, heard, and cared for, you can design the life you want to lead and contribute to a rewarding, profitable profession.

During her presentation at the 2021 Atlantic Coast Veterinary Conference®,

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Managing superficial pyoderma with light therapy

Phovia is highly effective for treating superficial and deep skin infections.

By Amelia G. White, DVM, MS, DACVD

Superficial bacterial folliculitis, also called superficial pyoderma, is a commonly diagnosed dermatological condition in dogs.[1,2] These infections are secondary to primary conditions affecting normal skin barrier function (eg, allergic skin disease, trauma, burns), keratinization (eg, nutritional deficiency, liver disease), and immune regulation (eg, neoplasia, autoimmunity, endocrinopathy).[2] Cats less commonly develop superficial pyoderma perhaps because of decreased adhesion of staphylococci to feline corneocytes, but the primary issues causing infection are similar to those seen in dogs.[3-8]

The primary pathogen associated with superficial pyoderma in dogs and cats is a normal resident of the skin, *Staphylococcus pseudintermedius*, but other flora may be involved.[2,8-12] As the normal homeostasis of this organism is disrupted from a primary disease, these gram-positive cocci invade

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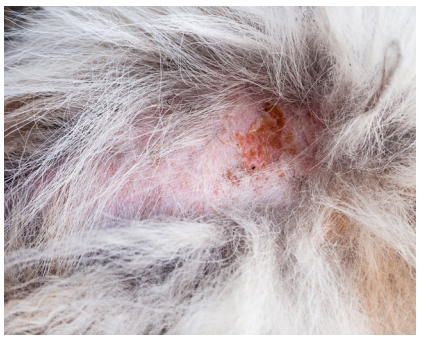

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[1] Data on file at Boehringer Ingelheim.

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[3] ProZinc® (protamine zinc recombinant human insulin) [Freedom of Information Summary]. St. Joseph, MO: Boehringer Ingelheim Vetmedica, Inc.; 2009.

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Celebrating veterinary professionals one initiative at a time

We are pleased to announce the booming success of the *dvm360®* Veterinary Heroes™ recognition program, designed to celebrate the achievements of veterinary professionals in today's industry. The program encourages veterinarians, veterinary technicians, practice managers, and client service representatives to nominate a professional who makes a significant impact in elevating patient and client care.

Our editorial Advisory Board has been given the difficult task of choosing winners in each category from among a large field of impressive nominees. The winners of the inaugural Veterinary Heroes™ awards will be announced in the December issue of *dvm360®*.

We also want to take a moment to celebrate the triumphant return of the Atlantic Coast Veterinary Conference® (ACVC), a *dvm360®* event. Faculty and attendees were able to learn, network, and engage with each other in Atlantic City, New Jersey, while following safety protocols that included mask-wearing throughout the convention center (except when eating or drinking), social distancing, and hand sanitizing.

Be sure to visit dvm360.com to view our online coverage of ACVC with articles and video interviews. Articles also appear in this issue of *dvm360®*.

To add to the plate of successes, *dvm360®* is thrilled to welcome 11 new partners to its Strategic Alliance Partnership (SAP) program including the addition of international inductees. The new SAP members demonstrate the organization's commitment to advancing veterinary medicine worldwide.

As you flip through the pages of this month's issue of *dvm360®*, you will find a variety of topics to digest. Highlights include articles about managing feline stress-related conditions (page 46), ways to promote a healthier work-life balance (page 50), and a look at the role of veterinary technicians in their own words (page 57).

We look forward to seeing all the new and familiar faces at our next live Fetch conference in San Diego, where we will be showcasing the latest veterinary advances and insights. Until then, we hope you are enjoying the crisp air and holidays the fall season brings.

—Mike Hennessy Sr
Chairman and Founder,
MJH Life Sciences™

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EDITOR-IN-CHIEF LETTER

Give thanks. Be thankful.

As we approach the holiday season, it always gives me great pause to be thankful for so many things. This year has been another challenging one, but I am happy to be in a profession that understands the meaning of gratitude, appreciation, and giving back.

Giving back to the profession is one huge way of giving thanks to a profession that is hungry for talented future veterinary professionals. This is something that I am personally passionate about and hope you will find inspiration in this story to do the same.

Over the summer, my very good friend and colleague, Dr Robert Mankowski from Mount Laurel Animal Hospital in Mount Laurel, New Jersey, and I participated in Vet Summer (https://vetsummer.com/). This fantastic program is a weeklong, high-level, immersive experience for students ages 12 to 17 years who are interested in entering the field of veterinary medicine. We all know the importance of creating a more diverse, inclusive, and equitable profession for vet med, and when I was approached about helping the director out with the program, I instantly jumped on the opportunity.

The vet summer camp is housed at the College of Mount Saint Vincent in Riverdale, New York. Students experience interactive, hands-on classes to better understand the variety of fields and careers within veterinary medicine. These are students from all walks of life with the same common denominator—the love of the human-animal bond and the goal of entering our wonderful profession.

On the last day of camp, the 80 students had the privilege to take a bus south to Mount Laurel Animal Hospital, where they had the ability to hang out with Dr Mankowski and me. The happiness, the intrigue, and the passion we saw on these kids' faces were far too similar to the look he and I had as children, when we had that glorious opportunity to shadow a veterinarian. The students were hungry to learn and eager to tour the veterinary hospital.

Dr Mankowski and I provided an interactive session sharing the life of a veterinary professional and how meaningful our profession is. Afterward, students had a pizza party with us where they asked us fantastic questions about the field and what subjects they should continue to focus their attention on as they enter high school. They were diligently writing notes (yes, that's how passionate they were about this field!), laughing, engaging, and enjoying our company as well as each other.

After showing them an extensive tour of the veterinary hospital, we also showed the students the onsite farm! The veterinary hospital sits on a large farm full of beautiful animals that include goats, chickens, pigs, emus, sheep, cows, alpacas, and zebus. Not only that, but we also showed the students how to pet, feed, and care for these farm animals.

It was one thing for them to observe us, but it was another when they *did* something impactful for the animal. To watch these children have these incredible lightbulb moments truly put a tear in my eye.

Some of them said they never had the opportunity to pet animals like they did that day. To summarize what a group of students said when they got on the bus to say goodbye to us, "this was the *best* day *ever*! We can't wait to become veterinarians!"

Dr Mankowski and I looked at each other, high-fived, thanked the hospital team for being so welcoming to these students, and drove home knowing we affected, inspired, and motivated 80 students to consider entering our glorious field of veterinary medicine.

So, you see, giving thanks is giving back. Give back to a profession that so desperately needs to inspire future veterinary professionals. Whether it be career day in an elementary school, Zoom visits in classrooms, or just an hour of job shadowing, you will truly affect the lives of children. Have a phone call with them. Talk to them. Make them feel welcome to the supper table of veterinary medicine.

Our profession is unique because it is truly a calling from within. Most of us knew we wanted to become a veterinarian when we were young. I was 6 years old when I knew I wanted to become a veterinarian and never veered off that challenging path.

I invite you to keep your doors, your hearts, and your minds open to students of any age that inquire about the field of veterinary medicine. Every profession has its flaws and ours is no different. However, it is not our duty to discourage, demotivate, or deny anyone from their calling. It is our mission to encourage, motivate, and allow them to feel inspired by us. Remember, we are superheroes to them. Can you imagine a superhero not signing an autograph to a child that looks up to them?

During this time of thanksgiving, please give thanks to a profession that has welcomed you into it when you were young.

Pay it forward.

Let our lives be full of both thanks and giving.

—Adam Christman, DVM, MBA
Chief Veterinary Officer

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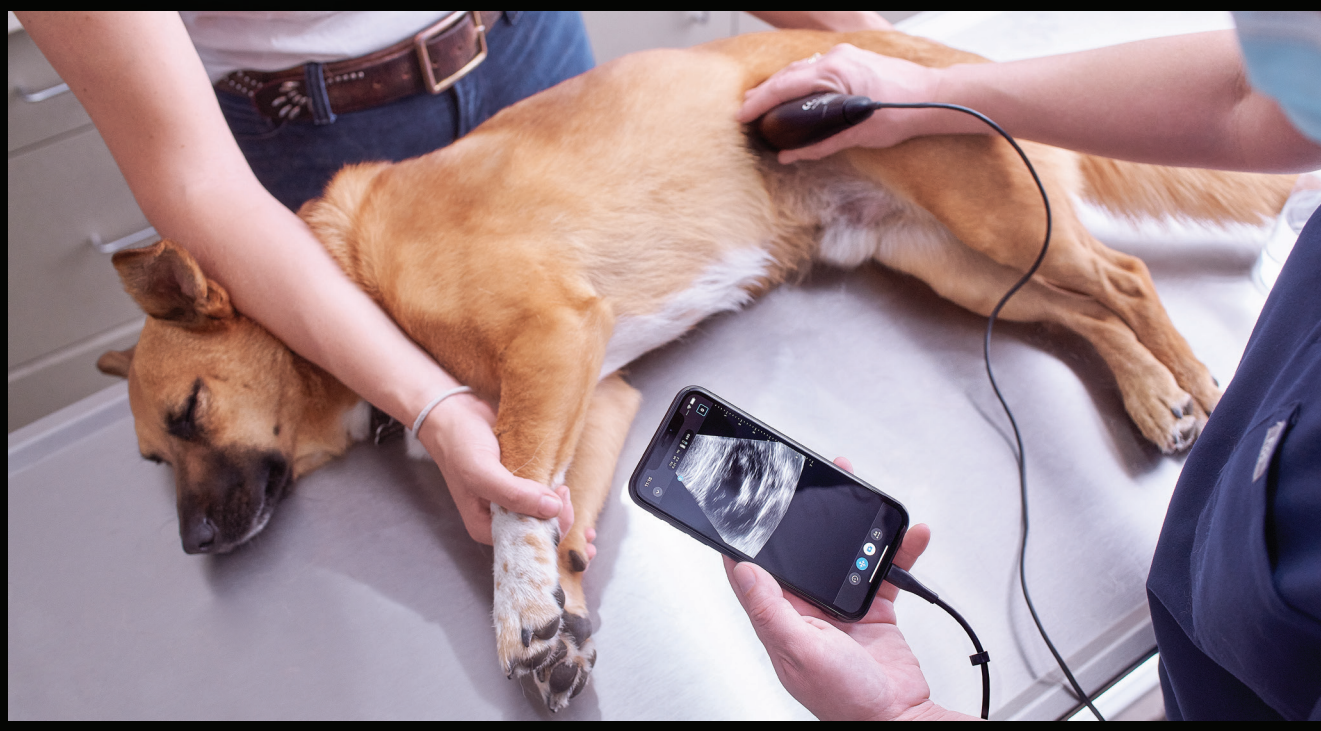

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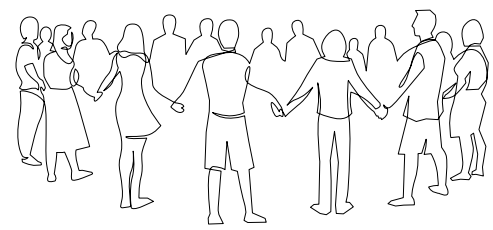

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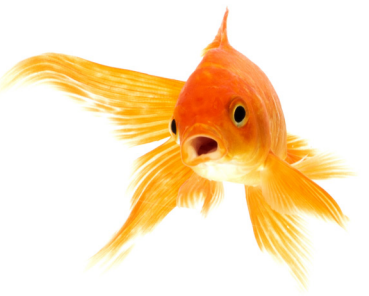

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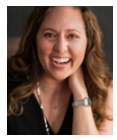

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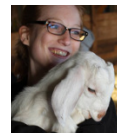

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Life as a Black veterinary student

Being Black in an (almost) all-White profession isn't easy, but it does offer an opportunity to be a catalyst for change.

By Simone O. Spence

Initially, my journey from Paterson, New Jersey, to the Royal Veterinary College in London, England, seemed like the hardest task of my life. Just like all my peers, I worked hard to get good grades, took the Graduate Record Examinations, spent a fortune on applications, and underwent a whirlwind of interviews. I felt overwhelmed by the entire process, as I am sure others can relate, and had insecure moments where self-doubt crept in. Some of that fear was centered on the usual questions of, "Are my grades good enough?" and "Do I have enough experience?"

Simone O. Spence

However, another fear set in that many of my peers would never have to worry about: Am I prepared to undergo the unique challenges I will face as a minority in this profession? The subject of diversity in veterinary medicine has been discussed time and time again. African Americans constitute a tiny percentage of the profession. Being accepted into veterinary school became a terrifying accomplishment for me because I would soon have to walk the path of the few.

Now that I am in my second year of veterinary school, I can see the road that led me here was not nearly as difficult as I thought, and it was only the beginning of my adventure. Moving to a new country a year ago was exciting but terrifying, especially with being thousands of miles away from my family and friends. In addition, my first year of veterinary school was packed full of general, scientific, and biological information that we must learn to set a foundation for our future clinical years. My classmates and I are also dealing with the unique stress that COVID-19 presents to our learning and lack of social interactions.

With the demands of keeping on top of my coursework, the stress of being away from my family, and restrictions due to COVID-19, I need to remind myself why I am here to keep the self-doubt at bay. Creating uncertainty over noncorrelating factors, such as our intellectual ability and the color of our skin, is an unfortunate human error, but I recognize the unique opportunity that I have to be an example for young, prospective Black veterinary students. Although my fear of being one of the few Black students in my veterinary classes brought on many insecurities, I now see it as a gift to share my experience and journey with others.

It can be scary trying to achieve what seems impossible when there is a lack of familiarity, and the absence of other students of color around you. Before moving to London, I had hopes that this city's diverse atmosphere might also be displayed within my veterinary program. Unfortunately, this is not the case. I have come to terms that this is the current reality of our profession, but change must be made. I take pride in the fact that though I may be in the minority, I am a trailblazer. I've become my own self-supporter, pushing myself through all the difficulties of being a second-year veterinary student. I'm excited to help pave the way for the Black students and veterinarians yet to come. dvm360®

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- In clinical studies, dogs treated with VETMEDIN lived almost twice as long from the start of treatment,[1] and required less intensification of therapy to maintain quality of life, than those treated with an ACE inhibitor[2]
- In the US, VETMEDIN has supported over 1 million dogs[3]
- Recommended by the ACVIM as part of standard treatment for dogs with congestive heart failure[4]

Studies show using VETMEDIN from the start gives dogs with CHF the opportunity for better days and longer lives.[5]

IMPORTANT SAFETY INFORMATION: VETMEDIN is for use in dogs with clinical evidence of heart failure only. The most common side effects reported in field studies were poor appetite, lethargy, diarrhea, dyspnea, azotemia, weakness, and ataxia. 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. **For more information, please see full prescribing information.**

References: [1] Häggström J, Boswood A, O'Grady M, et al. Effect of pimobendan or benazepril hydrochloride on survival times in dogs with congestive heart failure caused by naturally occurring myxomatous mitral valve disease: the QUEST study. *J Vet Intern Med.* 2008;22(5):1124–1135. [2] Häggström J, Boswood A, O'Grady M, et al. Longitudinal analysis of quality of life, clinical, radiographic, echocardiographic, and laboratory variables in dogs with myxomatous mitral valve disease receiving pimobendan or benazepril: the QUEST study. *J Vet Intern Med.* 2013;27(6):1441–1451. [3] The number of dogs treated with VETMEDIN in the US is estimated by IDEXX Laboratories, Inc. based on transaction data from a representative sample of US veterinary practices. Data on file at IDEXX Laboratories, Inc. Westbrook, Maine USA. [4] Keene BW, Atkins CE, Bonagura JD, Fox PR, Häggström J, Fuentes VL, et al. ACVIM consensus guidelines for the diagnosis and treatment of myxomatous mitral valve disease in dogs. *J Vet Intern Med.* 2019, 33:1127–1140. [5] 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.

TOGETHER, WE ARE MORE THAN MEDICINE.

Boehringer Ingelheim

IVPA praises Michigan Supreme Court ruling pertaining to licensed veterinarians

The ruling provides veterinarians the opportunity to use relevant experts in license defense cases.

The Independent Veterinary Practitioners Association (IVPA)—the first nonprofit association committed to uniting independently owned and locally operated veterinary practices—commended the Michigan Supreme Court's ruling to protect licensed professionals, including veterinarians, stating that all disciplinary actions must be based on expert testimony instead of the reviewing board's assumptions or perceptions.

According to a news release from the organization, this ruling offers veterinarians with active disciplinary cases the chance to use specialized experts to help defend their license for providing animal care.

"This legislation allows veterinarians to present medical evidence to fairly defend themselves when faced with disciplinary action," said Jeffrey Powers, DVM, IVPA member and owner of Veterinary Clinics North with 2 Michigan locations, in the release. "Relying on expert testimony will ensure fair and balanced review of the facts of the case to protect animals, individuals, and health care providers alike," Powers added.

The ruling guarantees the state of Michigan will continuously coincide with the more reasoned and appropriate principles applied throughout many other states nationwide.

"We're grateful to have worked with the IVPA to ensure that licensed professionals in Michigan are afforded fair rulings based on reliable and trustworthy testimony from experts," said Christopher Patterson, partner at Fahey Schultz Burzych Rhodes. "We consider this ruling a win not just for IVPA members, but for the idea that licensing processes should be fair and based on reliable evidence." dvm360®

REFERENCE

Independent Veterinary Practitioners Association commends Michigan Supreme Court ruling as it pertains to licensed veterinarians. News release. Independent Veterinary Practitioners Association. September 20, 2021. Accessed September 21, 2021.

YANIK CHAUVIN/ ADOBE STOCK

FDA's CVM determines TriviumVet's feline HCM program is eligible for expanded conditional approval pathway

The company was granted permission to pursue conditional approval because the CVM recognizes there is no current approved animal drug in the United States for treating feline HCM.

By dvm360® *staff*

TriviumVet, an Ireland-based animal health research and development company, announced that the United States Food and Drug Administration's (FDA) Center for Veterinary Medicine (CVM) has deemed it can pursue the expanded conditional approval pathway for its feline hypertrophic cardiomyopathy (HCM) therapeutic candidate Felycin—a patented, delayed-release rapamycin formulation.

Under the 2018 reauthorization of the FDA's Animal Drug User Fee Act, Congress permitted the FDA a limited expansion of the conditional approval pathway for certain new animal drugs. According to a company release,[1] conditional approval allows drug sponsors to legally market a product after proving that the drug is safe, manufactured in accordance with rigorous standards, and there is a reasonable expectation of effectiveness for use while completing the critical clinical studies.

With TriviumVet granted permission to pursue conditional approval, CVM understands there is no existing approved animal drug in the United States for treating feline HCM—a serious, life-threatening disease that affects about 15% of cats.[2]

"We are very pleased with this positive response from CVM because it establishes a pathway to first conditional and then full approval, potentially expediting access to the drug for millions of at-risk patients. We are excited to share results of our clinical work early next year and intend to submit our final study report to CVM once these results are available," said TriviumVet CEO Louise Grubb, MBS, BSc, in the release.[1]

"At TriviumVet we strive to produce treatments for clinical unmet needs and feline HCM is one of the diseases that must urgently be addressed. The interest in this treatment was highlighted in our December 2020 survey of US veterinarians carried out by Brakke Animal Health where 80% of respondents were likely to prescribe a novel product to their HCM patients," she added.

TriviumVet is conducting clinical research in client-owned cats to analyze Felycin's effectiveness in treating HCM. Previous results from laboratory animal studies and effects demonstrated in human organ transplant patients imply Felycin has the potential to slow or reverse the adverse cardiac remodeling underlying the disease process in HCM, according to the release.[1]

Preclinical investigations have demonstrated repeated dosing with Felycin is well tolerated by healthy cats at multiples of the intended therapeutic dose. dvm360®

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1. FDA's Centre for Veterinary Medicine deems TriviumVet's feline HCM program eligible for expanded conditional approval pathway. News release. TriviumVet. September 16, 2021. Accessed September 17, 2021. www.prnewswire.com/news-releases/fdas-centre-for-veterinary-medicine-deems-triviumvets-feline-hcm-program-eligible-for-expanded-conditional-approval-pathway-301378597.html
2. Client information sheet: feline hypertrophic cardiomyopathy. NC State Veterinary Hospital. Accessed September 17, 2021. https://cvm.ncsu.edu/wp-content/uploads/2020/07/Feline-Hypertrophic-Cardiomyopathy-client-handout-6.29.2020.pdf#:~:text=Feline%20Hypertrophic%20Cardiomyopathy%20(HCM)%20is,pressure%20or%20an%20overactive%20thyroid

Antinol partners with dog rescue advocate Lee Asher

By dvm360® *staff*

Vetz Petz, exclusive distributors of the pet joint health supplement Antinol, announced its partnership with Lee Asher, founder of The Asher House, a 501(c)(3) organization committed to pet rescue. The partnership will spotlight the supplement's transformational effect on dogs while informing pet parents of the significance of maintaining canine joint health and mobility.

"Every day, I see firsthand how the discomfort that comes along with aging and activity impact my dogs' joint health and mobility," said Asher in a news release. "I think all pet owners would benefit from a better understanding of how we can help our dogs continue to be happy, comfortable, and active even as they age. I'm excited to share my dogs' Antinol journey over the coming months."

After the official launch of Antinol within the United States this summer, Vetz Petz is introducing a nationwide initiative, Keeping Happiness in Motion, that urges pet owners to play a role in improving canine quality of life. The initiative will include Asher documenting the before-and-after mobility transformational journey of his 5 rescue dogs as they take Antinol daily over several months.

What's more, Asher's journey will be showcased through a series of videos on his Instagram—@TheAsherHouse—and through Antinol's social channels, @Antinol_USA on Instagram and AntinolUSA on Facebook. Pet parents are also encouraged to participate in the initiative by sharing content demonstrating their pet's journey of "keeping happiness in motion" on social media.

"Our goal is to make everyday moments better for longer through tackling joint and mobility discomfort for pets of all shapes and sizes," said Kevin Cook, Vetz Petz founding partner. "We know Lee shares in this passion and commitment, and we're so excited to share the mobility transformational journeys of Lee's amazing rescue pups with our audience and his, and share our Keeping Happiness in Motion movement with pet owners across the US." dvm360®

REFERENCE

Leading pet joint health supplement Antinol announces partnership with dog rescue advocate Lee Asher, founder of The Asher House. News release. Vetz Petz. September 8, 2021. Accessed September 13, 2021.

AVMA unveils new "Language of Veterinary Care" online tools and breakthrough research

These resources will enhance the personal connections and communication between veterinary professionals and clients, educate pet owners on the need to prioritize wellness visits, and much more.

By dvm360® *staff*

The American Veterinary Medical Association (AVMA) has released "Language of Veterinary Care," a set of comprehensive new online tools to help veterinarians effectively communicate to pet parents about the value of preventive care and the importance of wellness visits.

According to an AVMA news release, these resources emphasize personal connections and improved communication by enabling veterinary professionals to use "language that works" when conversing with clients about why and when they should go to the veterinarian, the various services available, and the costs of care.

"Pet owners want to do what's best for their animals," said José Arce, DVM, president of the AVMA, in the release. "Our goal is to help our members better engage with their clients so pet owners bring their animals in for regular checkups and follow their veterinarians' recommendations. Improved communications can also help alleviate some of the pressures that veterinarians, clinic staffs, and pet owners are experiencing because of the [COVID-19] pandemic."

Although most pet parents get regular veterinary care for their animals and have confidence in their veterinarians, research conducted by AVMA discovered that some owners still do not seek regular veterinary care for their pets; the main reasons cited involved affordability and value perception challenges, according to the release.

To help combat these hurdles, AVMA teamed up with a language strategy firm to investigate how veterinary teams can better connect with clients. The research offered insight from pet owners regarding their preference in communication and what resonates most with them during visits—finding its valued relationships and personalized care. With assistance from Synchrony's products, CareCredit and Pets Best Insurance Services, AVMA is developing a series of content pieces available to members for translating this research into actionable information for veterinary use.

"Language matters and we are excited to support this initiative to help veterinarians communicate the importance of wellness care in ways that resonate with pet owners," said Boo Larsen, general manager of veterinary medicine at Synchrony. "We are thrilled to sponsor this groundbreaking study because of its emphasis on building stronger communication between veterinarians and their clients to support personalized recommendations and trusted relationships. This meshes perfectly with our commitment to strengthening the veterinary/client/patient bond by weaving cost and financial choices into the relationship to keep the focus on the pet's care."

"We are very grateful to Synchrony for helping to bring this far-reaching and thorough research into the spotlight, and for supporting these path-breaking new initiatives that will benefit animals, clients, and veterinarians alike," remarked Arce. dvm360®

REFERENCE

Groundbreaking new Language of Veterinary Care research finds that pet owners value relationship and personalized care when interacting with veterinary teams. News release. American Veterinary Medical Association. September 20, 2021. Accessed September 20, 2021. www.avma.org/news/press-releases/american-veterinary-medical-association-unveils-new-tools-and-resources-help

VHRC launches comprehensive clinical research programs

Findings will help accelerate advances in pet products, medications, therapies, and devices.

By dvm360® *staff*

Veterinary Health Research Centers LLC (VHRC) is introducing clinical research programs with a worldwide network of trial sites to power studies leading to safe, effective pet products, medications, therapies, and devices.

According to a company news release, VHRC Certified Practices offers solutions for pharmaceutical companies, entrepreneurs, and innovators, with the goal being efficient, cost-effective clinical trials.

"Data-driven evidence is critical today in demonstrating efficacy of advanced treatment options before they are approved," said VHRC founder Joel Ehrenzweig in the release. "Using companion animals with naturally occurring ailments like kidney and heart disease, cancer, and obesity makes sense because the response to many treatments is similar in dogs, cats, and individuals."

Comprising general practices and specialty hospitals with advanced equipment and expert skill sets, this exclusive network of veterinary clinical trial sites enables VHRC to deliver results from proof of concept to commercialization, according to the release.

"Each VHRC Certified Practice site receives advanced GCP/EDC and technology-specific training as part of a rigorous site validation process prior to the initiation of each project," said Rob Hunter, PhD, chief science and regulatory officer at VHRC, in the release. "VHRC Certified Practices include acclaimed regional referral centers and niche specialists that can focus on fulfilling often esoteric patient enrollment requirements."

Ongoing trials at VHRC for B-Cure Lasers (www.bcurelaservet.com) are focused on treating knee, spine, and hip joint pain as well as gingivitis, particularly in senior dogs and cats. dvm360®

REFERENCE

Veterinary Health Research Centers launches clinical research programs for animal health, pharma and medical device companies. News release. Veterinary Health Research Centers. September 23, 2021. Accessed September 29, 2021. https://www.biospace.com/article/veterinary-health-research-centers-launches-clinical-research-programs-for-animal-health-pharma-and-medical-device-companies/

AAFCO urges additional research on animal food hemp products

Using these products before extensive studies and legal approval processes can negatively affect ranchers' access to markets, animal health, and ultimately human health.

By dvm360® *staff*

The Association of American Feed Control Officials (AAFCO) is calling for action on hemp and its by-products—including whole hemp plants, hemp seed oil, cannabidiol, and other cannabinoids—in livestock feed and pet food. AAFCO, which provides ingredient guidance for feed regulators, is urging the hemp and feed industries to continue studying the safety and efficacy of these products as nutritional ingredients.

AAFCO can use those findings to formally define the ingredients and offer standards for pet and livestock feed, the organization said in a news release. "We understand the hemp industry is eager to enter the animal food market, but we are concerned that not enough research has been completed on these products," said Susan M. Hays, AAFCO executive director, in the release. "That's why we are urging the hemp industry to conduct appropriate research and submit their results to us for review as a normal step in our ingredient approval process."

Although the 2018 United States Farm Bill legalized growing hemp, any feed ingredient—including hemp products—is under the jurisdiction of the United States Food and Drug Administration (FDA). Because research is required to identify the levels of Δ-9-tetrahydrocannabinol (THC) and other cannabinoids in hemp and the effects on intended uses and species, it is not known whether hemp products are safe for animal consumption.

"Allowing hemp by-products to be used for animal nutrition before rigorous research and legal approval processes have been completed could have adverse impacts on ranchers' access to markets, on animal health, and ultimately on human health when hemp-fed animal products enter the human food chain," Hays said.

Supporters of hemp in feed advocate passing state legislation to enable in-state use of hemp as a feed ingredient, but there is no national approval for such a move based on a comprehensive scientific review of its safety.

According to the release, AAFCO is concerned that welcoming hemp products to market through varying state laws, without research and review, will result in inconsistent manufacturing methods, unsupported marketing claims, and restriction of interstate and international markets.

The organization urges lawmakers to collaborate with stakeholders including the FDA, United States Department of Agriculture, the National Association of State Departments of Agriculture, livestock and dairy associations, consumer advocacy groups, and AAFCO itself within the review and approval process for hemp and its by-products concerning animal nutrition. AAFCO said it can guide hemp producers through the submission and review process. dvm360®

REFERENCE

AAFCO calls for hemp industry action on hemp products in animal food. News release. Association of American Feed Control. September 20, 2021. Accessed September 21, 2021. www.prnewswire.com/news-releases/aafco-calls-for-hemp-industry-action-on-hemp-products-in-animal-food-301380249.html

Butterfly Network and AVG collaborate to provide breakthrough in ultrasonography to UrgentVet clinics

By dvm360® *staff*

Butterfly Network, Inc, and American Veterinary Group (AVG) have teamed up to equip all UrgentVet clinics with the Butterfly iQ Vet—a single-probe, whole-body ultrasound system designed for all animals.

According to a company news release, UrgentVet is owned and operated by AVG and is the first dedicated urgent care practice for pets. The partnership with Butterfly Network was finalized after an iQ Vet was used in UrgentVet clinics.

"With COVID-19–related restrictions in our clinics, the volume of work has been felt by our team. We are a tech-focused, forward-thinking organization striving to continue to offer care in the way we always envisioned it—fast and expertly done," said UrgentVet founder Jim Dobies, DVM, in the release.

"Prior to using the Butterfly iQ Vet, we were using an ultrasound [system] that was more expensive and not as portable. The Butterfly technology was perfectly suited to what we do. In an acute setting, the Butterfly iQ Vet is fantastic. It can go anywhere," Dobies said.

The Butterfly iQ Vet is user-friendly for staff new to ultrasonography and helps with scans done by UrgentVet practice members. Additionally, Dobie said the real-time diagnostics within the examination room have helped demonstrate to owners what their pets are experiencing.

In addition, iQ Vet has been used by veterinarians to offer diagnostic insights and better care to all species. According to the release, patented Ultrasound-on-Chip technology lets Butterfly iQ Vet leverage the power of a semiconductor chip, pairing this with intuitive software accessible on a compatible mobile device or tablet (UrgentVet uses it most frequently with an iPad).

"Veterinary urgent care clinics are busier than ever. This is an important time to offer our powerful diagnostic tool, iQ Vet, that allows for fast and easy assessment," said Darius Shahida, Butterfly Network's chief strategy officer and chief business development officer.

"The iQ Vet makes [ultrasonography] as convenient as using a stethoscope, which is critically important for urgent care clinics. We are proud to support UrgentVet as the organization grows and expands," he added. dvm360®

REFERENCE

Butterfly Network, American Veterinary Group collaborate to equip all UrgentVet clinics with point-of-care ultrasound. News release. Butterfly Network, Inc. September 23, 2021. Accessed September 27, 2021.

Morris Animal Foundation announces new equine, animal welfare advisory members

By dvm360® *staff*

Morris Animal Foundation, a nonprofit organization in Denver, Colorado, funding scientific research to advance animal health and well-being, has announced 4 new members of its equine scientific advisory board and 1 of its animal welfare advisory board.

"We are honored to welcome our new advisory board members and appreciate the depth of international experience they bring, particularly in this year's equine research focus area of colic," said Janet Patterson-Kane, PhD, BVSc, chief scientific officer at Morris Animal Foundation, in a news release.

Individuals on the equine scientific advisory board are volunteer experts in their industry who help ensure fair, unbiased funding decisions to improve horse health worldwide. Those on the animal welfare advisory board review approved studies to guarantee they advance health while protecting animal welfare.

Joining the equine scientific advisory board team are:

Debra Archer, PhD, BVM&S, CertESTS, DipECVS, MRCVS: Archer is a professor of equine surgery at the University of Liverpool's Philip Leverhulme Equine Hospital in the United Kingdom and is the University of Liverpool's lead for veterinary clinical research. Her clinical interests include all areas of equine surgery and emergency care, with special interest in colic. Archer is lead investigator of the International Colic Surgery Audit, involving multiple clinics worldwide, and a large, multicenter clinical trial (CHARIOT lidocaine trial).

Sarah Freeman, PhD, BVetMed CertVA, CertVR, CertES (Soft Tissue), DipECVS MRCVS Associate: Freeman is a professor of veterinary surgery at the University of Nottingham in the United Kingdom. Freeman's research interests include wound management, end-of-life decision-making, and clinical disease in horses, specifically colic and musculoskeletal disease. She leads the Nottingham Equine Colic Project that assists owners and veterinarians with early recognition and assessment of equine colic.

Pat Harris, PhD, MA, VetMB, DipECVCN, MRCVS: Harris is a specialist in veterinary clinical and comparative nutrition and serves as director of science for MARS Horsecare, head of the WALTHAM Equine Studies Group at the Waltham Petcare Science Institute and scientific adviser for MARS EQUESTRIAN Sponsorship. She collaborates with experts on equine health and nutrition research at institutes and universities worldwide.

Mathijs Theelen, DVM, BKO, ECEIM: Theelen is a specialist in equine internal medicine and head of the foal intensive care unit at Utrecht University's Equine Hospital in the Netherlands. His clinical interests include antimicrobial susceptibility and resistance in horses and foals, and the role of the gut microbiome in overall equine health.

Joining the animal welfare advisory board team is:

Kat Littlewood, BVSc (Dist), PGDipVCSc (Dist), AFHEA, MANZCVS (Animal Welfare): Littlewood is a veterinarian in the Animal Welfare Science and Bioethics Centre at Massey University in New Zealand. Littlewood's research interests include animal welfare and behavior, veterinary ethics, human behavior change for animals, and end-of-life decision-making. dvm360®

REFERENCE

Morris Animal Foundation welcomes new equine and animal welfare advisory members. News release. Morris Animal Foundation. September 20, 2021. Accessed September 29, 2021. www.morrisanimalfoundation.org/article/new-animal-welfare-and-equine-advisory-board-members

Elura™
(capromorelin oral solution)

Elura helps cats with CKD maintain or gain weight to keep them

feline fabulous

It can be hard to watch cats with chronic kidney disease (CKD) waste away. Prescribe Elura at the first sign of weight loss in your feline CKD patients.

- MORE THAN 8/10 CATS GAINED WEIGHT*[1]
- UNIQUE MOA MIMICS THE NATURALLY OCCURRING HORMONE GHRELIN
- SAFE TO USE DAILY AND APPROVED FOR LONG-TERM USE
- ORAL SOLUTION WITH LOW DOSING VOLUME

INDICATION

For the management of weight loss in cats with chronic kidney disease.

IMPORTANT SAFETY INFORMATION

For oral use in cats only. Do not use in cats that have a hypersensitivity to capromorelin, or in cats with hypersomatotropism (acromegaly). Elura may increase serum glucose for several hours after dosing; use in cats with current or historical diabetes mellitus has not been evaluated and may not be appropriate. Use with caution in cats that may have cardiac disease, severe dehydration, or hepatic dysfunction. Elura has not been evaluated in cats younger than 5 months of age, or in breeding, pregnant or lactating cats. The most common adverse reactions included vomiting, hypersalivation, inappetence, behavior change and lethargy. Please see accompanying brief summary for product safety information.

***Compared to 4/10 control cats. A multi-center, placebo-controlled, randomized and masked field study including 176 cats with CKD and at least 5% unintended loss of body weight (as compared to the highest weight in the medical records for the 3 years preceding enrollment). Study period was 56 days (Day 0 – Day 55). Primary endpoint was percent change in weight from Day 0 to Day 55.**
CKD, chronic kidney disease.

1. Elura Freedom of Information Summary. NADA 141-536. 2020.

PM-US-21-0733

Elanco™

Dechra acquires veterinary marketing and distribution rights for equine ProVet APC

The global specialist in veterinary pharmaceuticals will have an exclusive license for equine ProVet APC and ProVet BMC.

By dvm360® *staff*

Dechra Veterinary Products recently announced its acquisition of an exclusive license from Hassinger Biomedical for equine ProVet APC (Autologous Platelet Concentrate) and ProVet BMC (Bone Marrow Concentrate).

"ProVet APC has become the most highly sought-after regenerative system for equine athletes," said Amy Hassinger, CEO of Hassinger Biomedical, in a news release. "We believe Dechra is especially poised through its experience in the veterinary sector to meet the growing global demand by veterinarians and their clients for the ProVet APC and BMC Regenerative Therapy System."

According to the release, the 2 patented medical devices concentrate platelets or bone marrow in 90 seconds with a processing time of 2.5 minutes. The technology found within ProVet APC has been found to consistently deliver 6 to 8 mL of a 7.8 higher concentration of platelet-rich plasma and can have a healing concentrate obtained from 54 mL of whole blood in the 60 mL system.

"The medical industry has long recognized that harnessing the growth factors found in platelets positively enhances healing results and reduces recovery time in soft tissue injuries," said Mike Eldred, president of Dechra North America, in the release.

"These 2 products will be great additions to our equine product line and further strengthen our market position in veterinary regenerative medicine," he continued.

Additionally, the acquisition of equine ProVet APC products will further accompany Dechra's Orthokine Vet IRAP joint therapy and offer veterinarians a comprehensive tool for their regenerative medicine needs. dvm360®

REFERENCE

Dechra acquires exclusive license from Hassinger Biomedical for equine ProVet APC. News release. Dechra Veterinary Products. September 22, 2021. Accessed September 27, 2021.

dvm360® welcomes 11 new SAP partners globally

This group includes the company's first international inductees, exemplifying its dedication to veterinary medicine globally.

By dvm360® *staff*

dvm360® welcomed 11 new partners to its Strategic Alliance Partnership (SAP) program. The group is the organization's first to include international inductees, demonstrating the company's commitment to the global industry of veterinary medicine.

According to a company news release, the evolving SAP program features organizations dedicated to offering expert insights and research on animal health, pet care products, real-time regulation updates for veterinary clinics, and veterinary medicine news.

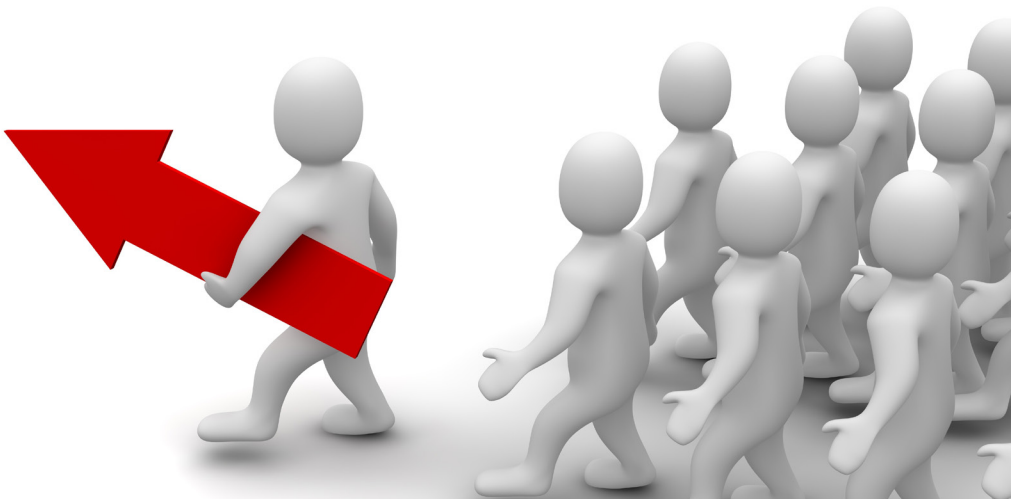
The new members reflect the company's core values of advancing veterinary medicine worldwide. They are: Ask Jan for Help, LLC; Bond Vet; Companion Animal Euthanasia Training Academy; Companion Consultancy; FirstVet; MedVet; Mount Laurel Animal Hospital; NorthStar VETS; Pawsibilities Vet Med; The Veterinary Cooperative; and TEEF for Life.

"We are thrilled to welcome the first international group of strategic alliance partners, who will help us continue to raise the standards of animal care," said Mike Hennessy Jr, president and CEO of MJH Life Sciences™, parent company of dvm360®. "We are looking forward to collaborating on initiatives that give back to the animal care community."

The SAP program offers global reach and visibility to partnering advocacy organizations, medical associations, and veterinary schools. Additionally, the program enables dvm360® to create cooperation and open exchange of information between trusted veterinary practitioners to support the profession. The company works with its affiliates to cross-collaborate and spotlight diverse veterinary communities. dvm360®

REFERENCE

dvm360® welcomes eleven new global Strategic Alliance Partnership (SAP) members. News release. dvm360®. October 1, 2021. Accessed October 4, 2021. https://www.prnewswire.com/news-releases/dvm360-welcomes-eleven-new-global-strategic-alliance-partnership-sap-members-301389388.html?tc=eml_cleartime



VetX International discovers link between leadership actions and practice culture

The United Kingdom–based veterinary consultancy company collected data from 2 veterinary conferences to demonstrate a connection between how veterinary practice leaders behave and the climate in their clinics.

By dvm360® *staff*

VetX International—a United Kingdom–based veterinary consultancy, community, and education platform—conducted research that uncovered a direct correlation between leadership and practice culture. The study collected data from veterinary leaders including practice owners and managers during a dvm360® Fetch conference and the Society of Practising Veterinary Surgeons-Veterinary Management Group Congress 2020.

According to a VetX International news release, the data explored veterinary leaders' ability to successfully address toxic behaviors, implement core values, hire and retain staff, and manage their own time, along with how these variables impact overall practice culture. Additionally, the study strived to establish steps leaders can take to streamline practice operations amid an international industry shortage.

The study results reported by researchers Dave Nicol, BVMS, Cert Mgmt MRCVS, founder of VetX International; and Dermot McInerney, BVSM, BVSc, head of veterinary partnerships at VetX International, indicated 4 actions that can have a heavy influence on the quality of workplace culture:

- Implementing a clear vision in practice
- Addressing and resolving inappropriate staff behavior
- Effectively managing leaders' time to be able to perform nonclinical activities
- Recruiting clinical talent effectively

Additionally, 3 out of 4 respondents reported struggling with finding time to work on leadership priorities, while 40% had difficulty with managing and addressing toxic behaviors and 65.2% found attracting and retaining new talent to be challenging.[1]

"We've long suspected that time-poor leaders were causing untold long-term harm to their practice performance by neglecting essential leadership activities in favor of more urgent clinical ones," Nicol said in the release. "The implications for such choices are now clear: good leadership simply cannot be left to chance. We're really proud of the fact that we've been able to show not just that these factors matter, but also show what things in particular leaders should be doing with their time to help grow healthy cultures that support practice objectives."

Overall, Nichol and McInerney hope the findings help leaders discover new methods for curtailing clinical work, forging and communicating an impactful vision, hiring and retaining the right individuals to match the clinic's vision, and dealing with toxic behaviors that can degrade workplace culture. dvm360®

REFERENCE

1. Study reveals definitive link between leadership actions & vet practice culture. News release. Basepaws. September 28, 2021. Accessed October 5, 2021.

Embark Veterinary releases first-ever purebred dog DNA kit

This comprehensive kit employs individualized health insights and information that can ultimately help extend dogs' lives by 3 years.

By dvm360® *staff*

Embark Veterinary, Inc has released its breakthrough DNA test for purebred dogs. Forged by veterinarians and geneticists, the kit provides purebred owners with unique, actionable health information to help pinpoint diagnostic, monitoring, and treatment plans that can easily be shared with a veterinarian.

According to a company news release, Embark discovered that over 50% of tested dogs are either are at risk for—or carriers of—genetic health complications, and that more than 1 in 3 owners have documented updating their dog's care after receiving test results.

"Until now, there has not been a dog DNA product on the market specifically designed for purebred dogs, but every dog owner deserves the most accurate and detailed data on their dog's health," said Ryan Boyko, Embark CEO and cofounder. "Not only will this test better inform owners, veterinarians, and breeders, but it will accelerate our health discovery engine and improve insights into breed-specific health conditions and traits, fueling discoveries that will help extend dogs' lives by 3 years within the decade."

Embark says this is the only dog DNA test available that gives owners a critical canine health metric: Embark's Genetic Diversity Score. According to the release, this score analyzes the stretches of DNA in a dog's genome to compute a precise measure of inbreeding, offering owners the most predictive score for identifying future health and longevity.

"We see that highly genetically diverse dogs live on average 2 to 3 years longer than dogs with low genetic diversity and have fewer health problems over their lifetime," said Adam Boyko, Embark chief science officer and cofounder. "Although owners can't change their dog's genetics, they can be vigilant about their dog's care and exercise knowing their dog's unique health risks."

The DNA test is available for $199 on Embark's website or at Amazon (a launch offer code—FALL30—can be used on Embark's website to save $50). dvm360®

REFERENCE

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Cincinnati Zoo collaborates with scientists to assess validity of remote infrared thermography

The partnership will explore the benefits of using remote infrared thermography for a variety of threatened or endangered species.

By dvm360® *staff*

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The Center for Conservation and Research of Endangered Wildlife (CREW) at Cincinnati Zoo & Botanical Garden announced it will be cooperating with scientists from Woods Hole Oceanographic Institution (WHIO)—a private nonprofit research and higher education facility dedicated to studying marine science and engineering—to prove the benefits of using remote infrared thermography (IRT) when performing noninvasive checkups.

"We are using thermal imaging to collect body temperature and heart/respiration rates on a variety of animals, including birds, reptiles, and mammals," said Erin Curry, PhD, a reproductive physiologist at CREW, in an organizational release. "At the same time, we are using traditional methods to obtain vital signs and comparing the results."

Although IRT has been used and has proved to be accurate when measuring heart rate in humans and large domestic animals, this will be the first time the technology is used to help threatened or endangered species. The team's goal is to gather a minimum of 50 different animal species at Cincinnati Zoo, accounting for variables such as fur length, head size, and the presence of fat and blubber, to validate the technology. At present the results are optimistic, with heart rates authenticated in a gorilla, bongo, sloth, and tenrec.

"Once we validate it, we can use it in zoos for noninvasive health checks," said Caroline Rzucidlo, MS, a PhD student in the Massachusetts Institute of Technology-WHIO Joint Program. "We also hope to attach it to a drone and fly it over wild populations of animals to get some basic health metrics without having to disturb them. We can compare those metrics over time to monitor animals' responses to environmental changes."

An additional goal for the team is to also use IRT for reproductive monitoring. According to the release, pregnancy diagnosis, estrus detection, and changes in testicular thermal signatures may shed some light on the reproductive status, improve animal management, and deliver more accurate timing of semen collection procedures and artificial insemination.

"Projects like this reinforce the Cincinnati Zoo & Botanical Garden's reputation as a global leader in innovative conservation research," said Thane Maynard, Cincinnati Zoo director. "I hope this technology will eventually be used to improve the health of animal populations all over the world, in zoos and in the wild!" dvm360®

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Zoetis adds digital cytology testing to Vetscan Imagyst

By dvm360® *staff*

Zoetis recently announced the addition of digital cytology testing to Vetscan Imagyst—its multipurpose diagnostics technology platform launched in September 2020. With this innovation, Vetscan Imagyst now employs a network of expert remote pathologists along with artificial intelligence (AI) technology for fecal testing.

According to a company news release, Zoetis remains dedicated to developing additional innovative applications for Vetscan Imagyst so veterinarians can offer enhanced patient care. "Every veterinarian knows the importance of easy and rapid access to specialists when diagnosing and treating our patients," said Richard E. Goldstein, DVM, DACVIM (SAIM), DECVIM-CA, vice president and chief medical officer of global diagnostics at Zoetis. "Now with the new digital cytology solution available from Vetscan Imagyst, we are virtually placing a board-certified, clinical pathologist right 'down the hall' from every veterinarian."

This digital cytology application also grants instant access to expert clinical pathologists for analyzing samples including cells from blood, internal organs, or bodily fluids, allowing fast, minimally invasive diagnosis of cancer, infection, inflammation, and more. With a quick, accurate review of common cytology specimens (eg, fine needle aspirates), Vetscan Imagyst helps veterinarians provide same-day diagnosis and treatment, when necessary.

Vetscan Imagyst offers first-of-its-kind technology with its digital cytology feature, including the following benefits:

- **Provides multiple applications in a single platform** with digital cytology and AI fecal testing results and can add future applications
- **Occupies less space** with a small in-office footprint and a compact scanner that can be easily added to any practice
- **Offers veterinary customers access to expert clinical pathologists** within the Zoetis network as needed
- **Accelerates the future of animal care** by updating the way and the speed with which diagnostic tests can be delivered

Vetscan Imagyst advances the process for clinical pathology review, displaying results within hours. Submissions are prepared in clinic using traditional means; however, they are submitted digitally instead of sending physical slides to a laboratory.

"We are excited to build on the incredible momentum that began with the AI fecal analysis launch," said Lisa Lee, senior vice president and head of global diagnostics at Zoetis. "Vetscan Imagyst has been a significant part of the Zoetis portfolio and continues to evolve to meet diagnostic needs in practices around the world.

"The unique multipurpose technology has added immense value to veterinary clinics, facilitating fast, more accurate results, leading to quicker diagnoses and decisions that ultimately strengthen the bond of trust between veterinarians and their clients," she added.

This addition demonstrates Zoetis' commitment to innovation and persistent drive to "meet the unmet needs of its veterinary customers." Vetscan Imagyst is at the forefront of in-clinic diagnostics and will continue to feature more advanced applications that will benefit veterinarians, their patients, and pet parents. dvm360®

REFERENCE

Zoetis adds digital cytology testing to Vetscan Imagyst, its multi-purpose diagnostics technology platform. News release. Zoetis. October 5, 2021. Accessed October 5, 2021.

Well-being

> Continued from cover page

White discussed what makes up passions and purpose, and she urged attendees to reflect on these to ensure that they are staying true to who they are.

Determining your passions and purpose

Your passions

White defined a passion as a topic or activity that you enjoy, comes naturally to you (ie, a gift or talent), energizes you, and makes time seem to pass quickly when you are engaging in it. She encouraged attendees to dedicate a few minutes to pondering about things that do this for them, noting they don't have to be related to veterinary medicine.

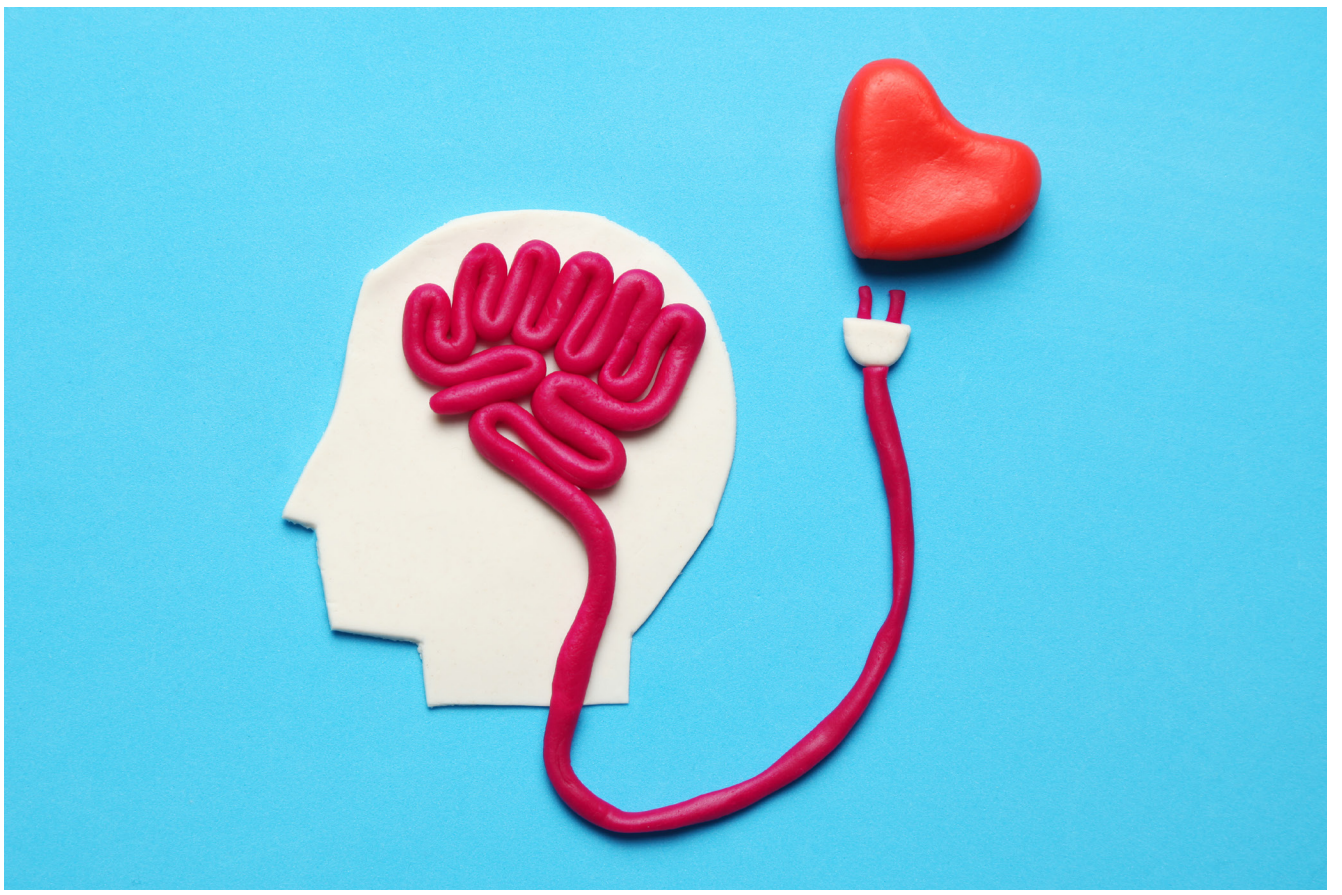
By realizing that others have a need to be valued, seen, heard, and cared for, you can design the life you want to lead and contribute to a rewarding, profitable profession.

—Patricia D. White, DVM, MS, DACVD, CPC

"Your passions can change over time, but it's important to recognize what they are," White said. "Pay attention to these things that light you up, then make a movement toward [them] or find out how to pull [them] into your life and incorporate [them] in what you do."

Your purpose—your "big why"

Next, White said, it's critical to clarify your purpose by answering these 4 questions: What do you love? What are you good at? What does the world need from you? What can you get rewarded for? She then described your purpose as a unique combination of your passions and skills aligned with your values that typically



ANDRII ZASTROZHNOV/ ADOBE STOCK

serves as the solution to a problem faced by a certain group of the population. Although being a veterinarian may be your answer to achieving your purpose, purpose usually involves all aspects of your life.

"When you have clarity on your 'big why,' it means you have clarity on the deepest meaning of what you do—that what you are doing is moving you in the direction of living your passions and how you are getting there is in alignment with your core values," White remarked.

She then emphasized that when these key characteristics of yours all line up, you will be happy, productive, and purposeful.

The benefits of passion and purpose on well-being

White shared that along with promoting your emotional and mental well-being, remaining true to your passions and purpose also promotes your physical well-being. For instance, if you stray from these things, your physical self will display signs of discomfort such as low energy or chronic fatigue, the feeling of being trapped, stomach discomfort or digestive disorders, forgetfulness or inability to concentrate, headaches, anxiety, depression, insomnia, addiction, or aches and pains.

However, if you follow your passions and move toward your purpose, you will experience lightness, freedom, and joy; have abundant energy; sleep better; and have less stress and better health.

"[Achieving] this [involves] work, but when you get [your passions and purpose] clear and start to change your intention and in every moment you get to choose, you can start to shift your life into that positive place," White said, adding, "You have to make a change, but that change comes slowly and it starts in the center with who you are."

Passion and purpose for your personal and professional life

It's critical to engage at the clinic each day from a place of passion and purpose rather than from a place of what you think you should do because of external influences or other beliefs. When you stay in line with your passions you develop a sustainable foundation; sustainability is the first step toward growth, and growth often results in profit, White said. Plus, when your ideas are completed with more purpose and meaning, you have the motivation and emotional energy required to venture outside your comfort zone and get inspired to transition from aspiration to achievement in your personal and professional life.

Takeaways

To live a life of success and be fulfilled as a heart-centered veterinarian in the clinic and beyond, start by pinpointing your passions and purpose, then ensure you incorporate these aspects into your daily life. Not only will this make a major difference in your life, White said, but it will also likely positively affect those around you, including the clients and patients you work with and your loved ones.

"When your goal is driven by passion and purpose, your core values are reflected in everything you do and you can't help but create an experience that adds values to others that you will be rewarded for and is fun," White concluded. dvm360®

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Dermatology

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deeper regions of the epidermis and hair follicle epithelium, increase in number, and enhance inflammation.

Classical clinical lesions of superficial pyoderma include papules and pustules that may eventually progress to alopecia, epidermal collarettes, scales, and crusts. Often the skin is erythematous and pruritic. Chronic cases may demonstrate lichenification, hyperpigmentation, and scarring alopecia from long-standing inflammation and infection.[2] Cats may develop even more unique cutaneous reaction patterns and skin lesions—especially when allergic skin disease is present—including miliary dermatitis, eosinophilic plaques, rodent ulcers, and eosinophilic granulomas.[5]

Identifying and addressing the primary disease is paramount in achieving complete, permanent resolution of the superficial pyoderma. Therefore, treatment is multifactorial and aimed at addressing the primary disease, reducing skin inflammation, and treating the infection directly. Current guidelines for the treatment of superficial pyoderma in dogs recommend the use of topical antimicrobials as sole therapy whenever possible; however, overuse of systemic antibiotics remains common.[2,13-16]

Topical therapy has many benefits including direct antimicrobial effects without use of an antibiotic, reduction in antibiotic-resistant bacterial populations, restoration of the normal skin barrier, enhancement of skin hydration, physical removal of keratinous debris, and removal of offending allergens from the haircoat.[2,14] However, topical therapy is met with challenges that impede clinical application. Adherence is the biggest concern when recommending topical therapy to pet owners. Frequent bathing or application of medicated solutions to the skin can be difficult when busy owner lifestyles combine with a nonadherent patient. Skin inflammation can be painful and animals may be resistant to topical therapy. Cats are fastidious groomers and may lick away a medicated topical therapy before it can achieve appropriate contact time. Additionally, some topical agents can cause oral erosions and ulcerations or even gastrointestinal disturbance when groomed off. For these reasons, systemic antibiotics continue to be a common prescribing practice for superficial pyoderma.

All antibiotic use, despite duration or frequency, contributes to the development of antibiotic-resistant bacterial populations on the animal and in the environment.[17-19] From that very first dose, bacteria are constantly evolving to implement inherent and acquired resistance mechanisms necessary for survival. One well-recognized mechanism is oxacillin resistance through the *mecA* gene, which produces a penicillin-binding protein receptor with poor affinity for β-lactam antibiotics.[2,14,15,20-23] Even more concerning than these oxacillin-resistant strains are those that develop multidrug resistance, which is defined as resistance to 3 or more antibiotic drug classes. This may happen over time with repeated antibiotic exposure or after a single dose of certain antibiotics such as fluorinated quinolones.[2,20,23-25] The continued emergence of antibiotic-resistant bacteria inhibits the successful treatment of bacterial infections in pets and humans. As veterinarians consider how their antibiotic use contributes to this growing pandemic, they must look for alternative, safe, effective, affordable, and convenient antibacterial treatment modalities.

Phovia as a solution

Investigation into the photobiological effects of light therapy has been ongoing for the past 50 years. Photobiomodulation (PBM) therapy is a type of light treatment that uses visible or near infrared light to promote therapeutic benefits including induction of tissue healing and regeneration and inhibition of biological responses that induce pain or inflammation. The treatment distance, wavelength, fluence, pulse parameters, spot size, and irradiation time influence the effects of light energy on tissue. Visible light with wavelengths ranging from 400 to 700 nm can stimulate positive photobiomodulatory effects that promote wound healing, reduce inflammation and pain, modulate stem cell populations, and reduce bacterial contamination of wounds.[26,27]

Once visible light enters the skin, it is absorbed by the cells and initiates chemical changes dependent on the wavelength (or color) of light and the chromophore within the skin.[27] Within each cell, membrane-bound organelles called mitochondria contain chromophores that absorb the light energy and begin making energy (adenosine triphosphate; ATP) via activation of cytochrome c oxidase. Outcomes of the mitochondrial respiratory pathway activation include stimulation of secondary messenger pathways, production of transcription factors and growth factors, and increased ATP production. However, excessive light energy exposure will overstimulate mitochondrial respiration and cause expenditure of all ATP reserves, which creates oxidative stress resulting in damaging elevations of nitric oxide, production of harmful free radicals, and activation of cytotoxic mitochondrial-signaling pathways leading to apoptosis.[27,28] This is why creating PBM therapy protocols is important for targeting the beneficial effects while avoiding unintended harm.

Specific benefits of light energy within the visible light spectrum can be broken down into each color of light. Blue light (400-500 nm) has a lower penetration depth and primarily interacts with keratinocytes, reduces bacterial adhesion and growth, and increases intracellular calcium and osteoblast differentiation.[29-31] Green light (495-570 nm) affects the superficial tissue and alters melanogenesis, reduces hyperpigmentation of the skin, and reduces tissue swelling.[29,30] Red light (600-750 nm) penetrates deeper into the dermis and subcutis where it acts on cellular mitochondria to reduce inflammation and promote collagen synthesis through fibroblast proliferation and production of transforming growth factor-β, fibroblast growth factor, platelet derived growth factor, and others.[26-28,32,33] Red light has proliferative effects on mesenchymal stem cells and induces proliferation of epithelial colony forming units important for tissue repair and regeneration.[34,35]

Phovia, sold by Vetoquinol, is a form of fluorescent PBM therapy utilizing a blue light emitting diode (LED lamp, 400-460 nm) and topical photoconverter gel that emits low-energy fluorescent light (510-600 nm) when illuminated by the LED lamp.[36,37] This interaction results in the formation of multiple wavelengths of visible light, each with a unique depth of penetration and effect on the tissue as described above. Application is fast and simple. The affected skin may be clipped free of hair and cellular debris removed with gentle cleaning. The skin is allowed to dry before application of the photoconverter gel. Just prior to application, 1 ampule of fluorescence chromophore gel is added to 1 container of photoconverter carrier gel and mixed thoroughly. The mixture is applied in a 2-mm layer to the affected skin, and the LED lamp is held 5 cm above the lesion and used to illuminate the area for 2 minutes. The gel is wiped away using saline-soaked gauze. The application can be repeated immediately after 5 to 10 minutes of rest or a second application can occur a few days later. Twice-weekly applications are continued until the wound is healed. Appropriate eyewear is required to protect the operator from the intensely bright light. Application is pain free and stress free for the patient, so sedation is not typically required.

Benefits of Phovia

Phovia shows great promise as a safe, effective therapy for treatment of numerous inflammatory dermatoses in dogs including superficial pyoderma,[38] deep pyoderma,[39] perianal fistula,[40] interdigital dermatitis,[41] calcinosis cutis,[42] acute traumatic wounds,[43] chronic wounds,[37] surgical wounds,[44] and otitis externa.[45] Phovia as a sole therapy speeds time to healing by 36% in canine superficial pyoderma as compared with dogs receiving oral antibiotics alone.[38] In one study, dogs with superficial pyoderma were treated with Phovia alone or with an oral antibiotic alone. Dogs treated twice weekly with Phovia demonstrated complete clinical healing in about 2.3 weeks ($P < .05$) whereas dogs receiving oral antibiotic healed in about 3.75 weeks.[38] Additionally, Phovia speeds time to healing by nearly 50% in deep pyoderma when used with an oral antibiotic (5.7 weeks of treatment) >>

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Dermatology

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compared with dogs receiving only oral antibiotic (11.7 weeks of treatment).[39] The ability of this fluorescent PBM therapy to eliminate or significantly reduce duration of exposure to antibiotics will decrease the spread of antibiotic-resistant bacterial strains within pets and humans.

Phovia's high safety profile makes it a beneficial tool to implement in everyday practice. Training the veterinary team to communicate therapy benefits with clients as well as to perform treatments is fast and easy. Training the veterinary technicians to perform treatments will give the veterinarian time to examine other patients. A single back-to-back application takes about 15 minutes, so pet owners can be in and out of the clinic quickly; however, the 2 weekly treatments can be separated by a few days if the veterinarian prefers to evaluate the patient more frequently. Additionally, when used as a sole therapy, clients are not required to administer oral or topical medications at home. This greatly improves treatment adherence and success. Instruct clients to use once-daily smartphone photos to document improvement at home. This can be useful when deciding how many treatments to perform. Most cases of superficial pyoderma will resolve completely by the third treatment.[38] It is a good idea to communicate to clients that 3 to 4 weekly treatments may be required.

Conclusion

Phovia is a versatile, innovative therapeutic approach to numerous types of dermatitis.[36] It is easy to implement in general practice, and is safe, pain free, and affordable. Phovia is highly effective for superficial and deep skin infections and eliminates the need for clients to administer numerous at-home treatments. This greatly improves the pet-owner bond and treatment outcomes by promoting adherence. Phovia accelerates time to wound healing, which decreases duration of antibiotic exposure and may reduce risk of antibiotic resistance development in these cases.[2,13,36-39] Phovia's efficacy against antibiotic-susceptible and antibiotic-resistant bacteria shows promise as an alternative therapeutic approach that promotes the principles of antimicrobial stewardship.[36] If you are interested in purchasing this medical device for your practice, contact your Vetoquinol service representative. dvm360®

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MEDICINE | Nutrition

Easy nutritional math?

It was my understanding that there would be no math

Help conquer your fear of math with these simple and effective formulas that offer a more personalized approach to your patient's nutrition plan.

By Rebecca A. Packer, DVM, MS, DACVIM (Neurology/Neurosurgery)

Are you intimidated by math? Do you find nutrition discussions difficult? During her talk at the Fetch dvm360® conference Robin Saar, RVT, VTS (Nutrition), puts these fears to rest by breaking down the math and presenting strategies for establishing client trust during nutrition discussions.

There are many aspects of veterinary nutrition that affect our patients throughout their lives, including weight loss, weight gain, gestation, lactation, neonates, and starvation cases. Saar presents approaches to all of these situations and breaks down the math into manageable pieces. Applying these formulas will allow you to provide more personalized care to your patients.

Energy requirements

The most common math involved in veterinary nutrition is calculating energy requirements for various situations. The resting energy requirement (RER) is one of the basic calculations used in many applications. The RER is the requirement when the patient is awake but at rest. The formula to calculate RER is BW0.75 x 70, where BW is body weight in kilograms. Although there is a linear formula for RER (RER = 70 + [30 x BW]), Saar does not recommend its use, as it is not accurate for pets less than 2 kg or more than 30 kg. These days most smartphone calculators have the xy button (x to the power of y), where you enter the BW, push the xy button, and then enter 0.75, then multiply that result by 70.

To calculate the maintenance daily requirements (MER) we use the RER multiplied by a factor. In her Fetch presentation, Saar presents a detailed chart for the appropriate factors to use when calculating MER based on whether the patient's activity is light/moderate/active, whether they are obese prone, whether the patient is intact or neutered, whether they need to lose weight or gain weight, and whether the patient is a dog or cat. From this chart, Saar highlights that cats tend to be slightly lower in their requirements than dogs and that neutered pets have lower energy requirements than intact pets.

When calculating the MER for weight loss, the factor is 1.0, effectively equivalent to the RER in these cases. Saar points out that for weight loss calculations, the BW used in the calculations should be the current weight, not the ideal or goal weight. She explains that this is partly because it is difficult to determine what the ideal body weight actually is, and partly because when using a regular diet for weight loss, cutting back calories will also result in reducing nutrients. Using the current weight avoids the risk of providing too few nutrients. This formula should be recalculated using updated weights frequently throughout the process of weight loss, so MER can be readjusted for the current weight. When calculating MER for weight gain, however, you should use the patient's ideal weight (not current weight) so you can ensure that you are meeting adequate nutritional requirements.

In some cases, you may find that you need to calculate daily energy requirements (DER). DER is slightly different from MER. When using MER, the presumption is that energy requirements are similar every day. DER is used when there are specific short-term increases in requirements, such as in the case of sled dogs on long (100-mile) runs, gestation, or lactation, neonatal or pediatric animals, or certain disease states. Think of a DER as a special need for a lot of extra calories "on that day." There are simple formulas for these DER calculating (if you are 16 weeks or younger, DER = RER x 3.0; if 17 weeks or older, DER = RER x 2.0); however, there are much more specific ways to calculate energy requirements for these situations that provide personalized care for each patient given their needs. Saar calls these "Robin's Fun Equations." They are a bit more complicated but can still be broken down into manageable steps, and provide a very tailored, personalized approach to caring for a patient. She presents these situations in detail in her Fetch seminar.

For example, when calculating the DER of a puppy, it is far more accurate to use the following equation: DER = 130 x BWC0.75 x 3.2 (2.71828-0.87[BWC/BWE]—0.1) where BWC is current body weight, BWE is the expected adult body weight, and 2.71828 is a constant than to simply multiply RER by a generic factor. This more complicated formula considers that very young neonates have high energy requirements but lower body weight,

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and then as they grow their energy requirements increase, and then ultimately as they become closer to their adult weight, their energy requirements are lower. The formula for a kitten is very similar, but does have some minor differences: DER = 100 x BWC0.67 x 6.7 (2.71828-0.189[BWC/BWE]—0.66).

Calculating feeding requirements

By considering the current and expected weights, the feeding requirements increase at first with growth and weight gain, then decrease as you approach the expected adult weight.

Gestation is another life stage in which personalized nutrition can help your patients, although there is no need to increase DER until 5 weeks post-breeding. Again, there are minor differences between the formulas for dams (DER = 130 x BW0.75 + [26 x BW]) and queens (DER = 140 x BW0.67). For dams, this formula equates to an increase in MER by about 25% to 60%, and about 40% to 50% in queens. The goal during gestation is to maintain a normal body condition throughout pregnancy.

Lactation is another life stage that requires additional nutrition. Saar describes that lactation is one of the highest energy demands that an animal can have. The calculated DER for lactation is dependent on the number of puppies or kittens nursing. With 1 puppy the DER = 3.0 x RER; however, each additional puppy the factor of increase is an additional 0.5. For lactating queens, the DER is calculating per kitten by weekly intervals. For example, during weeks 1 to 2 of nursing, the DER for the queen is RER + 30% per kitten. In week 3 this factor is 45% per kitten, week 4 is 55% per kitten, week 5 is 65% per kitten, and week 6 is 90% per kitten.

Once these temporary phases are no longer active, energy requirements return to the typical MER formulation.

In terms of disease states, tracking weight loss and calculating the percent loss over time can be useful as an indicator of disease. An unexplained weight loss of 5% of more should result in further scrutiny as to any known factors or perhaps diagnostic tests to determine potential causes. An unexplained weight loss of greater than 10% is concerning. For smaller patients, a small change in body weight can be easily overlooked despite being a significant percentage change, so it is worth reweighing in a month to see if the trend is ongoing or perform further diagnostic testing to evaluate potential causes.

Other disease states that require tailored nutritional plans include patients at a risk for refeeding syndrome. An example of this would be a pet who was lost and then found a week or two later, thin and dehydrated. Blood work at first may appear normal. But if you offer food after a period of starvation, the body's compensatory physiological processes that allow you to survive starvation will respond poorly to the abundance of food, and a day or two later result in electrolyte derangement and clinical signs. Refeeding, after these compensatory processes have been established and ongoing, acts as a trigger for cells to reuptake these electrolytes and glucose that previously had been shifted to the vasculature, and then blood concentrations of these substances get depleted. Although this sounds fairly complex, it is easy to combat these processes with a strict feeding plan. Saar presents a nutritional plan that is successful not only for refeeding after starvation, but also for diarrhea, diet changes, and other similar situations.

Calculating volume

After calculating all these detailed energy requirements for specific patients in very specific situations, we still need to know what amount of food we feed. This can be calculated on a volume basis by using the kcal/cup data from each food, or by weight using the kcal/kg data. For foods where the amount of kcal/cup is not available, Saar shows us how to calculate this by using the metabolizable energy from the ingredients. NFE (nitrogen-free extracts) are carbohydrates. Proteins have nitrogen, so nitrogen-free extracts are carbohydrates. NFE = 100%—% crude protein—% crude fat—% crude fiber—% moisture—% ash. Note that ash is not typically listed but is 2.5% for canned diets and 8% for kibble. Metabolizable energy (ME) = 10([8.5 kcal/g x % crude fat] + [3.5 kcal/g x % crude protein] + [3.5 kcal/g x % crude NFE]). Adding these components gives kcal per kilogram of food. From here owners could then weigh the amount of food given instead of measuring it.

The most common math involved in veterinary nutrition is calculating energy requirements for various situations.

—Robin Saar, RVT, VTS (Nutrition)

Nutrition plan adherence

All of these methods of calculating energy requirements are really interesting nutritionally, and it is great to create such tailored plans for our patients, but how do we encourage owners to follow through? Saar presents several strategies for building trust and compliance:

- Develop trust. Why do some owners trust a 16-year-old pet store employee more than their veterinarian with years of training and a degree behind them? We need to build trust, and Saar reminds us that one of the best ways to develop trust is to share stories. Share client stories related to the recommendations you are making. Talk about other peoples' experiences so they know there were others who did well and had good experiences on the diet you recommend. Then transfer that trust and information seamlessly to the rest of the team. Once you have your discussion and make your recommendation, communicate with the next person in line (the technician, the receptionist checking them out, etc). Clients want to see that we are all a team and organized, and not failing to share info or providing different opinions.
- Understand and listen to our clients. Sure, we know medicine and clients should know that, but in this day and age, they also hear all sorts of extraneous information. It helps to be sure to listen to what owners want. If they talk about kibble vs canned food, be sure to listen. If they talk about needing the convenience of getting food at the grocery store or having difficulty driving to the pet store across town, be sure to listen to these things. Do they talk about preferring homemade or fresh foods vs others? Pay attention to these details and adapt your conversation and recommendations to their needs.
- Give 1 clear recommendation. Saar realizes that we may have several options, but by already listening to owners you should have a clear recommendation that suits their needs and preferences. And reiterate this out loud so they hear it: "I have thought about your pet's needs and the information you told me, and here is what I recommend."
- Treat it like a prescription. "This will improve your pet's health, so this is what we recommend."
- Be open to offer another recommendation depending on the client's needs in case there are other factors that affect your recommendation. dvm360®

Packer is an associate professor of neurology/neurosurgery at Colorado State University College of Veterinary Medicine and Biomedical Sciences in Fort Collins and is board certified in neurology by the American College of Veterinary Internal Medicine. She is active in clinical and didactic training of veterinary students and residents and has developed a comparative neuro-oncology research program at Colorado State University.

NATIONAL PET DIABETES MONTH: Raising awareness and making strides

A general overview of canine and feline diabetes, plus the efforts the Diabetes PetCare Alliance is making to diagnose affected pets and provide clients with the proper resources.

By Julia Burke, Assistant Editor

November marks National Pet Diabetes Month. Consequently, awareness is being raised about this lifelong condition affecting approximately 1 in 300 adult dogs and 1 in 230 cats in the United States[1,2] to ensure veterinarians provide companion animals with proper diagnosis and treatment options so they can live fulfilling lives.

Diabetes keeps pets from producing or utilizing insulin appropriately, which prevents the conversion of food to energy; as a result, extra sugar remains in the blood resulting in lethargy and other health-related complications.[3] Though this disease has no cure, it can be managed with treatment and monitoring so pets can continue to thrive.

Risk factors for diabetes

Although canines and felines can acquire diabetes at any age, diabetic dogs are usually between 4 and 14 years and receive diagnosis from 7 to 10 years, whereas cats with diabetes are typically older than 6 years old.[4] In dogs, diabetes occurs in females twice more than males.[4] Additionally, a study from the *Journal of the American Veterinary Association*[5] revealed that certain canine breeds were at higher risk for developing diabetes including Samoyeds, miniature schnauzers, miniature poodles, and pugs.

Another risk factor is obesity, and aging dogs and cats may develop other diseases (eg, canine hyperadrenocorticism, feline hyperthyroidism, pancreatitis, heart disease, kidney disease; and urinary tract and skin infections) that may lead to diabetes, or that can greatly affect their response to treatment.[4] Additionally, long-term use of medications including corticosteroids is a diabetes risk factor.[4]

Signs of diabetes

Early diagnosis is critical to helping pets live longer, healthier lives. According to the American Veterinary Medical Association,[4] hallmark signs of pet diabetes include the following:

- Excessive thirst and increased urination
- Weight loss (though appetite may increase)
- Decreased appetite
- Cloudy eyes (particularly in dogs)

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- Chronic or recurring infections (eg, skin and urinary tract infections)

Diabetes diagnosis and treatment

The treatment for diabetes is typically straightforward—through a general health examination, a urine test for glucose or ketones, or a blood test that detects glucose levels.[3] However, additional blood tests can rule out other medical conditions, and urine cultures can eliminate the possibility of a urinary tract infection.[4]

Advise pet owners to manage their pets' lifelong diabetes with daily doses of insulin, glucose monitoring, attention to diet and exercise, and regular veterinary checkups. The main goal of monitoring diabetes involves keeping a pet's blood sugar near normal levels and avoiding life-threatening levels that are too high or too low. Each patient is unique, so they will require an individualized treatment plan consisting of a new diet and medications.[4]

Diabetes PetCare Alliance

The Diabetes PetCare Alliance is a partnership between Merck Animal Health, Zoetis, Purina Pro Plan Veterinary Diets, and veterinary professionals nationwide. It has been working since 2014 to inform clients about diabetes and facilitate the screenings for thousands of pets.[6]

Veterinary practices that joined the alliance gained access to downloadable resources for educating clients and raising awareness of the condition, thus increasing the number of pets screened for the disease during National Pet Diabetes Month and beyond. Clients whose pets receive diabetes diagnoses will get a free diabetes management kit which includes[6]:

- One AlphaTRAK 2 Blood Glucose Monitoring System from Zoetis
- One 6-pound bag of Purina Pro Plan Veterinary Diets DM Dietetic Management, Feline Formula for cats, or Purina Pro Plan Veterinary Diets EN Gastroenteric Fiber Balance Dry Formula for dogs
- One 10 mL vial of Vetsulin (porcine insulin zinc suspension) from Merck Animal Health

Although clinic enrollment occurred from September 1, 2021 to October 31, 2021, clients with companion animals receiving diabetes diagnoses are eligible to receive the kits from November 1, 2021, to December 31, 2021.

Takeaways

Although diabetes is a lifelong condition, early detection and proper treatment can allow pets to continue to lead happy lives. The Diabetes PetCare Alliance is helping pet parents across the nation identify diabetes in their beloved companion animals, so they can jumpstart treatment and keep pets healthy. dvm360®

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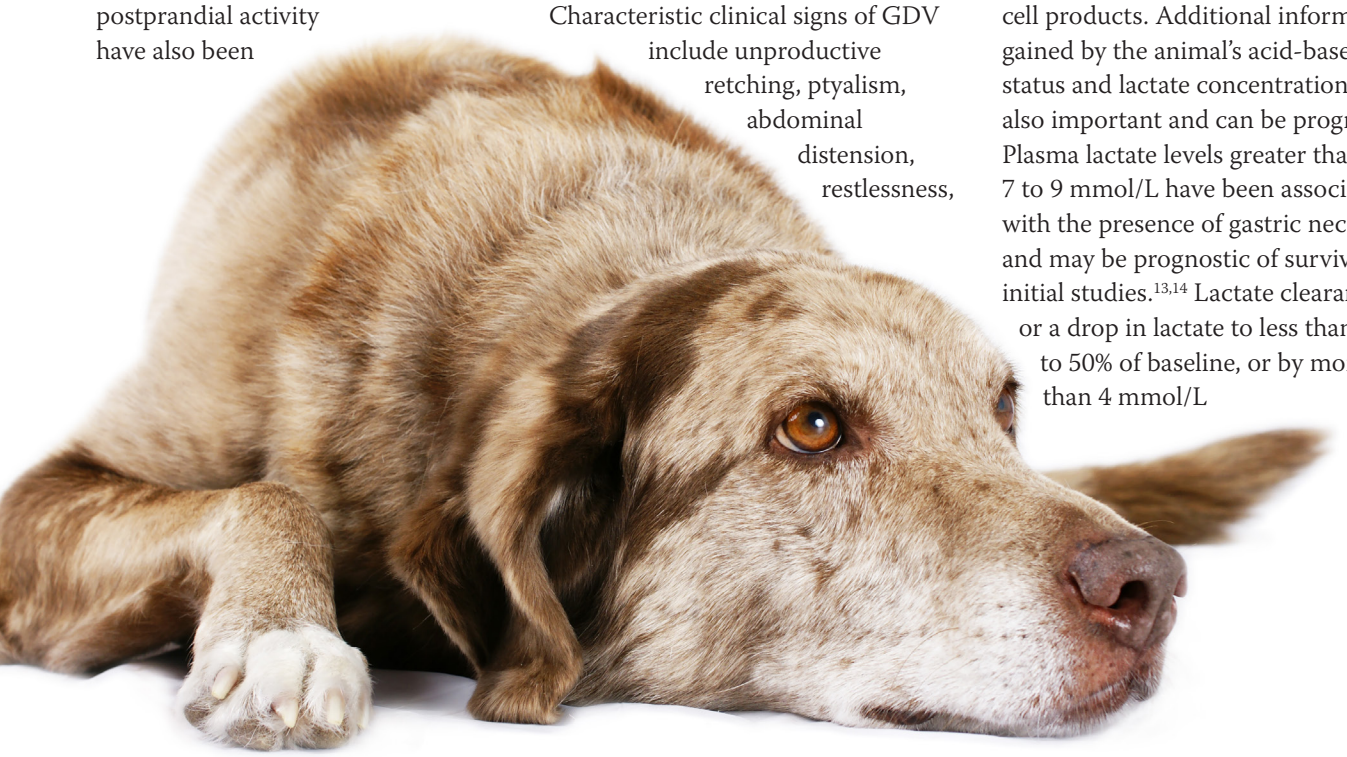
Gastric dilatation-volvulus: The twisted truth

Rapid stabilization, surgical intervention, and intensive postoperative care are key to successful GDV management.

By Elisa M. Mazzaferro, DVM, PhD, MS, DACVECC

Gastric dilatation-volvulus (GDV) is a common life-threatening emergency for which immediate recognition, stabilization, and surgical intervention remain the only option for therapy. Despite numerous advances in emergency and critical care, the exact etiology of this condition remains elusive. GDV is most common in large and giant purebred dogs but can occur in any size and breed of dog as well as in human and nonhuman primates, cats,[1] guinea pigs, and other species.

Advances have been made in identifying genetic predisposition in breeds such as the Great Dane, leading to the possibility of eliminating predisposed dogs from the breeding population.[2] Despite this, other risk factors including large thoracic depth to width ratios, advanced age,[3] stretched hepatosplenic ligaments, barometric pressure change, dietary fat content, meal and dry particle food size, foreign body ingestion,[4] patient temperament, prior splenectomy,[5-8] raising or lowering food bowls, and postprandial activity have also been implicated as potential causes for GDV; however, studies have shown conflicting results.[9]



PATHOPHYSIOLOGY

Independent of risk factors, GDV is a process in which instability of the gastric fundus, along with delayed gastric emptying and gas or fluid distension, results in 180° to 270° rotation of the stomach around its mesenteric vascular axis.[10] Some dogs may experience intermittent rotation and repositioning, but in the majority of cases, once mispositioned the dilated, rotated stomach compresses the caudal vena cava and diminishes venous return to the right heart, ultimately affecting cardiac preload and output.[11] Lack of perfusion to the stomach, along with decreased cardiac output, rapidly results in clinical signs associated with distributive and cardiogenic shock. Prompt recognition and early intervention are required to improve chances of a successful outcome.

CLINICAL SIGNS AND DIAGNOSTIC TESTING

Characteristic clinical signs of GDV include unproductive retching, ptyalism, abdominal distension, restlessness, and stretching. For confirmation, the right lateral abdominal radiograph is the most rewarding to demonstrate a classic appearance of dorsocranial displacement of the pylorus with gas distension of the gastric fundus and compartmentalization. In some instances, the presence of fluid or 360° rotation can make a diagnosis of GDV more challenging. In such instances, evaluation of contralateral and ventrodorsal abdominal radiographs may be required. Thoracic radiographs often reveal dilation of the esophagus with a small caudal vena cava and microcardia. Because of the lack of cardiac preload, the cardiac silhouette may be elevated from the sternum.[12]

In the patient with GDV, a minimum database should be obtained, consisting of a PCV/TS, venous electrolytes, acid-base status, and lactate concentration. Although the initial PCV/TS is not prognostic, patients with GDV can have rupture of the short gastric vessels or concurrent splenic torsion, resulting in absolute or relative anemia that may require transfusion of red blood cell products. Additional information gained by the animal's acid-base status and lactate concentration is also important and can be prognostic. Plasma lactate levels greater than 7 to 9 mmol/L have been associated with the presence of gastric necrosis and may be prognostic of survival in initial studies.[13,14] Lactate clearance, or a drop in lactate to less than 40% to 50% of baseline, or by more than 4 mmol/L with therapy, has more accurately been predictive of survival.[15-17] Serum spec cPL (canine pancreatic lipase) immunoreactivity may also be elevated in dogs with GDV, suggesting simultaneous pancreatic injury.[18] Prolonged coagulation times, an elevated D-dimer level, and lower fibrinogen concentration as well as Protein C and antithrombin activity have all been noted in dogs that do not survive postoperatively.[17]

STABILIZATION AND PREOPERATIVE CARE

Once a diagnosis of GDV is made, timing is critical in providing supportive care and initiating immediate surgical intervention. Placement of large bore intravenous catheters into the cephalic or lateral saphenous veins allows administration of crystalloid fluids. Isotonic crystalloids (Normosol-R, Plasma-Lyte A, 0.9% saline) should be administered in incremental boluses, starting with a quarter of the patient's calculated shock volume. In dogs, this is roughly 22 mL/kg (or take the patient's body weight in pounds and add a zero for the quarter shock volume) and should be administered as rapidly as possible. Once the calculated volume has been infused, reevaluation of the patient's perfusion parameters (heart rate, blood pressure, capillary refill time, mucous membrane color) should be performed to determine whether to continue additional fluid boluses or to add a colloid such as hydroxyethyl starch (5-10 mL/kg) for additional vascular support. Gastric decompression by trocarisation or orogastric tube placement should be performed to alleviate gastric dilation and improve cardiac preload.[19] Many dogs with GDV are bacteremic at the time of diagnosis due to bacterial translocation.[20] Preoperative administration of a first-generation >>

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> Continued from page 34

cephalosporin (Cefazolin 22 mg/kg IV) is indicated, along with maropitant (1 mg/kg IV) to decrease the risk of postoperative vomiting and subsequent aspiration pneumonia.

ANALGESIA AND ANESTHESIA

Analgesia in the form of a pure mu opioid such as methadone (0.1-0.2 mg/kg IV, IM) or fentanyl (2-3 µg/kg IV) can be administered prior to anesthetic induction. Opioids such as morphine and hydromorphone have potent emetic properties and so ideally should be avoided. Although the partial agonist buprenorphine may be beneficial at providing analgesia, its avid binding to the mu receptors may compete with more potent mu agonists such as fentanyl, which may be required intraoperatively or postoperatively, so its administration is not ideal.

Drug choices for anesthetic induction should be chosen based on the patient's degree of instability. In stable patients with functional reserves of adrenal norepinephrine, ketamine (0.5 mg/kg IV) and midazolam/diazepam (0.1-0.2 mg/kg IV) may be chosen, because ketamine results in the adrenal release of norepinephrine and an increase in cardiac output. Propofol (4-7 mg/kg IV) with or without a benzodiazepine (midazolam/diazepam) can be used during simultaneous preoxygenation and administration of an intravenous crystalloid fluid bolus to prevent vasodilator-induced hypotension. In the least stable patients, a combination of fentanyl (5-10 µg/kg IV) with a benzodiazepine (midazolam/diazepam) or etomidate (0.2-4 mg/kg IV) with a benzodiazepine can be performed. Once the animal is anesthetized and intubated, a constant rate infusion of fentanyl (10-20 µg/kg/hour) can be administered to reduce the level of gas anesthesia.

CARDIAC DYSRHYTHMIAS

The presence of preoperative, intraoperative, and postoperative cardiac dysrhythmias is common. Sinus tachycardia can be associated with relative hypovolemia from lack of cardiac preload, blood loss, discomfort, or vasodilation from gas anesthesia or inflammatory cytokines and reperfusion injury. Treatment of sinus tachycardia consists of intravenous crystalloid and colloid boluses, blood products when needed to address blood loss and anemia, and provision of adequate analgesia and anesthesia during surgery. Even in the absence of ventricular dysrhythmias in the preoperative period, early preemptive intervention with lidocaine (2 mg/kg IV, followed by 50 µg/kg/min constant rate infusion) has been shown to decrease the incidence of postoperative ventricular dysrhythmias, acute kidney injury, and hospitalization time.[21]

Ventricular dysrhythmias in the form of unifocal or multifocal ventricular premature contractions (VPCs), ventricular tachycardia, and R-on-T are common and should be addressed whenever they occur during anesthesia. During the postoperative period, lidocaine should be continued for its antiarrhythmic properties as well as provision of analgesia and treatment of reperfusion injury.

SURGICAL INTERVENTION

At the time of surgery, the stomach should be untwisted into its normal anatomic location. Next, the abdomen should be systematically explored. The spleen and its vascular supply should be carefully evaluated to determine whether torsion or thrombosis are present, necessitating splenectomy. Once a complete exploration of the abdomen has been performed, the stomach should be visualized and palpated for integrity and the presence of necrosis or perforation. When present, small areas of necrosis should be removed, resected, and not invaginated. The need for gastric resection, with or without concurrent splenectomy, has been demonstrated to be a negative prognostic indicator for survival.[22] Multiple gastropexy techniques have been described, including the right paracostal incisional, belt-loop, modified belt-loop, and circumcostal.[23-26] The technique chosen should depend on surgeon preference. Independent of the gastropexy performed, GDV recurrence is rare (< 5% chance of recurrence) when the technique is performed properly.[27] Possible causes of recurrence include too small an area of gastropexy (< 4 cm) or

breakdown of the gastropexy site. Placement of the gastropexy too close to the pylorus also can result in the postoperative complication of delayed gastric emptying.

POSTOPERATIVE CARE

Postoperative care involves provision of adequate analgesia, ongoing maintenance of fluid balance, treatment of cardiac dysrhythmias, and monitoring for postoperative complications such as ileus, gastrointestinal reflux and feeding intolerance, and disseminated intravascular coagulation.[27] Standard analgesia consists of administration of a pure mu opioid (methadone, fentanyl, hydromorphone) or administration of the partial mu agonist buprenorphine. These can then be transitioned to gabapentin (1.25-4 mg/kg po tid-qd) when administration of oral medication is possible. Because opioid drugs can contribute to postoperative ileus, early transition to other analgesia such as gabapentin is preferred. Intravenous crystalloids, with or without a constant rate infusion of metoclopramide (1-2 mg/kg/day), should be administered to maintain hydration and perfusion. Gastroprotectant therapy in the form of antiemetics (maropitant 1 mg/kg SQ, IV or 2 mg/kg po qd ondansetron 0.1-1 mg/kg IV, po bid-tid) or acid reduction (famotidine 0.5-1 mg/kg IV, po bid; pantoprazole 1 mg/kg IV bid or omeprazole 1 mg/kg po bid can be administered. Sucralfate (0.5-1 g per dog po tid - qid) and cisapride (0.1-0.5 mg/kg po tid) can be administered in the event of postoperative regurgitation. Careful attention to an animal's acid-base and electrolyte status is warranted, because hypokalemia can predispose a patient to cardiac dysrhythmias. Continuous ECG monitoring for a minimum of 24 hours postoperatively should be performed. If ventricular tachycardia is greater than 160 beats per minute, if there are multifocal VPCs or R-on-T beats present, or if the dysrhythmia is causing hypotension, lidocaine should be administered as previously described. If the ventricular dysrhythmias continue after the patient has been transitioned to oral medications, sotalol (1-2 mg/kg po bid) can be administered at the time of discharge and continued for 2 weeks until the time of staple/suture removal. In the most complicated cases involving partial gastrectomy, patients should have coagulation tests and a daily platelet estimate on a blood smear performed daily to investigate for disseminated intravascular coagulation (DIC). If DIC is suspected and coagulation times are prolonged, administration of fresh frozen plasma (5-20 mL/kg) should be considered.

PROGNOSIS

The overall survival for a patient with GDV ranges from 70% to 80% following surgical correction in most studies. Negative prognostic indicators include persistent elevations in lactate that do not drop by at least 40% of baseline following treatment, the need for lidocaine administration,[28,29] and the need for partial gastrectomy with or without concurrent splenectomy.[22]

PREVENTION

The best method of preventing GDV and its complications is to educate pet owners about prophylactic gastropexy in predisposed large-, giant-, or deep-chested breeds.[24,30-32] Prophylactic gastropexy can be performed as an elective procedure at the same time as a spay or neuter. Midline celiotomy approach as well as laparoscopic and laparoscopic-assisted gastropexy can be performed depending on the resources available, experience, and preference.[30-32] Although minor complications such as incisional infection are possible, the prognosis for recovery and prevention of future GDV is good.[32] dvm360®

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Understanding AND diagnosing canine hypothyroidism

By Laura Van Vertloo, DVM, MS, DACVIM

Canine hypothyroidism is a slowly progressive disorder resulting from failure of the thyroid gland to secrete amounts of thyroid hormones adequate for maintaining normal organ functions. Although hypothyroidism is relatively common and thyroid hormone testing is readily available, there is a diagnostic challenge because the clinical signs can be subtle and highly variable. Furthermore, there are numerous causes of low thyroid hormone levels in euthyroid dogs. Because of these factors, making a correct diagnosis of hypothyroidism can be difficult.

Canine hypothyroidism usually results from failure of the thyroid gland. This can be due to lymphocytic thyroiditis (destruction of the thyroid gland by inflammation) or idiopathic thyroid atrophy (degeneration of the thyroid gland in the absence of apparent inflammation). Failure of the thyroid gland is termed primary hypothyroidism and accounts for most cases of canine hypothyroidism. Less commonly, there is secondary hypothyroidism, in which the thyroid gland is healthy but the pituitary gland fails to secrete thyrotropin (TSH), resulting in a secondary failure of the thyroid gland to secrete the hormones thyroxine (T4) and triiodothyronine (T3).

Primary hypothyroidism affects different breeds; mixed-breed dogs, golden retrievers, Doberman pinschers, and Labrador retrievers are among those most affected. The age at which clinical signs manifest varies but diagnosis at middle-age to senior years is typical. Because it is the most common, the diagnostic approach to primary hypothyroidism will be the focus of this article.

Clinical signs

Because thyroid hormones affect virtually every organ, the clinical manifestations of disease can be different for each patient. Dogs affected with hypothyroidism often have a decreased metabolic rate resulting in lethargy, dullness, and weight gain without polyphagia. Dermatologic effects are the most common clinical sign of hypothyroidism, including alopecia, a dull and brittle hair coat, skin hyperpigmentation, and pyoderma. Neurologic (peripheral neuropathies, vestibular disease, myopathy) and cardiovascular effects (bradyarrhythmia) are less common but do occur. Rarely, dogs with severe, untreated hypothyroidism can develop myxedema coma, characterized by life-threatening hypothermia, bradyarrhythmia, and deterioration in mental state. Myxedema coma is typically the result of untreated hypothyroidism in the face of additional serious illness.

Clinical pathology

Clinicopathologic changes in hypothyroid dogs are relatively few but characteristic. Hypercholesterolemia is seen in approximately 75% of hypothyroid dogs; some will also have hypertriglyceridemia. Hyperlipidemia can result in the deposition of ocular lipid, which may be recognized on physical examination. A mild, normocytic, normochromic, nonregenerative anemia is seen in approximately one-third of hypothyroid dogs.

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Causes of diagnostic confusion: factors that decrease T4 in euthyroid dogs

It is critically important to remember the factors that can influence thyroid hormone testing, and the following should be carefully considered before making a diagnosis of hypothyroidism.

Drugs

Various drugs can influence multiple thyroid hormone tests, especially the total T4 (TT4) test. Prednisone, nonsteroidal anti-inflammatory drugs, phenobarbital, and tricyclic antidepressants are some of the more common offenders. If possible, patients should be removed from treatment with these drugs before evaluation for hypothyroidism.

Breed

Euthyroid sighthounds are known to have TT4 levels below the reference interval. Fortunately, these dogs are rarely affected by hypothyroidism.

Age

The TT4 level decreases with age and can dip below the reference interval in very elderly dogs.

Random fluctuations

Occasionally, euthyroid dogs with no other complicating factors can have a TT4 level that transiently drops below the reference interval. This should not be accompanied by clinical signs and repeat evaluation will likely show a TT4 level in the normal range.

Nonthyroidal illness

Systemic illness, malnutrition, trauma, and surgery can all cause decreased thyroid hormone levels. This is often called euthyroid sick syndrome. Although the mechanism is unclear, the condition is thought to be a physiologic adaptation to stress or illness. Most commonly, the TT4 level is decreased, but the free T4 (fT4) level can also be affected.

Diagnostic approach: specific thyroid tests

TT4

The TT4 test includes both bound and unbound (free) T4. T4 is the most abundant hormone secreted by the thyroid gland. This test is used to rule out hypothyroidism. Very few truly hypothyroid dogs will have a normal TT4 level. As mentioned, many factors can cause a low TT4 level in euthyroid dogs. Because of this, a low TT4 level alone should never be used to diagnose hypothyroidism. Additional thyroid diagnostics should be pursued to support the diagnosis before initiating treatment.

fT4

The fT4 is the small fraction of the total T4 that is biologically active. Because the fT4 level is less affected by nonthyroidal illness (NTI) than TT4 levels are, this test is frequently used as a follow-up to a low TT4 result if there is clinical suspicion of hypothyroidism but NTI is present.

TSH

The lack of negative feedback to the pituitary gland in primary hypothyroidism will result in increased TSH. Hypothyroid dogs will have a TSH level above the reference interval in about two-thirds of cases. The TSH test is used in combination with low TT4 and/or fT4 test results to support a diagnosis of hypothyroidism.

Tests for thyroiditis

Some laboratories offer assays for antithyroglobulin, anti-T3, and anti-T4 autoantibodies. Approximately half of dogs with hypothyroidism will have antithyroglobulin antibodies. Anti-T3 and anti-T4 antibodies can also be detected but are less common. These tests can be added to the diagnostic workup of a dog with suspected hypothyroidism to increase confidence in the diagnosis if the combination of TT4 and/or fT4 and TSH levels is equivocal. It is important to note that the absence of these antibodies does not rule out hypothyroidism.

Diagnostic approach: putting it all together

Because of the numerous factors that complicate thyroid diagnostics, a workup for hypothyroidism should always begin with reasonable clinical suspicion based on history, examination findings, and clinicopathologic parameters. It is important to carefully consider and, when possible, exclude nonthyroidal causes of a low T4 level prior to testing.

Definitive diagnosis of hypothyroidism requires multiple supportive thyroid hormone diagnostics, with the most specific combination of tests being TT4, fT4, and TSH. Because few nonthyroidal factors affect TSH levels, a low TT4 and/or fT4 result in combination with a high TSH level is highly consistent with true hypothyroidism.

Because as many as one-third of hypothyroid dogs will have a TSH level within the reference interval, a normal TSH result cannot be used to rule out hypothyroidism. In these cases, a clinical presentation suspicious for hypothyroidism, exclusion of nonthyroidal factors, a low TT4 and fT4 result, and a TSH level in the middle to upper end of the reference interval are sufficient to diagnose hypothyroidism. In cases with equivocal laboratory findings, finding antithyroglobulin, T3, and T4 antibodies may help increase the suspicion for true hypothyroidism. ■

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Managing head trauma in veterinary care

Patients presenting with head trauma can be intimidating but can improve immensely with intravenous fluid therapy, supplemental oxygen, and nursing care.

By Kate Boatright, VMD

Head trauma in veterinary patients is an emergency presentation that commonly occurs after a motor vehicle accident or other blunt or penetrating trauma. There are several unique considerations for patients that have sustained head trauma at presentation and during their hospital stay. During a session at the Fetch dvm360® Kansas City conference, Danielle Powers, DVM, DACVIM (Neurology), of the Animal Medical and Surgical Center in Scottsdale, Arizona, discussed management of head trauma for veterinary patients from initial presentation through recovery.

TRIAGE AND HISTORY

Patients presenting with head trauma should be triaged like any emergency patient. Airway, breathing, and circulatory status should be stabilized while minimizing movement of the patient. Powers reminds clinicians that many of these patients present in shock, and their mentation may improve significantly with the treatment of shock alone.

Ideally the neurological evaluation should be performed prior to administration of medication. Clinicians should assess the pupillary light reflex (PLR), pupil symmetry, ambulatory status, and mentation status of the patient. Use of the Modified Glasgow Coma Score (MGCS) can provide a quantitative evaluation that allows for objective reassessment overtime.

In addition to asking about comorbidities and medications, history taking should include specific questions to assess when the trauma occurred and assess for any loss of consciousness, mentation, and seizure activity following the trauma.

DIAGNOSTICS

It is essential when handling head trauma patients to minimize stress and prevent the patient from struggling; however, sedation and general anesthesia are contraindicated in most head trauma cases. Administration of a pure mu opioid can help to address pain and facilitate handling when obtaining diagnostics.

A complete blood count (CBC), serum biochemical profile, and urinalysis should be assessed in these patients. Jugular venipuncture should be avoided when collecting samples as compression of this vein can increase intracranial pressure. Noninvasive blood pressure, preferably with a Doppler, blood gas analysis, and imaging needed to assess other wounds (such as chest radiographs and ultrasonography) should also be performed.

MRI is the imaging modality of choice for brain imaging, but unless the patient is declining, general anesthesia should be avoided. If imagining is deemed necessary, the patient should be cardiovascularly stabilized prior to anesthesia. CT scans are the preferred imaging modality for assessment of skull fractures as radiographs are difficult to interpret and may be inconclusive.

TREATMENT

Treatment goals for patients with head trauma will vary by the patients' status at presentation and comorbidities. Basic stabilization measures, including placement of a large gauge IV catheter, delivery of intravenous fluids, and supplemental oxygen delivery can improve mentation status significantly in some patients. Pain control is also essential for head trauma patients and pure mu opioids are recommended as they can be easily reversed in the case of declining neurologic or cardiovascular status.

More specific treatment goals include seizure management, controlling increased intracranial pressure, maintaining carbon dioxide levels, and maintaining cerebral perfusion pressure. Powers reminds veterinarians that "by preventing the hypovolemia and hypoxemia secondary to shock, often the brain function will improve without necessarily treating the brain trauma directly."

Treatment goals for patients with head trauma will vary by the patients' status at presentation and comorbidities.

—Danielle Powers, DVM, DACVIM (Neurology)

Administration of steroids is no longer recommended as a first-line therapy as there is limited clinical evidence in human medicine to support their use. Additional treatments including controlled hypothermia and administration of other medications have been discussed in the literature, but results are currently equivocal. Powers feels that "these may or may not be helpful and are clinician's preference when [used] as a treatment for head injury."

In most cases, giving time for the patient to recover is a core part of treatment. During recovery, nursing care is essential to prevent secondary problems such as pressure sores, aspiration pneumonia, urine retention, and corneal ulceration. Oral medications, food, and water should be withheld until the patient is able to swallow on their own.

PROGNOSIS AND RECOVERY

The prognosis for head trauma patients is variable depending on the severity of the injury and comorbidities. Both primary and secondary brain injuries occur as a result of head trauma, resulting in immediate and delayed effects. The MGCS can predict prognosis, with lower scores carrying a poorer prognosis. In human medicine, Powers shared that prognosis is "significantly correlated with the level of oxygenation and systolic blood pressure prior to and during medical intervention."

Powers notes that while recovery can be variable, for pets "the degree of recovery may be less important if they can perform tasks required as a companion animal, as opposed to a working animal or person." Quality of life, comfort, and ability to do basic tasks such as eating, drinking, and walking are the most important considerations for companion animals recovering from head trauma.

Owners of pets who have experienced head trauma should be advised that seizure activity can occur up to 4 years after the brain injury, but the longer a patient goes without seizures, the less likely they are to develop.

TAKE-HOME POINTS

Head trauma is an emergency in veterinary patients. After rapid evaluation, pain medication, gentle handling, IV fluid support, and supplemental oxygen are the most critical things the veterinary team can provide to help facilitate recovery. More specific interventions are available and will vary depending on the degree of the injury. dvm360®

Kate Boatright, VMD, a 2013 graduate of the University of Pennsylvania, is a practicing veterinarian and freelance speaker and author in western Pennsylvania. She is passionate about mentorship, education, and addressing common sources of stress for veterinary teams and recent graduates. Outside clinical practice, Boatright is actively involved in organized veterinary medicine at the local, state, and national levels.

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Product comparison in an unregulated industry: Hemp

As new veterinary CBD products continue to flood the market, understanding what they contain vs what is on the label can be daunting. Fortunately, with a little online legwork, clinicians can arm themselves with objective product information.

By Stephen Cital, RVT, SRA, RLAT, CVPP, VTS-LAM (Res Anesthesia)

As veterinary professionals, we have been using nutraceuticals and supplements forever. These products are intended to support (not treat) a function of the body or to promote healthy function of a particular physiologic system. There are many legal nuances that we must be aware of when using these products—so many that it is beyond the scope of this article to discuss them all.

Every year it seems we are introduced to another nutraceutical or supplement and are essentially left to fend for ourselves regarding the quality, efficacy, and proven dosing of these products. Unless you have been living under a rock, you likely have heard of or have had clients ask about a new "wonder" molecule known as cannabidiol (CBD). The fact is that CBD is only 1 of hundreds of molecules known as phytocannabinoids that are produced by both hemp and marijuana plants. However, it is important to understand the difference between hemp products and marijuana. Hemp products contain less than 0.3% Δ-9-tetrahydrocannabinol (THC; the main intoxicating compound in marijuana) and are widely available and legal in many states. Marijuana, on the other hand, is still illegal federally despite varying legal status' at the state level. We also must be aware of another set of pharmacologically active molecules known as terpenes that can also be found in these products. Terpenes are aromatic molecules that deliver the classic aroma of hemp and marijuana and may also contribute to product efficacy.

Both hemp and marijuana are hot topics in the field of veterinary nutraceuticals/supplements, with many platforms offering continuing education on the topic. However,

many fall short in helping practitioners with choosing a safe, effective and an economical product. With so many choices available at legal recreational dispensaries for marijuana products, to gasoline stations, online vendors, and now sales representatives hitting our clinics, the decision-making can be mind-boggling!

The first step in educating ourselves and helping our patients is knowing what is in these products. This can be achieved by locating a certificate of analysis (COA) by a third-party ISO/IEC 17025 certified laboratory by either directly contacting the company or by perusing a manufacturers website. Certification with the ISO (International Organization for Standardization) means the company has had its product analyzed to guarantee it contains what the company says it contains.

Myself and many colleagues familiar with cannabinoid containing products often say, "If the company is unwilling to give you a COA, walk away." I take this to heart because this is one of the only ways to arm ourselves against poor-quality products until the United States Food and Drug Administration releases guidelines regarding cannabinoid containing products development and use. There is much information that should be included in a COA, including the cannabinoid levels in mg/mL format to help dose and determine the cost per mg. It also should provide information about what terpenes are present in the product and their concentration and whether there are contaminants such as residual solvents, bacteria, or mycotoxins. Finally, the COA should contain an elemental analysis looking for things like heavy metals. To see what a COA should look like visit, www.vetcannacademy.com.

Although a COA is not a silver bullet, it does raise the question, "Should we be asking for a COA for all of our supplement and nutraceutical products in house?" The answer is probably yes. Aside from a COA, it might also be best to consider using products, not just CBD, with clinical efficacy data, pharmacokinetics data, and safety studies. It is time that we, as the community of individuals selling these types of products, demand better science before carrying them in our practices.

Recently, I helped with a veterinary CBD product study1 that illuminated the differences in product formulations and the ways in which some companies may deceive us. We found most products did not match what is on the label, with some having less CBD than what is claimed on the bottle and others containing more CBD than what was claimed. We also found heavy metal contaminants in some of the products, with one surpassing what is considered safe by the USP.

If you decide to carry hemp products in your practice, please consider some of the standards of how to assess these products. Your clients, patients, and licensure will thank you. dvm360®

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Pitfalls in canine socialization

Don't let these challenges stand in the way of canine socialization goals.

By Amanda Carrozza

The socialization of dogs is a hot topic in the veterinary industry, according to Christopher L. Pachel, DVM, DACVB, CABC. In a Fetch dvm360® session, Pachel presented the idea that not all techniques are equal because not all canines are the same.

As the lead clinician and owner of Animal Behavior Clinic in Portland, Oregon, Pachel is well versed in providing clients with the best solutions for their pet's behavioral challenges.

"When questioned, many pet owners, trainers, and veterinary team members can list examples of what types of exposures should be included in a socialization program, such as dog-dog play, exposure to children, access to novel objects, and navigating various physical environments," he said.

These exposures may be adequate when viewing socialization through a general lens. However, expand that lens slightly wider and additional windows of opportunity for influencing this developmental stage can be seen. They include genetic influences, prenatal effects, impacts of exposure during the neonatal period, and the behavioral outcomes of ongoing learning.

"This broader lens highlights the aspects of neural and behavioral development that occur both before and after the primary socialization period that typically receives most of the attention within this conversation," Pachel said.

The primary socialization period, he continued, includes the development of motor coordination, seeking out nonmaternal interactions, and making primary associations with physical and social environments. When this process happens smoothly, a puppy is considered socialized.

Recognizing potential roadblocks and their biological or environmental causes can help clinicians tailor a behavioral plan for a patient's specific needs, Pachel said.

Insufficient socialization

In children, the deprivation of sensory input during pivotal developmental stages can be correlated to disturbances in social and emotional functioning and limbic alterations. This deprivation also shows through patterns of social withdrawal, pathological shyness, explosive emotionality, and the inability to form typical attachments.

Pachel asked, "Could these same outcomes occur for puppies who experience similar deprivation?"

According to foundational studies of canine behavior and socialization, deficits through the age of 14 weeks are likely to be associated with long-term changes in social behavior.

Those alterations can be specifically correlated with the area of social deprivation (intraspecific, interspecific, and environmental). Interestingly, he pointed out, more recent studies confirm that contact with specific groups of individuals, such as children, during the developmental period from 3 to 12 weeks can help protect against problematic behaviors such as canine aggression or problematic excitability.

To help guide this process for pet owners and animal caregivers, additional studies have quantified the amount of socialization at which these exposures influence long-term social outcomes.

Trauma

"While there is much research yet to be done on the topic of experiential trauma for developing dogs and puppies, taking a closer look at parallel studies of human development highlights the impact of adverse childhood experiences (ACEs) and the behavior patterns that are more likely to occur in the humans who experienced them during key developmental windows," he said.

For humans, ACEs—such as emotional abuse, physical neglect, or exposure to household mental illness—can be associated with an increased vulnerability to stressors and the development of negative mental health. Those early exposures predict later susceptibility to impaired health and functioning through systems and pathways that also exist within canines and other domestic animals.

Conditioned arousal

Learning can influence the development of canine behaviors associated with increased arousal. And that arousal can subsequently influence both behaviors and the processes of emotional regulation and learning.

"With repeated exposure to situations in which emotional tolerance is exceeded or the animal is reinforced for displaying behaviors associated with increased arousal, it is possible to influence the speed, intensity, duration, or latency to the recovery of so-called reactive behaviors," Pachel explained. dvm360®

Managing dermatological conditions with new treatment options

Recent advancements in medications provide antibiotic and antipruritic therapies for pyoderma, pruritus, and atopic dermatitis.

By Rebecca A. Packer, DVM, MS, DACVIM (Neurology/Neurosurgery)

Treatment options for veterinary dermatology patients have advanced significantly in the past several years. Board-certified by the American College of Veterinary Dermatology and the American Board of Veterinary Practitioners, Paul Bloom, DVM, DABVP, DACVD, summarized the latest treatments available for treating pyoderma, pruritus, and otitis, during the Atlantic Coast Veterinary Conference® in Atlantic City, New Jersey. These drugs could be important additions to your treatment arsenal.

In a prepared statement, Bloom separated these new medications into the broad categories of antibiotics and antipruritics. The mainstay of antibiotics for pyoderma has previously been cephalexin, a first-generation cephalosporin. Although this arguably remains the first-line treatment for bacterial folliculitis, the newer antibiotics used to treat pyoderma include the oral antibiotic cefpodoxime and the long-duration injectable antibiotic cefovecin (Convenia; Zoetis), which are both broad-spectrum third-generation cephalosporins. Bloom discussed the potential concerns with using third generation cephalosporins as a first-line treatment.

Cefpodoxime is advertised as a first-line antibiotic for pyoderma; however, the broad-spectrum nature does risk development of resistant bacteria. Whether targeted by the treatment or not, and whether pathogenic or not, resistant bacterial organisms can develop within the broad-spectrum and then, in turn, transfer their resistant genes to other organisms in the environment or other species. The advantage of administering cefpodoxime over cephalexin appears to be primarily logistical, as cefpodoxime is administered once daily, versus cephalexin, which is administered twice daily. As such, Bloom stated, the risks to developing resistant organisms may not outweigh the logistical benefits, unless the patient already failed treatment with cephalexin.

Similar concerns exist for cefovecin. This parenteral antibiotic has been approved in other countries for treatment of numerous organisms including *Staphylococcus intermedius*, beta-hemolytic *streptococci*, *Escherichia coli*, *Pasteurella multocida*, *Proteus* spp, *Staphylococcus intermedius*, and *Streptococcus canis*. Because of similar risks of potentiating resistant bacteria, Bloom cautioned that cefovecin should be reserved for patients who cannot be medicated orally. Therapeutic concentrations are maintained for approximately 7 to 14 days post injection, with specific therapeutic timing dependent on the specific bacteria and MIC, he said. Although perhaps subtherapeutic, tissue levels persist for up to 65 days. There is question as to whether or not this persistent subtherapeutic tissue concentration will potentiate bacterial resistance even further. Specific concerns exist about potentiation of extended spectrum β-lactamases (Enterobacteriaceae such as *E coli* and *Klebsiella pneumoniae*) that are multidrug resistant. Bloom also reminded us that, with any new therapeutic, long-term adverse effects are not yet fully known.

Available antipruritic medications include oclacitinib (Apoquel; Zoetis), modified cyclosporine (Atopica; Elanco and Cyclavance; Virbac), and lokivetmab (Cytopoint; Zoetis). These 3 medications have different mechanisms of action.

Oclacitinib is a JAK1 pathway inhibitor. JAK1 is an intracellular pathway that is activated when cytokines bind to specific cell membrane receptors. Activation results in production of various cytokines that trigger and perpetuate pruritus. Oclacitinib therefore inhibits activation of the JAK1 pathway, limiting the amount of proinflammatory and pruritic cytokines produced. It may also be helpful off label for other immune-mediated diseases, including vasculitis, ischemic dermatopathy, pemphigus foliaceus, and discoid lupus erythematous. Adverse effects appear to be rare, but may include neutropenia or leukopenia, and may reduce seizure threshold.

Bloom reminded us of 1 important factor to be aware of when using oclacitinib; it will mask pruritus regardless of etiology. For example, a patient with sarcoptic mange, flea allergy dermatitis, or bacterial or yeast pyoderma, possibly masking the untreated underlying disease. For this reason, identifying the underlying cause of pruritus is an important component of diagnostic and treatment planning.

Although not new, modified cyclosporines remain highly utilized in dermatology. Bloom cautioned that it is essential to use the modified cyclosporines to achieve consistent absorption. Bloom also recommended using modified cyclosporine in uncomplicated atopic dermatitis, where oclacitinib and lokivetmab have failed. Full therapeutic effect is typically reached within 4 to 6 weeks of administration. Adverse effects appear to be minimal, and consist of gastrointestinal signs, cutaneous papillomatosis, and gingival hyperplasia. Maropitant or ondansetron may help offset vomiting.

Another new medication used in veterinary dermatology is lokivetmab (Cytopoint; Zoetis), a canine monoclonal antibody that binds to and neutralizes IL-31. Bloom noted that, although low amounts of IL-31 are beneficial, higher amounts are detrimental and contribute to the pathogenesis of atopic dermatitis. Lokivetmab is administered via subcutaneous injection, once every 30 to 60 days. As it is a specific canine monoclonal antibody, it can only be used in dogs. Bloom recommended using this drug in cases of pruritus from allergic skin disease, with or without concurrent *Demodex* or bacterial pyoderma or cystitis, or patients with a history of (or current) cancer. Bloom said that cases that failed to respond to either oclacitinib or lokivetmab may respond to the other treatment, due to the different mechanisms of action. As such, if a therapeutic trial with one of these medications is not effective, it is worth trying the other.

Bloom's final update in "new drugs in veterinary dermatology" relates to treatment of otitis. Administering topical ear medications can be tricky for owners, and often treatment is prescribed for 7 to 14 days. This new product contains hydrocortisone aceponate, miconazole, and gentamicin (Easotic; Virbac) and its delivery system is a pump bottle with a flexible tip that allows easy application of the medication deep (but safely) into the ear canal. The pump is metered to allow 1 cc dispensed with each pump, and treatment duration is only 5 days. Bloom's experience with this has been positive, due to both adherence and efficacy.

Dermatological conditions are one of the more common diagnoses requiring veterinary care, and several new treatments have become available over the past few years. Bloom's overview of novel treatments should help all practitioners better understand the options available to care for their patients. dvm360®

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Managing feline stress-related conditions

A multipronged approach may be utilized, including ensuring basic needs are met, environmental enrichment, behavior modification, and the considered use of pharmaceuticals or supplements.

By Kate Boatright, VMD

Veterinarians are increasingly aware of the role that stress can play in medical and behavioral conditions in our feline patients. But recognizing signs of stress is only the first step in improving the quality of life for cats experiencing stressors that impact their daily lives. During a session at the Fetch dvm360® Kansas City conference, Christopher Pachel, DVM, DACVB, CABC of the Animal Behavior Clinic in Portland, Oregon discussed practical tips for managing these stress-associated conditions in cats.

RECOGNIZING STRESS

Cats are notorious for hiding illness, and behavioral changes related to chronic stress may be subtle. At times, pet owners may present the cat to the veterinarian for changes in activity, appetite, or social interaction. In other cases, the cat may be presented for hair loss, inappropriate elimination, upper respiratory infections, or other physical illness. In these cases, it falls on the veterinary team to identify the presence of stress-related behaviors and potential stressors through careful history taking and educating their clients on the role that stress plays in these medical presentations.

PRINCIPLES OF BEHAVIORAL TREATMENT PLANS

Pachel encourages practitioners to consider a three-pronged approach to management of stress-associated conditions in cats, including "behavioral modification, environmental management, and 'medication,' which may include nutritional support, supplements, pheromones, and pharmaceuticals." He notes that each patient will have a customized treatment plan and not every prong will be used in all cases.

The Hierarchy of Behavior Change-Procedures, available from the International Association of Animal Behavioral Consultants, discusses a least intrusive, minimally aversive (LIMA) approach to behavioral modification. Pachel reminds veterinarians that before any behavioral modification is attempted, the pet's health, nutrition, and environment should be evaluated. Only after disease and pain are addressed and basic physical needs are met can behavioral interventions be successful.

ENVIRONMENTAL MANAGEMENT

Assessing the cat's home environment is an important first step in management of environmental factors that may contribute to stress.

Pachel notes that for cats, it is not just about whether a resource (food, water, litter box, and safe hiding locations) is available, but also whether the cat perceives that it is available. He suggests an in-person walk-through or use of telemedicine platforms and owner-recorded video of the home as tools that can be used to assess the home environment. After the assessment, changes to the environment can be discussed that improve resource availability to reduce daily stress.

Addition of enrichment opportunities to a cat's environment can help to reduce stress.

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Pachel notes that it may take some trial and observation to find the right type of enrichment for each individual patient, but the results can be highly rewarding. Consider opportunities for the cat to expend energy, engage in species-typical behaviors such as climbing and hunting, and providing mental stimulation. Enrichment can be incorporated into feeding time (ie, use of a food puzzle), training, and more.

Assessing the cat's home environment is an important first step in management of environmental factors that may contribute to stress.

—Christopher Pachel, DVM, DACVB, CABC

BEHAVIOR MODIFICATION

While many believe that cats cannot be trained, Pachel states that "behavior modification strategies are absolutely available for cats," and they "can have a dramatic impact on stress-associated conditions." There are many specific skills that can be taught to cats using traditional learning techniques, such as habituation, classical conditioning and operant conditioning. Pachel notes that there are species-specific training considerations, including the amount and type of reward and feline body language indicating readiness to progress to more difficult training.

MEDICATION

"Medication" can be delivered to cats in many ways, and may include nutritional support, supplements, pheromones, and pharmacological interventions. For any of these medical interventions, a trial-and-observation approach is often needed. Pet owners should be made aware that the first product selected may not work, but that does not mean any future medications or supplements will be failures as well.

Nutritional support is found in the form of prescription diets with added ingredients to reduce stress levels while support the health of specific systems, including urinary and gastrointestinal. If these diets are found to be helpful, a large advantage over other medication options is the improved adherence seen with administering a diet compared to administration of a pill or supplement.

Supplements and pheromones are available in a wide variety of cat-specific products. Pachel encourages practitioners to get familiar with not only the individual products but their active ingredients, which may aid them in choosing the best product to try for a particular patient. Pheromone products mimic natural feline pheromones and are often delivered to the environment instead of the patient directly, which may make them easier to incorporate into an intervention strategy.

Pharmacological intervention is appropriate for some pets with stress-associated conditions that are motivated by fear, anxiety, stress, and arousal. Pachel states that for behaviors with other motivations, medication is unlikely to help and may, in fact, be contraindicated. If medical therapy is deemed appropriate, veterinarians must consider whether a situational or daily maintenance medication is indicated and the type of medication, including the target neurotransmitter and potential side effects, that will best address the patient's condition.

For any of the medication options, Pachel suggests careful assessment of owner compliance and ability to administer medication when selecting the best product(s) to try. If medication or supplement administration is stressful for pet and owner, long-term use is unlikely, and the added stress of medication administration may negatively affect the patient or harm the bond between pet and owner. Use of compounded medications, feline-friendly medication administration, and positive reinforcement with a high-value reward can all be discussed as options to reduce stress and improve compliance.

TAKE HOME POINTS

A partnership between pet owner and veterinary team is needed to maximize outcomes for stress-related behavioral and medical conditions in feline patients. Once stress-related conditions are recognized, intervention strategies should be designed that include environmental management, behavioral modification, and/or medication. Each cat will require an individualized treatment plan that addresses their specific needs and is feasible for the pet owner to implement. dvm360®

Kate Boatright, VMD, a 2013 graduate of the University of Pennsylvania, is a practicing veterinarian and freelance speaker and author in western Pennsylvania. She is passionate about mentorship, education, and addressing common sources of stress for veterinary teams and recent graduates. Outside clinical practice, Boatright is actively involved in organized veterinary medicine at the local, state, and national levels.

A breakthrough **joint supplement** for dogs and cats

Flexadin Advanced from Vetoquinol is an oral supplement that helps prevent degenerative joint disease and is used as part of a multimodal therapy for managing the condition.

By Janice L Huntingford, DVM, DACVSMR, CVA, CVPP, CCRT, CAVCA

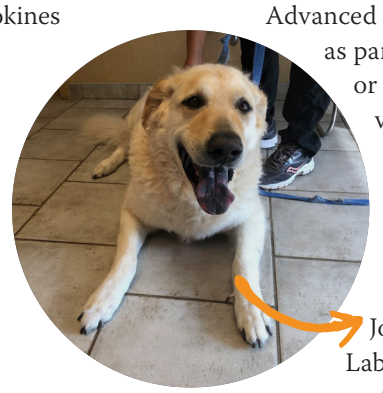
Degenerative joint disease (DJD) is the most common orthopedic illness, affecting more than 20% of dogs and cats older than 1 year and more than 80% of those in the senior category. It is characterized by chronic joint pain and stiffness, immobility, and lameness. It decreases quality of life for affected pets.

Management of DJD is multimodal and involves control of clinical symptoms by reducing pain, protecting joints, and improving mobility. Multimodal therapy is achieved through weight loss, exercise, and physical rehabilitation, along with pharmaceuticals and supplements.

Flexadin Advanced from Vetoquinol is a joint supplement that contains a unique active ingredient: undenatured collagen type II (UC-II), which has a different mode of action than is traditionally found in other such products. UC-II forms the major structural component of the hyaline cartilage of articular surfaces and the nucleus pulposus of the intervertebral disc.

Healthy, undamaged cartilage is not seen as foreign by the immune system; however, when DJD occurs, the damaged collagen molecules are released into the synovial fluid. This stimulates an autoimmune response against the type II collagen, further damaging the hyaline cartilage in the joint and starting a cycle of joint degradation, cartilage damage, and pain. UC-II is believed to affect the gut immune system, inducing oral tolerance to turn off the immune response that targets type II collagen in joint cartilage.

When taken as an oral supplement, small amounts of UC-II are transported across the gut epithelial cells to immune cells in the Peyer patches of the gut-associated lymphoid tissue. Once there, the UC-II activates the T cells to become T regulatory cells. When these T cells encounter natural type II collagen from joints, they secrete anti-inflammatory cytokines that suppress the action of cells that normally would break down type II collagen.[1,2] By inducing oral tolerance, UC-II supplementation initiates anti-inflammatory and cartilage protective pathways that prevent the immune system from further damaging the joint.



In supplement form, UC-II is derived from chicken sternum cartilage and has been shown to be more effective in reducing pain and lameness than glucosamine and chondroitin.[1] UC-II has also been shown to prevent inflammation and cartilage degeneration in supplemented healthy dogs that were strenuously exercised compared with dogs that were not supplemented.[3]

Flexadin Advanced contains 40 mg of UC-II and is easily administered as a single chew to dogs and cats. It is highly palatable and no loading dose is required. Most clients will see some response within 2 to 3 weeks; in some cases it is sooner. Veterinarians should use Flexadin Advanced in their patients with DJD as part of multimodal therapy or to help prevent DJD in very active patients. It is backed by research and is cost-effective, safe, and highly efficacious.

Case study

Joe, an 11-year-old Labrador retriever mix, was presented for a pain evaluation. Joe was stiff on rising, frequently lying down and panting, and reluctant to play fetch.

Joe was diagnosed with DJD of the hips and lower back. He was started on a nonsteroidal anti-inflammatory drug (NSAID) and pentosan polysulfate sodium (Cartrophen Vet; Biopharm Australia) injections. After 2 weeks, Joe's owner had noticed an improvement. The NSAID was discontinued as Joe had some liver enzyme elevations, and Flexadin Advanced was started. After 4 weeks Joe was back to "acting like a puppy again" and his owners were very pleased. They credited his biggest improvement to the Flexadin Advanced. dvm360®

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7 strategies to support work-life balance for your veterinary team

Top-down actions can provide a tailored work environment, improve employee retention, and strengthen morale and the bottom line.

By Ivan Zakharenkov, DVM, MBA

Work-life balance may seem elusive—always 1 choice or change away from attainment. In fact, it is the result of many mindful decisions to align 3 key priorities: work, self, and others. Achieving that balance leads to a satisfied, meaningful life that fulfills professional and personal goals.

Veterinary medicine often lacks balance. These professionals are selfless individuals committed to caring and advocating for animals, often at the expense of their own health, well-being, and personal time. Veterinarians' exceptional devotion and emotional investment frequently lead to burnout and imbalance, sometimes driving them from the profession. According to the American Veterinary Medical Association's (AVMA) 2020 Census of Veterinarians report, poor work-life balance is the main problem[1] for veterinarians, with 75% naming it the top reason for wanting to leave the profession.

Although self-help resources are available, they are often ineffective in the veterinary work environment. Therefore, practice leaders must prioritize work-life balance. Top-down actions, such as the following 7 strategies, can provide a tailored work environment, improve employee retention, and increase morale, well-being, and the bottom line.

#1 Do not use a compensation model that incentivizes long hours

For too long, veterinarians have maintained long hours, extra shifts, and high case volume. Many production-based compensation models[2] demand constant pursuit of targeted goals to meet basic cost-of-living needs and pay off mountainous student debt, to say nothing of achieving financial stability. Veterinarians may forego taking much-needed time off for fear of missing production-based pay targets. New veterinarians are more likely to experience emotional fatigue from a simple salary model that undervalues their workload. They may find themselves overwhelmed and defeated by a strictly commission-based pay scale.

Production-based compensation models that reward effort through commission and bonuses motivate workers but may also trigger unhealthy or unethical competition between veterinarians, leading to increased workplace tension. Monitor staff well-being frequently to ensure employees are not sacrificing their health or that of their patients to sustain an appropriate income.

#2 Offer flexible scheduling and part-time employment

The AVMA 2020 Economic State of the Veterinary Profession report[3] proves that veterinarians want more life with their practice, but not necessarily a practice life. More veterinarians prefer working fewer hours for less compensation rather than more hours for increased income, according to the report. This preference is not limited to 1 gender—for the fourth year in a row, men and women were more likely to want fewer hours, with women only slightly ahead of men in this wish.

Part-time employees can give a practice much-needed scheduling flexibility by enabling additional appointment slots or expanded hours, such as late nights or early mornings, without forcing full-time associates into unwanted overtime. The benefits of part-time employees are reflected in the bottom line. Research[4] shows that owners and associates working less than 2000 hours per year—about 40 hours per week—averaged more transactions and better gross revenue per hour than those who work more than 2000 hours per year. The data reinforce the idea that work-life balance is necessary for a sustainable, profitable practice.

#3 Increase support for parents

For veterinarians with children, work-life balance is a perpetual tug-of-war. Guilt about absence from an area of life can weigh heavily, and the impact of overlap is significant. According to research[5] by *dvm360®*, 75% of veterinarians indicated their responsibilities as parents had interfered with their work; 87% stated their work had interfered with their duties as parents.

Parental leave and childcare expenses pose additional economic hurdles for many families on top of veterinary student debt. Practices can showcase their dedication to work-life balance by providing options like the following:

- **Paid parental leave**—Do not make parents choose between their work and their children. With a financial safety net in place, clinicians can step away for planned or emergency family time without guilt and return satisfied and focused.
- **Financial childcare support**—If each paycheck mostly covers day care costs, veterinarians may elect to leave the workforce until their children are of school age.
- **In-hospital day care**—Eliminate staff worries about drop-off, pickup, and coordinating schedules for their children.

#4 Hire relief vets to balance the workload

The greatest asset of any practice is its workforce; recruiting relief veterinarians can be invaluable in preventing burnout and exhaustion. Relief veterinarians can help most during practice promotions, growth periods with excessive demand, staff shortages, seasonal business, or emergencies. They can provide staff with peace of mind from knowing that someone can share the load, that taking time off will not mean compromising patients or owners, and that veterinarians can temporarily step away to head off burnout.

#5 Do not promote heroism

Veterinarians often choose their profession because of their compassion, so they cannot resist a call for help or an animal in need—whether that need is urgent or could wait until tomorrow. When you love what you do, there is always a phone call to make, a topic to study, or a patient to see; however, this often comes at the expense of personal responsibilities, interests, time with family, and attention to mental health. An option we are exploring at Galaxy Vets is getting permission from veterinary teams to monitor the number of hours they spend at work through an app on their personal device to ensure they do not overwork.

Celebrating a job well done or an exceptional deed can be motivating, but praiseworthy actions can endorse self-sacrifice. Instead, consider the following strategies:

- Encourage regular breaks and protect that time.
- Ensure staff take a full lunch break.
- Provide employees with a dedicated break area or lounge to escape the clinic's chaos.
- Block off periods on each veterinarian's daily schedule that they can use as they choose.
- Limit the number of consecutive

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working hours, just as pilots or truck drivers are obligated to take breaks after a certain number of hours on duty.

Keep tabs on staff members who push through lunches or compromise their break time with interruptions and phone calls; they may need additional encouragement to turn off their "hero mode."

#6 Talk—and listen—to your team

Knowing a team's needs is impossible without listening. Develop a deeper understanding of your team members by learning about their lives outside the hospital. An employee's personal interests and hobbies may reveal a compromised work-life balance. For example, a colleague who recently mentioned joining a gym but admitted missing the last few sessions may be experiencing workload-related fatigue. A few minor adjustments to hospital routine can create a supportive dialogue. Consider the following strategies:

- **Set boundaries and protect personal time:** Encourage employees to keep personal calendars they can check when asked to take on an extra shift, to ensure they are not sacrificing a personal event for work.
- **Create a hospital vacation calendar**: View vacation as a practice benefit, not a loss; rested employees have improved job satisfaction and performance. Keep track of vacation days with a dedicated calendar to ensure staff are taking enough time off.
  - » **Hold meetings that focus on relationships, not performance**: Conduct regular 1-on-1 check-ins with employees and ask for their honest answers to questions such as:
    - Are you happy?
    - Do you have everything you need?
    - Is there anything I can help you with right now?

Consistent meetings that emphasize employee well-being set the groundwork for a trusting, productive work relationship.

#7 Sponsor healthy offsite activities

Demonstrate practice priorities by providing staff with benefits such as gym memberships, yoga classes, or massages. An Apple Watch or fitness tracker can help track sleep, exercise, and water consumption or improve eating habits. When employees see an emphasis on their mental and physical well-being, they not only reap the gift's benefits but also feel that the practice cares about them.

What gets measured gets improved, so consider employee well-being a vital parameter of your practice and track the data with the same attention level you would give financial reports. Work-life balance metrics should be a big part of overall practice performance evaluation. Employees getting the support they need in this highly demanding profession are more resilient against stressors and more content to stay in your practice.

Although a profound professional commitment is a great asset, sacrificing personal well-being is not healthy. Veterinary professionals should avoid institutions that do not prioritize work-life balance. dvm360®

Ivan "Zak" Zakharenkov, DVM, MBA, CEO of Galaxy Vets, is a veterinarian, entrepreneur, and passionate advocate for the well-being of veterinary professionals. Twelve years as an emergency department veterinarian inspired him to create Smart Flow, a first-in-the-industry workflow optimization system later acquired by IDEXX. He subsequently founded Veterinary Integration Solutions, an executive consulting firm where he helped veterinary groups systematize acquisition, integration, and improvement of practices with special attention to burnout prevention. Pursuing his goal to make a sizable impact on the veterinary profession, he took the lead in Galaxy Vets, a new veterinary health care system co-owned by its employees with burnout prevention as a strategic priority.

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FROM SURVIVING TO THRIVING: The 4 P's of positive leadership

A positive psychology expert shares his framework for leading flourishing veterinary teams.

By Erica Tricarico

In veterinary medicine, professionals often are depleted more than they are fulfilled, according to Josh Vaisman, CCFP, MAPPCP, cofounder and lead consultant of Flourish Veterinary Consulting. In his lecture at the Fetch dvm360® virtual conference, Vaisman said that everyone in the veterinary profession deserves sustained fulfillment. Positive leadership, he added, is the key to unleashing meaningfulness and bringing out the best in individuals, teams, and organizations.

"I'm on a mission to empower veterinary leaders with evidence-based skills for positive leadership so they can enable positive cultures in their practices and bring out the best in themselves and those they lead," he said. Here are Vaisman's 4 P's of positive veterinary leadership that you can implement at your clinic to cultivate a nurturing environment in which employees feel valued, motivated, and have a "want to" attitude.

1 Psychological safety

Psychological safety means creating a practice culture that views mistakes as learning opportunities. Results from a study[1] examining psychological safety in the workplace revealed that it is absent in many workplaces. In the study, higher-performing teams with the best patient outcomes reported more medical errors than the teams with the worst patient outcomes. How can this be? The high-performing teams were not making more mistakes—they were simply more likely to admit making them.

The bottom line? "If the environment makes it unsafe or dangerous to take intrapersonal risks, we will withhold those things. And when we withhold we are not learning, we are not growing, we are not improving—as an individual, as a team, or an organization," said Vaisman. "We have to have psychological safety in our teams to achieve the level of candor necessary for success and growth."

According to Vaisman, psychologically safe teams believe the following:

- If I make a mistake, it is not going to be held against me.
- I can discuss difficult topics with my team.
- On my team, everyone's opinion matters.
- It is safe to ask for help and admit a lack of ability.
- New ideas are welcome.

2 Purpose

Purpose is the reason something is done or created. Purpose is also a powerful tool that leaders can use to unlock meaningfulness, said Vaisman.

When an environment generates meaningfulness, employees are much more positively engaged in their work. Having a high level of purpose and meaningfulness is also the No. 1 way to prevent burnout, noted Vaisman. He suggested 2 ways to enable a sense of purpose and meaningfulness at your veterinary practice:

- **Routinely show that all work matters.** We are often good at pointing out the big things like saving a patient's life, but the small moments, such as cleaning the examination room between patients, matter too, said Vaisman. Positive leaders help people believe that.
- **Connect all work to a higher purpose.** When purpose is vivid, team members feel that their work matters, they matter, their work is meaningful, and they get to do meaningful things every day, he said.

3 Path

Path is about clarifying to empower, said Vaisman. "From a leadership perspective, clear expectations are very much about putting a pin on the map. Positive leaders enable clear expectations and help teams develop clear expectations internally," said Vaisman.

When the path is clear, team members agree with statements like the following:

- "I know what is expected of me."
- "I have meaningful control over my day-to-day work."
- "I am consistently able to contribute to achieving our goals."
- "I have the resources I need to succeed."

4 Progress

Progress is about enabling people to experience meaningful growth, contribution, and a sense of value and work, said Vaisman. He suggests 2 ways to bring progress to life:

- **Show appreciation:** Celebrate all things big and small, and reward positive behavior and not just positive results. Express gratitude, especially during challenging times.
- **Provide support:** Build relationships and connect with your team in meaningful ways, giving them a sense of belonging. Use growth-minded language and productively address shortfalls. When people are appreciated (feel valued) and supported (they feel like they matter), "We are telling them, 'You are capable. I believe in you,' " said Vaisman. dvm360®

Clarifying roles and responsibilities

Vaisman suggests all veterinary professionals want to succeed in their work. To do so effectively, they need to clearly understand what is expected of them, feel a meaningful sense of control over how they achieve those expectations, and be supported by the resources they need to succeed.

To support this, Vaisman discussed RACI, a tool that can help clarify roles, responsibilities, and decision-making authority at your clinic. For each task or project that you are trying to accomplish, answer the following 4 questions:

R—Who is **responsible?** This is the team member (the "doer") who does the work to complete a task. A task may have more than 1 responsible party.

A—Who is **accountable?** This is the person who owns the final decision on whether a task is completed successfully. "The buck stops here."

C—Who is **consulted?** These are the people ("in the loop") to whom questions and concerns about the task should be directed.

I—Who needs to be **informed** throughout the process? These are the team members who need to be kept abreast of task progress and completion ("keep in the picture").

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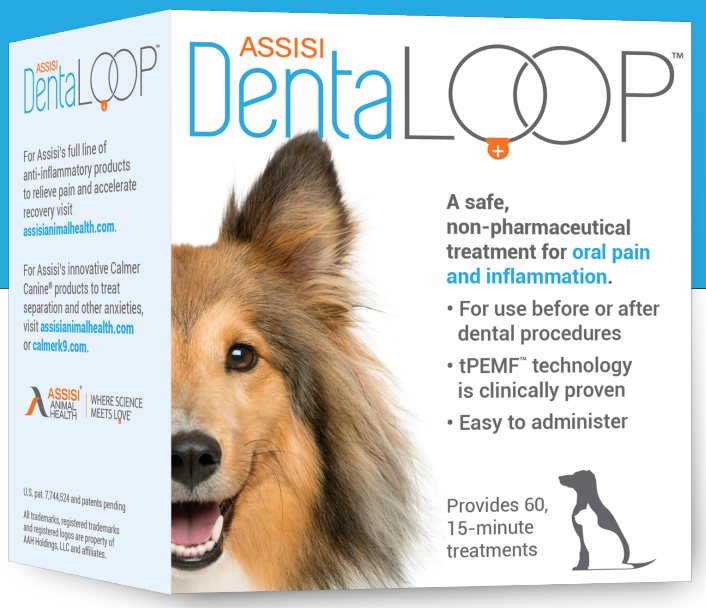

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Dental Pain and Inflammation—Acute and Chronic

By Heidi Lobprise, DVM, DAVDC

The role of pain and inflammation in oral and dental disease can be present in many forms, all of which should be addressed. In discussing dental and oral issues and care with pet owners, mentioning pain and infection often elicits empathy and can help them decide to follow your recommendations for optimal care. A pet with a painful mouth may still be eating, but not as well as it could be, and an unkempt cat may be a sign that the mouth is too painful for grooming. Providing the best care that we can is important for our patients, starting with recognizing discomfort.

Acute Oral and Dental Pain

A patient can have acute pain issues due to tooth trauma, especially if the pulp/nerve complex is open and exposed. Although this can cause significant discomfort initially, once the neurovascular bundle dies and becomes necrotic, the acute pain typically decreases and any underlying chronic infection or inflammation may not seem to cause significant pain, unless an abscess occurs. The owner may not realize there is an issue, but any compromised tooth—open canal or discoloration indicating pulpal death—should be extracted or managed via a root canal procedure (endodontic therapy). Osseous fractures from more severe trauma can cause significant pain until the damage is repaired and healed. Some of the most common causes of acute pain in the oral cavity are surgical extractions and repairs, and even periodontal therapy. A multimodal pain management protocol is optimal to minimize any discomfort for our patients.

A complete perioperative analgesic protocol is critical for every dental surgery patient, no matter how extensive the procedure may be. In fact, even if "just a dental" is anticipated, many surprises often arise once radiographs are taken, so start with preoperative analgesics in every patient. In the presence of significant infection and inflammation or pain, administering oral medications for a few days prior to the procedure may help decrease the extent of the disease, make the patient more comfortable, and give you healthier tissues to work with. Antibiotics should only be used in the presence of distinct infection and will not be needed in many cases, based on individual situations. Nonsteroidal anti-inflammatory drugs (NSAIDs) can be dispensed for patients with good renal health preoperatively, and in most patients postoperatively. A preanesthetic regimen may consist of a low dose of an opioid for pain, a mild sedative, and even an α2 antagonist in select patients.

Once the patient is under general anesthesia with appropriate monitoring and support, local or regional blocks should be placed to provide analgesia that will extend into the postoperative period. These will also allow the levels of inhalant anesthesia to be kept to a minimum.

Various techniques exist for regional blocks for regions that include the maxilla (infraorbital or caudal maxillary blocks) and mandible (inferior alveolar or caudal mandibular, and mental blocks). Providing some of these blocks can be technique sensitive, so good training for your veterinary team is suggested. Many local anesthetic drugs are available, and individual preference may be based on their clinical time to onset and duration of action. Lidocaine hydrochloride and bupivacaine hydrochloride are commonly used; however, the longer duration of bupivacaine is an important benefit, especially when the drug is used in conjunction with buprenorphine to potentiate the duration (a 9:1 ratio, bupivacaine:buprenorphine) or in its liposomal-encapsulated form (Nocita; Elanco). Postoperative instructions for patients may include starting or continuing the NSAID, using cool compresses, and avoiding hard diets and chews until healed.

Chronic Oral and Dental Pain

Dogs and cats can experience chronic pain due to a number of issues, from untreated periodontal and periapical infections and temporomandibular joint dysfunction (osteoarthritis [OA], ankylosis) to neuropathic pain conditions; they can also have pain after surgical procedures. Ulcerative diseases such as feline stomatitis (or feline chronic gingivostomatitis) and canine chronic ulcerative stomatitis can have varying levels of pain associated with the inflammation and ulceration that is typically due to an overactive host response. Extractions often help these patients extensively, but at times patients can have refractory inflammation and discomfort. Feline oral pain syndrome (FOPS), which is most prevalent in Burmese cats, seems to flare in response to stress and stimuli ranging from erupting permanent teeth to periodontal disease. Traditional medications such as corticosteroids and NSAIDs generally don't help much with FOPS, whereas many patients will respond to phenobarbital, diazepam, or gabapentin.

Acute and Chronic Oral and Dental Inflammation

By definition, acute inflammation is the local immune response to cellular injury, serving as a mechanism to initiate the elimination of noxious agents and damaged tissue. It can be a complex response, with various cell types and multiple inflammatory mediators involved. As the body's normal response to damaged tissue or the presence of harmful organisms, inflammation typically has a beneficial goal of helping tissues heal, including in the postoperative period. Management of acute inflammation may include the use of corticosteroids or NSAIDs and treating the underlying disease or trauma that was the inciting cause. Short-term use of these pharmaceutics can be very effective, but there can be adverse effects. When short-term inflammation or pain is not adequately controlled, symptoms and concerns can ramp up.

Chronic pain or inflammation often requires additional levels of a multimodal approach, starting with the appropriate use of medications if the condition is severe, such as in chronic oral pain or OA. Additional therapies may include nutritional intervention, supplements, and antioxidants; applying esterified fatty acids to the gingival tissue for oral issues; and providing specifically targeted nutraceuticals such as glucosamine/chondroitin sulfate for cartilage and connective tissue management for comorbidities. Beyond the oral cavity, excessive adipose tissue affects mobility and places stress on patients with OA; additionally, the impact of excess nutrients and diminished energy expenditure leads to the metabolic issues that form the basis of meta-inflammation, a low-level, chronic inflammation. Untreated oral and dental disease, especially periodontal disease, can also contribute to these levels of chronic inflammation that can have a systemic impact.

Chronic Inflammation and Aging

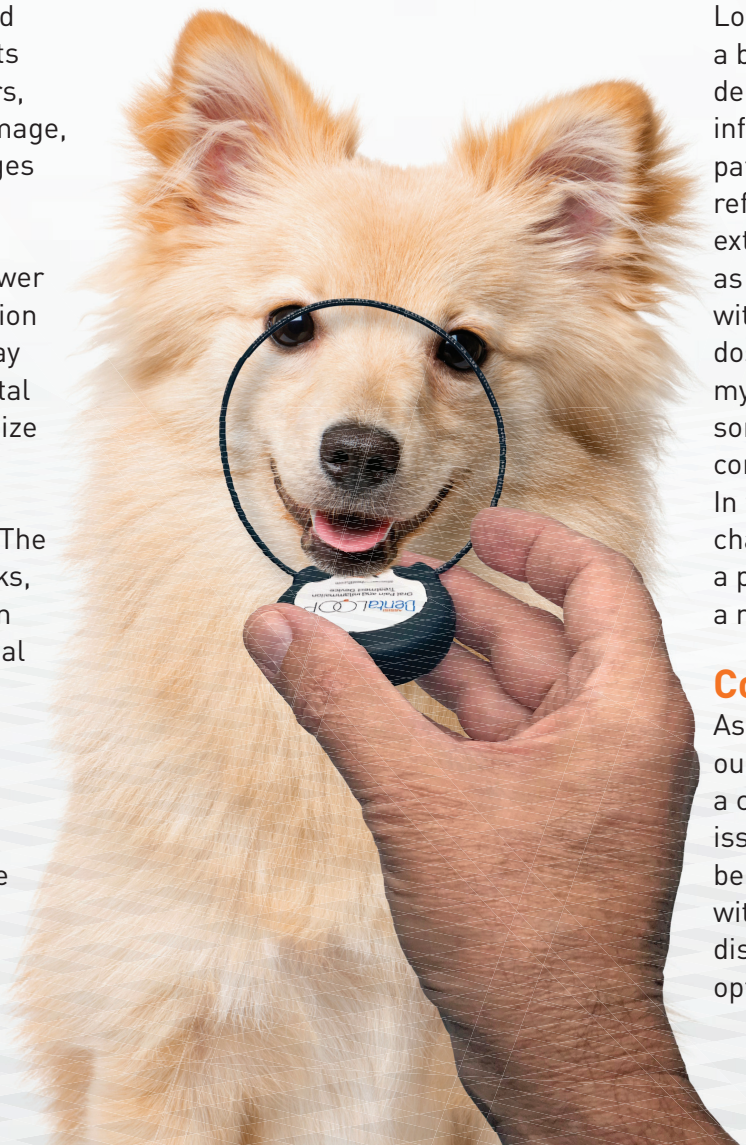
Inflammation from chronic oral or dental disease (as well as other causes) can also be a critical influence in the aging process, as has been shown in both humans and dogs. The inflammatory process results in an increase in inflammatory markers, immunosenescence, and oxidative damage, and this can result in pathologic changes linked to the chronic inflammation.
With aging, chronic inflammation and cytokine production can result in a slower resolution of inflammation after infection or tissue insult. Although an owner may be concerned about an anesthetic dental procedure in older pets, we can minimize those risk factors with preoperative diagnostics, intervention, and optimal patient support during the procedure. The benefits frequently outweigh those risks, and we often see older patients with an improved quality of life once their dental disease has been controlled.

Assisting with Acute Pain and Inflammation

In addition to treatment and medications, we can provide adjunctive recommendations such as home dental care and appropriate diet and supplements to address pain and inflammation. Additionally, removing any environmental stresses can help improve oral discomfort in patients.

In the pre- and postoperative period, and for those patients with chronic inflammation and pain, a therapeutic targeted pulsed electromagnetic field (tPEMF) system, Calmer Canine, can be provided with the Loop for dental care by Assisi Animal Health. A modification of the classic Assisi Loop systems, and delivering the same FDA-cleared tPEMF signal, Calmer Canine is designed to help deliver the EMF to the area of the oral cavity. This technology has been proved to help reduce pain and swelling by increasing endogenous production of eNO (endothelial nitric oxide), a cell signaling molecule that increases production of anti-inflammatory cell mediators and stimulates production of endogenous endorphins and opioids in damaged oral tissue.

This device can be used to help reduce preoperative pain, erythema, and edema in oral inflammatory conditions. Postoperatively, it has been shown to help speed recovery and reduce swelling, pain, and healing time after dental extractions. It also helps reduce the need for opioids and other pain medications.



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Presurgery Protocol

a. Calmer Canine is activated and applied around the patient's muzzle or held adjacent to the injured, inflamed, or painful area of the mouth twice a day for 15 minutes. It reduces pain and inflammation and improves the condition of the tissues in preparation for a planned dental or orofacial procedure.

b. Postsurgery or Post-trauma Protocol

c. Apply the device around the patient's muzzle or adjacent to the injured or affected area 2 to 4 times a day for 15 minutes, to reduce edema and pain and hasten healing.

Assisting with Chronic Pain and Inflammation

Due to the impact that chronic pain and inflammation can have on our patients, who are often suffering in silence, a multimodal approach, again, should be used to help maintain a good quality of life. Many studies and recommendations may start with a basis of providing some relief from chronic maladaptive pain with the use of medications such as gabapentin, amantadine, and even some ketamine protocols. In these patients, the tPEMF therapy of the Assisi Loop for dental care may also provide a benefit. Anecdotal information from dental specialists reports a decrease in inflammation when the Loop is used for patients with feline stomatitis and some refractory inflammation after full mouth extractions. This would not be considered as a monotherapy but used in conjunction with esterified fatty acid application, low dose doxycycline, cyclosporine, and a myriad of other stomatitis protocols. In some cats, increasing the time in between corticosteroid doses may provide a benefit. In fact, many oral medications can be very challenging to administer to a cat with a painful mouth, so the Loop can provide a noninvasive way to help.

Conclusion

As veterinary professionals, a key part of our patient focus is providing patients with a comfortable quality of life. Oral and dental issues can greatly affect the overall well-being of these patients, and we should work with pet owners to remove or manage any disease we can while continuing to provide options for complete pain management. ■

Improving your "human skills" with communication

Communication among members of the veterinary team or between the veterinary team and clients can sometimes become tense, but practices can improve the outcomes by understanding key principles of communication and learning to de-escalate a situation.

By Kate Boatright, VMD

Alyssa Mages, BS, CVT, and Caitlin Keat, MSM, of Empowering Veterinary Teams, are reframing the conversation around communication, starting with reclassifying it as a "human skill," instead of the more commonly used "soft skill."

During the session they presented at the Fetch *dvm360®* Kansas City conference, they discussed how to improve these essential human skills through key communication.

According to Mages and Keat, to have effective communication, we must first understand the goals of the conversations we are having, whether with clients, team members or others in our lives. Goals of successful conversation can include conveying an understandable and factual message, maintaining a friendly, open, and honest conversation style, and being memorable to create a lasting impression.

Mages and Keat presented 4 types of communication: controlling, promoting, analyzing, and supporting. Understanding and identifying these styles of communication can help you to best engage with those you are talking to:

- Controlling is typically straight to the point and assertive. This type of communication may come across as aggressive, but it is not intended that way in most situations. To best communicate with these individuals, know your facts and stick to the topic at hand.
- Promoting is enthusiastic and engaged and centers on people and experiences. Connecting with this type of communicator can be done through asking and answering personal questions, but you will probably need to be the one to keep the conversation on track.
- Analyzing involves in-depth conversations and tends to be fact-based and inquisitive. Be ready to answer questions and stay patient while the other person processes the answers and facts.
- Supporting tends to focus on problem solving and connection. This style of communicator tends to be more laid back, excels at conflict resolution, and relies on establishing trust.

It is important to note that in many conversations, multiple styles will be used by both parties. To be good communicators and effectively engage with our audience, we must learn to adapt and use different styles depending on the situation.

Phone communication

Many interactions in the veterinary hospital start before the client even reaches the doors of our clinic. Our client service representatives (CSRs) and veterinary team members are often communicating with the clients over the phone prior to or after their appointment and can set the tone for the visit.

Having a script to follow can help to guide these conversations, as well as in-person conversations. Scripting does not mean that the same words are used every time in every situation, but it provides a baseline for where to begin.

Mages and Keat want veterinary teams to know that it is important to maintain phone etiquette by confirming who you are talking to and attempt to make a personal connection. They also recommend the phrase "I'll be right with you," instead of "Would you mind holding?" or "Please hold" as a gentler way to place a person on hold.

When speaking to a client on the phone, and especially when performing teletriage, Mages and Keat suggest remembering the 3 R's: receive, record, and relay. This ensures that no information is missed or lost as it is passed from one member of the veterinary team to another.

De-escalation

Mages and Keat note that in the current environment, every member of the veterinary team and their clients are under large amounts of stress. When stress levels run high, conversations can go in the wrong direction quickly and anger can ensue. In these situations, it is important that we de-escalate the situation, which requires what Mages and Keat refer to as a "reduction of the intensity of a conflict of a potentially violent situation."

The first step in de-escalating a situation where tempers are flaring, whether it be between client and staff or between staff members, is to recognize that it is happening. Body language and other nonverbal communication can be helpful to notice as they can be early indicators that we are not connecting with the person we are conversing with.

Once we have recognized that a conversation is heading into a heated place, we must pay attention to our own emotions and keep them in check. Being able to do this is part of emotional intelligence. By understanding and controlling our own emotions, we can alter our communication style, tone, and body language to respond to the situation. Mages and Keat believe that communication is a two-way street and if you can manage your reaction it will help to de-escalate the interaction.

De-escalation can be done in 3 ways, say Mages and Keat: direct, delegate, or defer. Directing a situation involves taking control and telling the other person what the next steps are. Delegating means stepping away and sending someone else into the conversation. Deferring means asking to postpone the conversation (as long as it is a non—life-threatening situation) until a later time when emotions have calmed. Each of these techniques have their place and which option is chosen will depend on the situation and the personalities involved.

Take-home points

Successful communication requires us to use many different styles of communication depending on whom we are engaging with and the situation we are in. Learning to recognize communication styles, when we are connecting with someone, and when we aren't, will help all members of the veterinary team to better communicate with one another and with their clients. dvm360®

Kate Boatright, VMD, is a 2013 graduate of the University of Pennsylvania, is a practicing veterinarian and freelance speaker and author in western Pennsylvania. She is passionate about mentorship, education, and addressing common sources of stress for veterinary teams and recent graduates. Outside clinical practice, Boatright is active in organized veterinary medicine at the local, state, and national levels.

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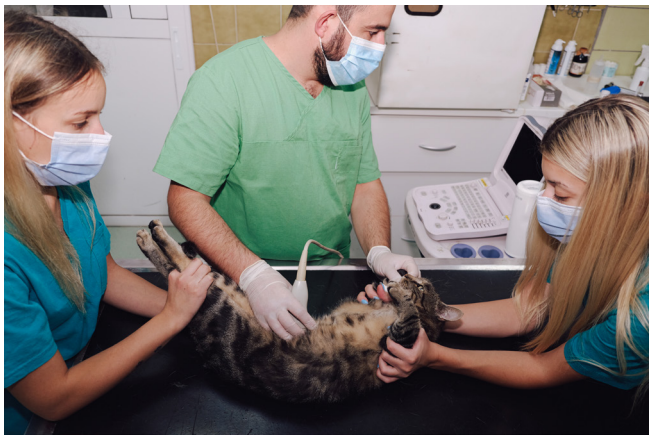

Veterinary technicians embrace their roles

National Veterinary Technician Week focused on the professionals who play a vital role in caring for animals in a veterinary practice.

By dvm360® *staff*

National Veterinary Technician Week in October recognized these professionals' contributions to veterinary medicine. According to the American Veterinary Medical Association (AVMA), they are critical to the function of veterinary practices and play an important role in the welfare and health of animals in their care.[1] Additionally, AVMA says, veterinary technicians drive practice efficiency and well-being, allowing veterinarians to focus on work requiring a more advanced veterinary education.[1]

First observed in 1993, National Veterinary Technician Week is held annually during the third week in October, according to AVMA.[1] In celebration this year, *dvm360*® asked veterinary technicians about their roles and what motivates them most. The responses came by email and through the Veterinary Support Staff Career Group on Facebook. They include the following:

Q What inspired you to become a veterinarian technician?

Stephanie Adams, LVMT; Family Pet Health, Murfreesboro, Tennessee: I have always loved medicine, science, and helping [individuals]. I grew up with various pets and combined my interests in animals and medicine to be an LVMT [licensed veterinary medical technician].

Zoey Smith, LVT; Family Pet Health: I was inspired to be a veterinary technician because I love how animals touch our lives. There is just something about the human/animal bond that has always moved me. [Although] the pandemic continues to be a challenge for us in the profession, one aspect that has touched me deeply is how important pets have been to so many who needed connection and love this past year and a half.

Alexia Minschwaner, CVT; Dresher, Pennsylvania: My love for animals and natural curiosity inspired me to become a veterinary nurse. Animals can be so different from us regarding diet, health, and mannerisms. Becoming a vet nurse has enabled me to learn so much about our pets.

Bash Halow, BA, CVPM, LVT; Halow Consulting, New York, New York: My first position in an animal hospital was a kind of veterinary attendant. I was supposed to do whatever anyone else on the staff told me to do. Sounds terrible, but I loved it. Then after enough [individuals] quit, I got to work the front desk. I got [chewed out] by clients, doctors, techs, you name it. I loved that job too. It didn't matter that I got [chewed out]. I just loved it. I loved the multitasking; I loved learning about the medicine; I loved gabbing with my coworkers and the clients.

Still, the real siren song was "the back." If you were a technician who worked in "the back," you got to answer the hard questions, you got to do the cool jobs, and you were directly associated with patient outcomes. I wanted to be a technician. And after enough callouts, enough staff shortages, and enough pleading, I learned some technician skills.

Many years later, New Jersey offered technicians a chance to be "grandfathered in" if you could pass a licensing exam and could get letters from vets vouching for your skills. I studied for weeks to pass that test and pass it I did.

That's how I got to be a licensed tech, but now that I think about it the license is almost an afterthought. The thing that has always turned me on about my position is the learning, the care, and the client education. The knowledge and experience I have had as a tech has made an impact on >>

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my own animals' lives and the lives of countless other pets and pet owners I have enjoyed meeting over the years.

Tasha McNerney, BS, CVT, VTS (anesthesia and analgesia): The movie *Turner & Hooch*. I wanted to be the veterinarian in that movie. When I realized there was a career [like] being a veterinarian but with more hands-on nursing skills, I went for it.

Alyssa Mages, BS, CVT; Empowering Veterinary Teams LLC: To be a voice for the voiceless and to lend my skills and compassion to those who truly need it.

Kelly Piedrahita, LVT; Bond Vet, New York: I would say my passion for animals inspired me to become a vet tech. Since a little girl, I was obsessed with animals. When I discovered there was a profession to help and save them, I was sold.

Q What is your favorite part of being a vet tech?

Adams: I love nursing sick pets back to health and reuniting them with their pet parents.

Smith: My favorite part of being a technician is the constant opportunity to grow and improve. There is always a new skill or some new knowledge or information that comes up that improves our level of patient care. I strive to be a lifelong learner and I love that there will always be something to learn in the veterinary profession.

Halow: I love learning. I love helping clients understand the value of veterinary care and oversight by a veterinary medical team.

McNerney: The constant learning, from new techniques to new anesthetic drugs...I love being able to learn new things to make anesthetic events safer for my patients.

Mages: Being part of an incredible community that is constantly growing and evolving, all while helping animals and utilizing cutting-edge medicine and technology.

Athena Ojeda, LVT; Bond Vet: I love that there is practically no limit to what I can do to help my patients. We as technicians wear so many hats! From basic things like administering vaccines to doing blood transfusions, monitoring anesthesia, performing dental prophylaxis, taking radiographs, caring for wounds, and so much more. I am able to take care of whatever they need to keep them healthy and thriving.

Q What is something clients would be surprised to know that you do as a vet tech?

Minschwaner: Many of us are passionate about training and behavior. I think clients would be surprised to know that we really do take our time and work with our patients and make sure they are not stressed. We want the vet office to be a happy place for every animal and client.

Smith: I think clients would be surprised to know that as a licensed technician we do a little of everything. We draw blood and run analyzers, screen blood work and lab results before the doctor sees them, fill prescriptions, answer phones, monitor anesthesia, educate clients, clean up stinky messes and, in the best moments, we get to play with puppies and kittens.

Halow: I honest to goodness treat their pet like a thinking, feeling being. I don't work with animals all day; I work with individuals.

McNerney: I think clients would be surprised to know the vet tech is usually the one monitoring your pet under anesthesia and is sometimes specialized in anesthesia.

Mages: Everything. All joking aside, there is a lack of understanding among the general public of all the things that veterinary technicians and nurses do—anesthesia, phlebotomy, radiology, etc—and we're only limited by how much we push ourselves to learn to accomplish.

Dianny Felix, LVT; Bond Vet: I find it humorous that most people don't compare both human medicine and veterinary medicine when they're actually very similar. Clients are usually surprised knowing that I've performed anesthesia on their pets, pulled blood work, helped doctors come up with a differential diagnosis, and [performed radiographs].

Q What should veterinarians know about the veterinarian technician role?

Adams: LVMTs are the most valuable resource veterinarians have available. Use us to our fullest extent and show gratitude. You want us to be around and to stay around.

Smith: I wish all veterinarians and practice owners understood the value of their staff. Treating LVTs and assistants as valuable assets with knowledge, as well as being kind and supportive of them and their mental and physical health, goes a long way to retaining a staff that is loyal and wants your practice to grow and succeed.

Halow: Tell me what you need to get done, train me. I'm ready and eager to learn. You and I can make a great team.

Mages: We're here, we're skilled, and we're ready to be utilized. Let us do what we are capable of doing so that we can support you to do the amazing work you do.

Christina Clarke, LVT; Bond Vet: With all the roles and tasks that [veterinary] nurses have, it is imperative that our voices are heard and respected.

Q What advice would you give aspiring veterinary professionals?

Adams: Surround yourself with kindness and positivity. Be the vet or LVMT that you want your pets to have.

Minschwaner: Although this field can be challenging mentally and physically, quality pet care starts with you. Always take care of yourself.

Smith: I would advise them to know their worth. Without a support staff, even the best doctor cannot succeed. Take what you know and use it. This is a hard job but it's incredibly rewarding when you find a practice that values you. Don't dwell on mistakes; own them and learn from them, but then move on.

"My favorite part of being a technician is the constant opportunity to grow and improve."
—Zoey Smith, LVT

Halow: Show up. Learn. Be ready to help. The profession is exploding with opportunities. As the world modernizes, there are fewer gatekeepers between you and your goals—but skip the entitlement thing. Be worth it and you will be treated as worthy.

McNerney: Go into it with eyes wide open. It's very rewarding, but the field has some drawbacks such as lower pay compared with our human nursing counterparts.

Mages: Remember: No one is "just" anything. Own your awesome and advocate for it.

Additional information about veterinary technicians can be found on the AVMA's website and at dvm360.com.

Kara Schaffer, LVT; Bond Vet: The advice I would give to aspiring veterinary professionals is to never forget why you wanted to enter the profession and how you have grown within your role. We work in a profession where you will never stop learning. There will be instrumental people who will help advance your skills regardless of their position title. It is important to always remain open to learning from others and remember to help empower the next generation to thrive as others did for you. dvm360®

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For more information, visit **thevetiverse.com/en**

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Marc Rosenberg, VMD

THE DILEMMA

Delivering a needed dose of relief to the veterinary community

A practice weighs its options for the best way to spend surplus income for the betterment of animal lives.

The COVID-19 pandemic has impacted the lives of everyone, and the veterinary profession is no exception. Masking, curbside care, anxiety, and vaccine adherence have wreaked havoc on the profession. One facet of the viral invasion unique to the profession was an increase in pet ownership because of the mandated lifestyle change of a pandemic society. This has resulted in a significant increase in practice incomes.

The Hopson Animal Hospital felt that despite the pandemic restrictions and stress on their practice, some of their monetary good fortune should be used to assist the animals they serve. The clinic administration—with input from the hospital staff—set out to see how they could lighten the economic and emotional fallout of COVID-19 for their clientele.

A clinic staff meeting was convened to address the subject. How could the Hopson animal hospital assist pandemic-impacted pets and clients in need? The hospital director told staff that due to increased client services and government assistance efforts, the clinic was in the position to assist certain clients in need. But what should this assistance look like? It was suggested that help be given to clients that requested aid caused by pandemic hardships. That was countered by the comment that many clients in need may not be comfortable initiating such a request. It was then suggested that the client intake questionnaire include a query asking if the pandemic has significantly affected job status or current income. If the answer was "yes", a predetermined discount could be applied to those invoices.

Another staff member suggested that nonprofit shelters, adoption agencies, spay and neuter facilities, and pet community outreach organizations could receive a donation from the clinic to assist the animals they are helping. This way, a specific budget could be established to assist these organizations in need. She went on to say that assisting clients that state they need assistance could be overwhelming, and the clinic may not have the funds to meet all of the client needs. This could then end up making things inequitable.

Finally, there was a suggestion by a dissenter in the group. This staff member felt the increased monetary good fortune of the clinic should be used to enhance clinic equipment and resources that could better serve the medical needs of the patients including staff continuing education and facility upgrades. He went on to suggest that it would also be a much-needed morale booster at a difficult time.

The hospital director now had a decision to make. Should efforts be made to assist pandemic-affected indigent clients? Should additional assistance go to local shelters and nonprofits dealing with medical and staff related issues? Or should more of the enhanced budget be directed internally to increase the capabilities of the Hopson Animal Hospital?

After much consideration it was determined that additional resources would be directed to care for animals housed in nonprofit shelters. This aligned most closely with the clinics mission statement to help pets in need through progressive medicine and compassionate care.

I guess this would technically have to be called a champagne dilemma. Nevertheless, after the stress and heartache of this pandemic, charitably helping pets is an important part of the healing process. dvm360®

Dr Rosenberg's response

The entire staff of the Hopson Animal Hospital participated in the process of designating charitable efforts to pets in need. This effort should not be taken lightly. After masking the entire workday, worrying about family health and school schedules, this feel-good gesture is a godsend. While the profession remains in a pandemic battle, every victory contributes to the health and well-being of our colleagues. This charitable effort by the Hopson Animal Hospital as well as similar efforts from around the country will bring immeasurable relief to pets, clients, and veterinary health care workers.

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Tap the tax, savings potential of cash balance plans

A qualified retirement plan, cash balance plans have seen rapid growth in recent years and are used in many businesses including medical practices.

By Jason M. O'Dell, MS, CWM; and Carole C. Foos, CPA

Cash balance plans (CBPs) are often referred to as today's "modern retirement plans" because their use has grown rapidly in closely held businesses, including medical practices, during recent years. CBPs are a solution for high-income practice owners looking for tools that can provide them with significant short-term tax deductions along with strong long-term economics.

A CBP is a qualified retirement plan (QRP) that can provide dermatologists with a way to increase tax deductions and simultaneously boost retirement savings.

In a CBP, a participating employee will have access to a certain sum upon reaching retirement. Let's use $100,000 as an example. To get to $100,000 at retirement, the plan assumes a combination of employer contributions and compound interest over time. When the employee retires, they can take the $100,000 either as a lump sum or as an annuity that pays a portion of the $100,000 in periodic payments.

CBPs are like traditional defined benefit plans in terms of the funding and reporting requirements. Minimum funding standards apply; there is a minimum annual employer contribution that is reported on the CBP's tax form 5500. An actuary is required to calculate this contribution amount using a reasonable actuarial funding method and actuarial assumptions specified by the IRS. The employer can decide to contribute an amount between the minimum funding requirement and the maximum permitted deduction but should attempt to fund to the actuary's recommended contribution level to meet the plan's current benefit liability.

On the other hand, CBPs are different from traditional defined benefit plans that promise a specified monthly benefit amount at retirement (ie, 3% of pay per year of employment, payable at the retirement age of 67). CBPs define benefits in the form of an account balance, rather than a periodic amount. This can be helpful because employees always understand what they are entitled to under the CBP because it is a specific amount. Owners and employees both know what is going into the plan on their behalf and what will come out when they leave.

CBPs and 401(k)s are not mutually exclusive. In fact, a dermatology practice can typically utilize both types of plans simultaneously, "layering" a CBP on top of its existing 401(k).

Main benefits of CBPs

There are 4 compelling reasons why dermatology practices are interested in CBPs:

1 Significantly increased deductions for plan contributions

In 2021, 401(k)s are subject to maximum deductible contribution limits of $19,500, with profit-sharing plan limits at $58,000. (The catch-up contribution for those over age 50 is an additional $6,500 annually.) These limits increase slightly each year. Properly structured CBPs, on the other hand, can allow business owners to make tax-deductible contributions of $200,000 or more, potentially saving them $80,000 to more than $100,000 in income taxes annually.

2 Additional costs are much lower than additional tax savings

CBPs usually involve higher annual administration costs and higher employer contribution amounts for employees than 401(k)s and/or profit-sharing plans. Nonetheless, the tax savings typically dwarf these additional expenses, making the CBP extremely attractive.

TABLE how a cash balance plan can create 2 deductions for the price of 1

Cash balance plans (CBPs) can be used to reduce taxable income enough to qualify for the qualified business income (QBI) deduction even if the taxpayer's business is a specified service trade or business, like a medical practice. That holds true for those whose income puts them above the new tax code's QBI threshold limits. In this way, the CBP can create 1 deduction that leads to a second deduction, as the following example shows.

QBI	Before cash balance plan	After cash balance plan[a]
199A deduction	$585,822	$300,000
Total taxable income	$0	$60,000
Total taxable income	$585,822	$240,000
Federal income taxes[b]	$154,126	$45,642
Difference in federal income taxes[c]	-	$108,484

A: CBP CONTRIBUTION IN YEAR 1 OF $285,822.
B: BASED ON 2021 TAX RATES FOR A MARRIED FILING JOINTLY TAXPAYER.
C: ADDING A CASH BALANCE PLAN REDUCES FEDERAL TAX BY 70%.
SOURCE: OJM GROUP, CINCINNATI, OHIO

3 Possible second level of tax deduction

For those whose income puts them above the new tax code's qualified business income (QBI) threshold limits, a CBP can be a tool to reduce taxable income enough to qualify for the QBI deduction, creating 1 deduction that leads to a second deduction (**Table**).

4 Greater access to top (+5) asset protection level

As an exempt asset under federal law and most state laws, ERISA-qualified QRPs are protected at the highest (+5) level. Unless a CBP is put in place for only 1 owner, with no other employees, this ERISA protection will usually also apply to the CBP. With larger contribution levels allowed in the CBP, this means more wealth can be protected in the CBP than in most other QRPs. CBPs are powerful planning tools that provide larger contributions than the QRPs most medical practices use today. CBPs can be attractive to practice owners who are looking for greater tax deductions, asset protection, and superior retirement savings. dvm360®

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