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The Best Of The
BEST 
OF
2022
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.

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

- In clinical studies, dogs treated with VETMEDIN lived almost twice as long from the start of treatment, and required less intensification of therapy to maintain quality of life, than those treated with an ACE inhibitor.

- In the US, VETMEDIN has supported over 1 million dogs

- Recommended by the ACVIM as part of standard treatment for dogs with congestive heart failure

References:
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.
Veterinary Conference Calendar

AVMA Veterinary Leadership Conference January 5-7
Chicago, Illinois (hybrid)
avma.org/events/veterinary-leadership-conference

Western Veterinary Conference February 19-22
Las Vegas, Nevada
www.vitacare.com/

Note that many of this year’s industry events are now being held online or via a combination of live and virtual learning. Please visit individual event websites for details.

JANUARY

AVMA Veterinary Leadership Conference 2023
January 5-7
Chicago, Illinois (hybrid)

Veterinary Conference

Midwest Veterinary Conference February 10-12
Murfreesboro, Tennessee
mccv.tvm.net

Veterinary Conference

Virginia Veterinary Conference February 16-18
Roanoke, Virginia
vvma.org/vvc

FOR THE WEEK OF FEBRUARY 20-26

Veterinary Conference

Music City Veterinary Conference February 10-12
Columbus, Ohio
www.mwvcinfo.com

Veterinary Conference

February 16-18
Virginia Veterinary Conference

Veterinary Conference
ON-DEMAND WEBINARS

**Ditching the Itch**  
*With a Happy Skin Barrier*  
*Specialty:* Dermatology  
*Speaker:* Linda Messinger, DVM, DACVD  
*Sponsor:* Nutramax  
*RACE-approved:* 1.0 CE Credit Hour

Epidermal barrier dysfunction in atopic dermatitis has been a hot area of research. We will examine various therapeutic modalities intended to help improve epidermal barrier dysfunction, thereby aiming to reduce pruritus and other clinical signs in dogs with atopic dermatitis. Several cases will also be discussed.

**Creating an Incredible Marketing Toolkit for Your Veterinary Hospital**  
*Specialty:* Business  
*Speakers:* Caitlin DeWilde, DVM; Nick Mignacca, ezyVet; and Jake Flashman, ezyVet  
*Sponsor:* ezyVet  
*RACE-approved:* 1.0 CE Credit Hour

Everything you need to know to market your veterinary practice, build a successful brand, and delight your customers. Learn how to stand out from the competition, create emotional connections with clients, and leverage the power of digital marketing to smash revenue goals.

**Polyps, Pain & Pus- Yuck:**  
*Treating & Preventing Recurrent Ear Disease*  
*Specialty:* Dermatology  
*Speaker:* Joya Griffin, DVM, DACVD  
*Sponsor:* Vetoquinol  
*RACE-approved:* 1.0 CE Credit Hour

Learn how to diagnosis and treat ear otitis externa and what to do in recurrent cases.

**Radiation Oncology–A Review**  
*Specialty:* Oncology  
*Speaker:* Maegan Watson-Skaggs, DVM, DACVR-RO  
*Sponsor:* VCA  
*RACE-approved:* 1.0 CE Credit Hour

This course covers the general principles of radiation oncology. We will discuss how radiation works, different radiation delivery techniques, radiation associated adverse effects, and common tumors treated with radiation therapy in veterinary medicine.

**Pain Assessment to Support Patient Care, Practice Efficiency and Improved Communication**  
*Specialty:* Pain Management  
*Speakers:* Ralph Harvey, DVM, MS, DACVMA; and Kristen Cooley, BA, CVT, VTS, (Anesthesia & Analgesia), VCC  
*Sponsor:* BioTraceIT  
*RACE-approved:* 1.0 CE Credit Hour

The evaluation of pain is essential in veterinary care. New insights and technology have emerged to address how animals often obscure signs of pain, particularly in the chronically painful patient. This educational event will focus on bedrock fundamentals, individualized care plans, pet owner engagement and satisfaction, and how improved communication leads to client loyalty and staff empowerment.

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And, along with our CE content, we have multiple non-CE programs on the horizon, including podcast episodes with some familiar faces.

**LIVE WEBINARS**

**Pesky Pyoderma: Appropriate Diagnosis and Treatment Options**  
*Date:* December 15, 2022  
*Specialty:* Dermatology  
*Speakers:* Ashley Bourgeois, DVM, DACVD; and Julie Miller, DVM, DACVD  
*Sponsor:* Vetoquinol  
*RACE-approved:* 1.0 CE Credit Hour

Learn about the clinical signs of pyoderma, how to perform cytology, and appropriate treatment options.

**Radiation Oncology–A Review**  
*Date:* December 19, 2022  
*Specialty:* Oncology  
*Speaker:* Maegan Watson-Skaggs, DVM, DACVR-RO  
*Sponsor:* VCA  
*RACE-approved:* 1.0 CE Credit Hour

The course covers the general principles of radiation oncology. We will discuss how radiation works, different radiation delivery techniques, radiation associated adverse effects, and common tumors treated with radiation therapy in veterinary medicine.

**CONTACT US**

Have ideas for future continuing education opportunities or wish to educate fellow colleagues as one of our faculty? Tell us more at CEFaculty@dvm360.com.
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26 **Best of the best of 2022**
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Caitlin McCafferty, Associate Editor; Sydney Yankowicz, Assistant Editor
Antech’s partnership allows us to focus on what we love most — more time caring for patients.

Nicole Sheehan, DVM, with her dog Cooper-owner, Whole Pet Veterinary Hospitals

94% of veterinarians surveyed agreed in a study agreed that sending fecals to a reference laboratory produces more accurate results. Technicians also reported that in-house fecal flotations are their least favorite task.

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Veterinary professionals are resilient. You’ve fought through staffing shortages, overloaded schedules, and a surge in pet ownership—all while adapting to pandemic-driven challenges such as implementing curbside and virtual care. The world needs the heroes of vet med now more than ever, so we spent 2022 devoted to supporting the people at the heart of the profession.

In our continuing efforts to revitalize live conferences and continuing education, we launched dvm360® Unleashed—a gamified continuing education (CE) experience—at the 2022 Fetch dvm360® Conference in Kansas City, Missouri. This innovative new format delivers CE in an engaging game show format, allowing attendees to participate and immerse themselves in learning like never before. The event was a huge hit with attendees, so look for dvm360® Unleashed! to expand to future Fetch conferences as we continue to reinvent and modernize the live CE experience.

At dvm360®, we recognize the importance of celebrating the heroes of veterinary medicine who serve as an example of how truly impactful and inspiring this profession can be. In 2021, we unveiled the inaugural class of Veterinary Heroes™, recognizing 8 paragons of leadership who stand at the vanguard of the profession, propelling it forward. This year, we expanded the program to honor 12 Veterinary Heroes™ who likewise have worked to advance the field of veterinary medicine. We also were proud to host the 2022 Veterinary Innovators of the Year Awards in San Diego, California, earlier this month. With 2023 around the corner, take a moment to think about whom you would nominate as a veterinary hero. There is certainly no shortage of heroes in veterinary medicine.

dvm360® strives to provide veterinary professionals with everything they need to take care of our beloved animals, yourself, and each other. Our new live and on-demand CE webinar platform, dvm360® Flex, debuted this year and has grown into a leader in comprehensive online education for veterinary professionals. The dvm360.com website strives to be the foremost resource in news and clinical information. From timely FDA warnings, to answers on canine liver enzymes, check out our top articles, videos and podcasts for 2022 on page 26.

With the shadow of the pandemic slowly receding, we are excited to show you what we have in store for live Fetch conferences in 2023 and beyond. With inspiring new speakers, engaging new experiences, and refreshing new formats for CE, we’re setting the stage for our best year yet.

—Mike Hennessy Jr
President & CEO,
MJH Life Sciences®
These are a few of our favorite things
(vet med edition)

Parvo in puppies and ringworm in kittens
Bright jaundice patients trying so hard not to be bitten
Brown paper packages full of worms from anything
These are a few of our favorite things

Cream-colored oodles of many kinds of doodles
From labradoodles to goldendoodles, even the Berne doodle
Pumps are not working and everything’s beeping
These are a few of our favorite things

Clients who fail to pick up their furbaby’s ashes
Calicos that look deceiving with those adorable mustaches
Those naughty kittens consuming every piece of string
These are a few of our favorite things

When the dog bites (fill out an OSHA form)
When the bee stings (grab the epinephrine)
When I’m feeling sad (watch a TikTok video)
I simply remember our favorite things
And then I don’t feel so bad

Goldens that give you that “look” and your smitten
Bright woods lamp glow on a pile of kittens
Brown paper packages seeping urine on everything
These are a few of our favorite things

Dogs who just ate a whole crisp apple strudel
Knowing you’re staying late because it’s a schnoodle
Macaws and amazons coming down for broken wings
These are a few of our favorite things

Chihuahuas with dresses and blue satin sashes
Knowing your fingers are in for some lashes
Can’t find a med with back orders to everything
These are a few of our favorite things

When the cat bites (check for Bartonella)
When the fleas zing (do your dermatologic database)
When I’m feeling mad (It’s OK; you’re not alone)
I simply remember my favorite things
And then I realize how vet med is soooooo RAD!
Are paid ads worth it?
The dos and don’ts of paid online marketing

The world of online advertising can be tricky to navigate. With the amount of information available, it’s hard to know what to do, what to invest in, and how to interpret the data. Paid ads can be worthwhile, but only if you know what you’re doing. If you don’t or are just dabbling—hoping for the best but crossing your fingers that you get it right—chances are you’re wasting your time and money. Nevertheless, you can learn.

ARE YOU DOING IT RIGHT?

It’s all about audience conversions. You may get impressions, but unless they’re turning into clicks and purchases, your paid ads are not working. What’s the solution? Google Trends. This digital resource gives you access to a vast amount of free information about your audience: what people are searching for, whether the searches come in patterns, and much more. It allows you to bid on the most popular keywords to increase your visibility. Most importantly, it allows you to check what your audience is looking for, and that’s where you can turn impressions into conversions. Then you can include the right keywords in your website copy to enhance search engine optimization (SEO), climb the results page organically, and ditch paid ads for much more profitable advertising (SEO is free).

1. Make sure that your ad’s landing page is relevant
If your ad is not representative of the landing page it leads to, you are not only likely to push a poor customer experience, but also may lower your ad’s overall quality score.

2. Use keywords
Keywords are king for organic traffic and the key to success with paid ads. The ads shown to potential customers are based on the keywords you use because your customers are looking for specific keywords to find answers to their questions.

3. Start small
If you’re running a marketing campaign for the first time, you should not be investing $10,000 in it. Instead, you should cap your daily budget so you can run the ad for more than just a few days. Budget it well and limit how many times the ad can be shown to customers.

4. Remember the account structure
Your ads need to be organized. They need to have no more than 10 ad groups per campaign. Each group should have 2 or 3 ads and a minimum of 20 keywords. Organization is key; otherwise, you may not see the results you’re looking for.

5. Don’t use smart campaigns
You may think that using smart Google Ads campaigns is a genius idea to keep it all simple, but the reality is that simplicity limits flexibility. Your ads might perform decently, but you will see much better results when you have control over your targeting and bidding strategy, among other things.

6. Don’t use default bidding or targeting
Instead of default bidding, use the custom option. This way you will have more control over your cost per click and overall conversions.

7. Don’t launch an ad without testing it first
You could lose a lot of money by launching an ad campaign without first seeing whether it works. To check this, simply do A/B testing to see which ad performs better. You may find that it’s a waste of time, but think of it this way: What if testing meant that you could tweak the ad and double the conversion it brings in?

8. Ignore automatic ad extensions
Sometimes you may see a phone number or links to additional pages beneath a listing; these features are called ad extensions. Be sure to use manual extensions to the best of your abilities. Although you cannot control automatic ones generated by Google based on the information you provided, you can use extensions manually, which can make it easier for your ads to perform significantly better. In fact, they can increase the click-through rate to remarkable levels, which may be what your ad campaign needs if you are seeing high impression numbers without seeing the conversion increasing as well. The best way to choose the links to include is by reviewing your Google analytics to see which of your pages are most highly viewed. And just like that, you know a bit more about paid advertisements! Paid ads can be helpful, but only if you know how to use them.
This year brought a number of inaugural events for dvm360®, and overall, 2022 was not short of conferences for the team. From coast to coast, each conference took us throughout the country to new locations and debut program launches.

The dvm360® editorial team covered in-person events that included Fetch in Charlotte, NC; Directions in Veterinary Medicine (DIVM) in Indianapolis, IN; Fetch in Kansas City, MO; the Atlantic Coast Veterinary Conference® in Atlantic City, NJ; and and Fetch in San Diego, CA.

**FETCH CHARLOTTE**

Our year kicked off with a new location for our Fetch dvm360® conference in Charlotte, North Carolina. This conference took place April 22 to 24, and featured a wide variety of lectures to choose from, including feline medicine, dermatology, integrative medicine, and much more.

The dvm360® editorial team interviewed more than 20 faculty members from the conference on their respective lecture topics. Fetch Charlotte also featured a karaoke event for attendees to participate in some after-show fun.

“Charlotte has a special place in my heart, so I [was] excited to be part of this experience for the first time that Fetch [was] in the Queen City,” said Fetch faculty member Charles D. McMillan, DVM, in a previous dvm360® interview. After the success of the first conference of 2022, Fetch Charlotte is scheduled to return next year in March.

**DIVM**

The DIVM conference, held June 24 to 25, in Indianapolis, Indiana, was an inaugural event for a smaller, single-track version of veterinary conferences. For a more intimate approach, the conference focused on topics specifically in pain management.

In a dvm360® interview, keynote speaker Matthew Brunke, DVM, DACVSMR, CCRP, CVPP, CVA, said, “I’m thankful it’s a small gathering. I like the fact that it’s a single track. Sometimes when you go to the bigger meetings, you [think], ’I wanted to be in so-and-so’s lecture, but there’s only so many spots. And how do you get into every room or learn all that?’ ”

He added, “So by having a nice, focused group, where it’s just one powerhouse presenter after another… I’m not missing out because I’m not in somebody else’s lecture room.”

From the success of this single-focused conference, DIVM is set to return in 2023 covering 3 unique topics in 3 new conference locations.

**FETCH KANSAS CITY**

The Fetch dvm360® conference in Kansas City, Missouri, was a returning conference for us, and it featured the launch of our first gamified continuing education (CE) program, dvm360 Unleashed!, during which attendees could answer Jeopardy!-style questions to earn CE credit. Fetch Kansas City took place August 26 to 28, and the game show was unveiled in place of the second-day keynote presentation and the third-day Lunch & Learn session.

“Gamified learning actively engages participants to interact, which is known to increase memory recall and comprehension,” Adam Christman, DVM, MBA, chief veterinary officer of dvm360®, said in an interview.

Coverage of these and other industry conferences can be viewed at dvm360.com/conference.
Endangered softshell turtles are born at San Diego Zoo Wildlife Alliance

The San Diego Zoo Wildlife Alliance in California recently announced that its wildlife care team welcomed 41 endangered Indian narrow-headed softshell turtle hatchlings over the summer. They are the first of the species to be hatched by a North American accredited conservation organization.

For more than 20 years, the zoo’s wildlife care specialists have been closely monitoring their 3 resident narrow-headed softshell turtles for any sign of breeding. It’s a long process because not only can it take about 10 years for these turtles to reach sexual maturity, but also they typically lay their eggs overnight and cover them with dirt, making it a challenge to find a nest.

This summer, the wildlife team members discovered 2 nests with the 41 turtle eggs. Some of the turtles were hatched in the reptiles’ habitat, while the other eggs were put in an artificial nest incubator to increase their chance of survival.

“This is a thrilling moment for us at the San Diego Zoo, and an incredible step forward in the conservation of this species,” Kim Gray, curator of herpetology and ichthyology at the San Diego Zoo, said in an organizational release. “We have been focused on caring for these turtles for a very long time, and part of that care is to gain a greater understanding of the species’ natural history. With the knowledge we gain here at the zoo, we can better assist our partners in India to help this essential species thrive in their native habitat.”

Also referred to as the small-headed softshell turtle, the Indian narrow-headed softshell turtle is a large turtle species native to the Indian subcontinent! They live on the bottom of deep rivers and streams in northern India, Bangladesh, and Nepal. These turtles are considered an indicator species by scientists, meaning they help establish the health of the surrounding environment. "These turtles are higher-level predators within their native ranges," Gray said. "If they are thriving, that means the river habitats where they live are healthy and can support other species. And that includes humans, as some local communities depend on the same water source used by the turtles."

The species is listed as endangered on the International Union for Conservation of Nature Red List of Threatened Species. Their population has been at risk due to the international pet trade, human harvesting for food, environmental pollution, and destruction of sandbar habitats. Scientists are trying to determine the exact number of turtles left.

San Diego Zoo Wildlife Alliance has worked with the Turtle Survival Alliance, specifically the organization’s presence in India, to host wetlands workshops that inform local communities about the interconnectedness between the health of native wetlands and rivers, and the well-being of local human populations.

REFERENCE

Zoetis releases Project WAG to promote well-being of veterinary health professionals

Zoetis has launched Project WAG (Wellbeing and Growth), a US initiative to help veterinary professionals develop and maintain an improved standard of well-being in their practices. Project WAG provides all veterinary professionals, including veterinarians, veterinary technicians, and support and administrative staff, access to online resources in 1 place that offer tips on promoting self-care. This empowers them to establish healthy boundaries at work, connect with the community, and create more joy in their daily work.

According to a company release, the resources include:

• Complimentary support: Access to complimentary support facilitated by licensed health care professionals and self-care resources
• Connection with the community: Tools to help veterinary health professionals promote team building and community among their peers, and within their own practices to prioritize a culture of well-being
• Information about well-being and the veterinary profession: Educational resources to help veterinary health professionals feel informed so they can take control of their well-being and become advocates for colleagues, peers, and future veterinary professionals

“Burnout and well-being concerns within the veterinary field are fairly common but, unfortunately, overlooked problems. In fact, nearly one-third (31%) of veterinarians in the US have reported experiencing depressive episodes,” Tara Bidgood, DVM, PhD, executive director, US Petcare Professional Services and Medical Affairs, Zoetis, said in the release. "Zoetis is committed to the health and wellness of pets, and this commitment extends to the dedicated and passionate veterinary health professionals who care for these cherished pets every day. We created Project WAG to help empower the veterinary community—from the front desk to the treatment room—to spread positivity and better well-being through education, collaboration, and outreach," she said.

The Project WAG resources can be found at www.ProjectWAG.org.

REFERENCES
The Tuskegee University College of Veterinary Medicine in Alabama has announced the establishment of 2 programs supported by the Tuskegee Veterinary Medical Alumni Association (TVMAA): the TVMAA Endowed Scholarship program and the TVMAA Endowed Chair.

“We are grateful to the TVMAA for their continued support of the college. The decision of the executive board at its annual meeting to establish a TVMAA Endowed Scholarship and Endowed Chair is a monumental decision that will positively affect the lives of our students and our educational programs,” said Ruby L. Perry, DVM, PhD, MS, DACVR, dean of the Tuskegee University College of Veterinary Medicine (TUCVM), in a university news release.

The TVMAA Endowed Scholarship was established with a $45,000 gift from the Tuskegee medical alumni association, according to the university. Tuskegee’s veterinary scholarship committee identifies awardees annually, based upon criteria developed by the college. The goal of this scholarship is to provide financial assistance for TUCVM students with demonstrated financial need and to supplement other financial resources available to the recipients to allow them to continue their veterinary medical education at TUCVM.

Upon graduation, recipients are encouraged to join the TVMAA and support the objectives of the organization and continue giving back to help sustain the legacy of the college.

The TVMAA Endowed Chair was established with 2 TVMAA fundraising campaigns that relied on veterinary alumni giving and raised a collective $2.5 million. The purpose of this endowed chair is to provide significant financial support for an outstanding faculty member who will enhance and advance clinical sciences. The chair will enable the college to hire and retain talented and committed faculty who will strengthen academics, clinical practice, and research programs, as well as inspire students to be future leaders in the veterinary medical profession.

“The spirit of this scholarship and endowed chair both align with the mission and vision of our college to sustain the legacy of the Tuskegee University College of Veterinary Medicine, not just for our students now but for the generations to come. The TVMAA’s commitment to ‘Mother Tuskegee’ and its alma mater will not only support students in the professional DVM program on track to becoming career-ready veterinarians, but also clinical and research faculty to teach and train our next generation of future veterinarians,” Perry added.

The TVMAA encourages its members to give back to the TUCVM and partners with the college in fundraising activities, in particular those activities that directly benefit the academic and student programs. Additionally, the association provides financial support to assist veterinary student organizations.

The TVMAA Endowed Chair both align with the mission and vision of our college to sustain the legacy of the Tuskegee University College of Veterinary Medicine, not just for our students now but for the generations to come. The TVMAA’s commitment to ‘Mother Tuskegee’ and its alma mater will not only support students in the professional DVM program on track to becoming career-ready veterinarians, but also clinical and research faculty to teach and train our next generation of future veterinarians,” Perry added.

Cornell University saves canine with a rare tumor

Cynthia Hopf, DVM, an assistant clinical professor at the Janet L. Swanson Wildlife Hospital at Cornell University College of Veterinary Medicine (CVM) in Ithaca, New York, noticed that Cherokee, her 9-year-old bloodhound mix, had a drooping eyelid and decreased pupil size. She suspected she could be suffering from Horner syndrome, which can present with neurologic issues following head trauma. After seeing this at work with her wildlife patients, she knew something was wrong because Cherokee had not experienced any kind of trauma.

Hopf immediately contacted Courtney Korff, DVM, and Emma Davies, BVSc, MSc, DipECVM, at CVM’s Neurology and Neurosurgery Services, and Cherokee was brought in for imaging. Korff and Davies discovered a mass in the canine’s chest that would be diagnosed as neuroendocrine carcinoma.

The tumor was small and would have likely gone undetected if it was not pressed against a nerve that coursed through Cherokee’s chest and contributed to normal eye function. This location and nature of the tumor are considered highly unusual. Cherokee was scheduled for surgery with another colleague, Nicole Buote, DVM, DACVS-SA. Buote used tools and scopes that were threaded through 3 small incisions in Cherokee’s chest to remove the tumor for an easier recovery. Hopf brought her dog home after the surgery, and Cherokee was up and moving the next day.

The tumor was sent to Pathology Service at CVM for assessment, which declared it to be a neuroendocrine carcinoma. Cherokee was transferred to the Oncology Service for case management and prescribed toceranib phosphate (Palladia; Zoetis). Although the most recent scans showed no evidence of disease, to be safe, Cherokee will continue on toceranib phosphate.

Reference available online at dvm360.com
Hip dysplasia is a deformity of the hip occurring when the ball (head of the femur or thighbone) and the socket in the pelvis (acetabulum) do not develop in unison during puppyhood, resulting in laxity of the joint and then degenerative joint disease or osteoarthritis (OA). Canine hip dysplasia is an inherited condition, but there are environmental risk factors as well, according to Selena Tinga, DVM, PhD, DACVS-SA, an assistant professor in the Section of Small Animal Surgery at Cornell University College of Veterinary Medicine, in a dvm360® interview.

“The inheritance of hip dysplasia is very complex, there are many, many, many genes involved in the predisposition, and then simply being predisposed genetically does not necessarily mean that an animal shows the phenotype, or the clinical signs associated with it,” Tinga explained.

Some other risk factors of canine hip dysplasia include obesity and lack of sufficient exercise, said Matthew Brunke, DVM, DACVSMR, CCRP, CVPP, CVA, medical director at Veterinary Surgical Centers Rehabilitation in Vienna, Virginia, in a dvm360® interview. Tinga added that overnutrition, growing too fast, and, potentially, calcium supplementation or early spaying may promote development of the clinical disease as well.

WHY CERTAIN BREEDS MAY BE AT HIGHER RISK

Hip dysplasia is often associated with large and giant, fast-growing breeds (eg, German shepherds, Newfoundlands, Labradors, golden retrievers, and Bernese mountain dogs), who have genes linked to the condition. However, the condition is not exclusive to bigger dogs. In fact, Tinga suggested that hip dysplasia may not even be more prevalent in larger breeds, although they present clinical signs more frequently.

“I wouldn’t say large and giant breed dogs are the only ones affected or even necessarily more affected; they probably are, [but] we just don’t have the numbers to say that,” she said. “I think [smaller breeds] tolerate the instability and the osteoarthritis better, and so we don’t diagnose it very commonly as a clinical problem.”

Another reason giant and large breed dogs are known for having hip dysplasia could be because surgical treatment, such as a femoral head ostectomy (FHO), is more complicated in these dogs than in smaller ones. They require a lot more care postoperatively to have a moderate or good outcome, Tinga added, “because large and giant breed dogs are so clinically affected by it and because we don’t have an easy surgery to provide...
them comfort; that's why we just invest in and focus on them more.

**EARLY DETECTION IS KEY**

Early screening is important to detect hip dysplasia in young dogs, especially because a dog may not show signs of the condition. Brunke said, “When a dog’s hip hurts, it just keeps walking. But it just doesn’t want to walk as much, so it lies down [and] we think it’s lazy.... It can be super subtle, in trying to [hide its discomfort] early on.” He recommends that veterinarians perform a PennHIP x-ray, especially in dogs at risk, which measures how loose a dog’s hips are. “It’s through a set of distracted and compressed x-rays that have to be done under sedation,” Brunke continued.

If veterinarians do find hip laxity in puppies under 5 months old, there are surgical interventions where the hip doesn’t have to be replaced, including a juvenile pubic symphysiodesis (JPS). “[JPS] is where we fuse the growth plate of the pubis. That allows us to get better coverage [on the femoral head] that helps those hips grow,” Brunke explained. Tinga said that JPS helps slow the development of OA and can even prevent dysplasia in young dogs, especially because a dog may not show signs of the condition. Brunke said, “Age is not a disease, so we don’t have to give up on them; we still have a lot of good ways [in which] we can help,” Brunke said.

**MANAGEMENT AND TREATMENT OPTIONS**

For dogs diagnosed with hip dysplasia later in life, medical management is the most common modality. This can be done through a balanced diet and exercise to maintain a healthy weight. Tinga noted, “[For any dog with orthopedic disease, getting them down to a good body condition and then doing controlled, regular—meaning daily low-impact—activities is really good for strengthening, but not having concussive forces across joints with orthopedic disease.”

For temporary relief, dogs can also take nonsteroidal anti-inflammatory drugs (eg, carprofen and meloxicam), joint supplements (eg, those containing omega-3 fatty acids, undenatured type II collagen, etc), or joint injections. Another excellent way to help patients manage hip dysplasia is with rehabilitation therapy. “That can be things like phytoceuticals, laser therapy, shock wave therapy, and good exercise, [such as] with underwater treadmills,” Brunke said.

If, after using all these modalities to address the pain, dogs are still showing clinical signs for hip dysplasia, Tinga said that is when you may consider advanced surgical options, such as a total hip replacement or FHO. According to Brunke, hip dysplasia is “one of the few diseases we can absolutely cure in veterinary medicine” through a total hip replacement. “Then there’s no painful arthritis. It’s a perfectly tight joint. It has implants that are going to hold up for the life of the pet, and they can be much more comfortable because they use the leg the way it was designed to be used,” he added.

On the other hand, an FHO, Tinga said, “is harder to recover from for large breed dogs. So it’s not usually our top choice for treating hip dysplasia. Because it’s such a final thing once you do it, that’s the leg the dog has....”

**TAKEAWAYS**

Tinga noted that it is important to familiarize yourself with the treatments local veterinary surgeons offer and their general guidelines for intervention, so you can easily refer patients who present with canine hip dysplasia. She also reemphasized determining a nutrition and weight loss program for an affected patient. Both Brunke and Tinga agreed that dogs suffering from hip dysplasia should be removed from the breeding pool to prevent future dogs from inheriting the condition.

Brunke concluded by encouraging veterinary professionals to be good advocates for patients. You can catch hip dysplasia in early stages, but also catch it when the pet is older and there are still excellent options, he noted. “Age is not a disease, so we don’t have to give up on them; we still have a lot of good ways [in which] we can help,” Brunke said.

**REFERENCES**


Pet identification for the exotic animal

Using microchips, leg bands, shell labels, and other methods to identify

The owners of exotic pets love their extraordinary animals. They provide them with specialized husbandry and veterinary care, seek out species-specific diets, and among other things want identification for their pets as well. They may be interested in individual identification for their animals if they have concerns surrounding their pet getting lost, such as a bird that may escape through an open door or a tortoise that might mischievously break out of a backyard pen. Other times, identification needs are necessary for breeding facilities that must keep track of the many family lineages they are producing. Furthermore, many of the exotic animal species that we keep, although common in captivity, are sparse in the wild, so they have importation and exportation rules and regulations. Thus, for owners traveling with their exotic pet or moving to another country, individual identification may be prudent.

MICROCHIPS

Microchips are “passive integrated transponders” (PIT) and in the field biology setting are often referred to as PIT tags. They rely on what is known as radio frequency identification technology. This technology uses a specialized reader to provide the energy of communication with the microchip and thus the microchip itself has no battery. Microchips are small inert implants that can be inserted under the skin or into the muscle or abdominal body cavity and can remain in good working condition for decades. The International Organization for Standardization (ISO) has worked with producers to ensure that different brands of microchips can be read by all microchip readers. Unfortunately, not all manufacturers in the United States are ISO certified. Should your animal become lost, any veterinary clinic, animal shelter, or other organization with a universal reader can verify your animal’s identification number, and often a phone number of the manufacturer’s microchip registry. For this purpose, the pet owner must maintain their updated contact information in a microchip number registry to connect their ownership with the number that identifies their animal.

The World Small Animal Veterinary Association (WSAVA) has developed guidelines for implantation locations on companion animals to elicit optimal contact between the microchip and reader. There may be some regional variances in implant location, and uncommonly, microchips may migrate to a new location if implanted subcutaneously. It is important to scan the entire animal if a microchip is not found to ensure one has not been missed. The microchip implant in small mammals (<17-cm spinal length) is located subcutaneously between the scapulae. Although larger, rabbits and ferrets are still typically implanted in this location as well. Veterinarians also use this implantation site for canines and felines (except in Europe). Larger mammals are implanted subcutaneously at the base of the left ear. In birds over 5.5 kg, the implantation site is subcutaneous at the base of the neck. For smaller birds, the microchip is implanted into the left pectoral muscle. Reptiles are a diverse group and have various implantation sites. For turtles and tortoises, the implantation is subcutaneous or intramuscular, as size allows, in the proximal left hind limb (Image 1). In crocodilians, the microchip is implanted subcutaneously over the neck, anterior to the large nuchal scales. Small lizards (<12.5-cm snout to vent length) receive intracoelomic implantations, whereas large lizards receive subcutaneous ones in the left inguinal region. Interestingly, the WSAVA recommends that snakes be implanted subcutaneously on the left side of the neck. For many species this causes undue stress, and for the person implanting or scanning the microchip a risk of a painful or even venomous bite. It is for this reason that many clinicians and field biologists implant in a location similar to that used for lizards, subcutaneously over the left caudal coelom. Amphibians are implanted subcutaneously or into the lymphatic sac along the dorsum. Fish can be implanted in the left side

Image 1: A pet California desert tortoise (Gopherus agassizii) is scanned for a microchip in the left prefemoral fossa. Inset is an example of what the microchip reader shows when it scans a microchip. It includes a unique 15-digit number and, in this case, the microchip’s manufacturer registry where the pet owner can upload up-to-date contact information.
of the coelomic cavity if small (< 30 cm), or subcutaneously on the left side of the dorsal fin's anterior base.

**BIRD LEG BANDS**

Leg bands are often used to identify birds. Birds of prey, kept by falconers or tracked by biologists, will have crimped “lock-on” or riveted bands placed around the leg above the foot. More commonly, breeders of pet exotic birds will place size-appropriate rings or closed bands around hatchlings, such that when the bird grows, the foot will become too large to pull out of the band. It is now considered a permanent means of identification. Open bands are “C” shaped, which can be closed around an adult bird’s leg for identification but are considered nonpermanent. A common use for such bands is to identify a bird once it has been sexed as male or female. A band will be placed on the right leg to indicate a male, and on the left to indicate a female. Identification bands typically have stamped text that corresponds to the breeder, and an individual number for the bird. The American Federation of Aviculture maintains an Exotic Bird Registry, where bird bands, as well as microchip numbers, can be connected with owner contact information.

Bird leg bands typically last the lifetime of the animal without problems or concern. Uncommonly, there are instances where they can cause trauma to the leg or make an injury worse by constricting a leg that has become inflamed for other reasons. It is important to look for problems with a bird band during regular health checks. As bird legs can easily be damaged or broken, if a band needs to be removed, it should be done so by a veterinarian.

**SHELL LABELS AND OTHER IDENTIFICATION METHODS**

For turtles and tortoises, a simple, externally visible means of identification is to create a label and epoxy it to a scute on the carapace (Image 2). The label can include any information desired, such as an identification number, the animal’s name, and even the owner’s name and contact information. The label can also be simple text printed on a piece of paper and cut to size. A clear, 5-minute epoxy covers the label and fixes it onto a scute. This is typically a caudal scute that is less likely to be worn or damaged by digging or other abrasive activities. It is important for placement to be in the center of a scute and not across the seam of 2 scutes as this may inhibit proper growth.

There is a plethora of other means of identification for pet exotic animals. Many have origins and primary uses in the laboratory, zoological, or field biology setting. A noninclusive list of these includes tattoos, various methods of branding, toe clipping, ear notchling, scale clipping, scute notchling, and color-coordinated visible implant fluorescent elastomer that is injected and remains visible under the skin. Most of these methods are traumatic and few are used in pet animals. If a pet animal has any of these means of identification, it likely originated from one of these scientific settings.

There are many good reasons to have permanent identification for your pet. Of equal importance is to have your pet’s identification number registered and to maintain up-to-date contact information in the registry. Doing so greatly increases the chances of your pet being returned to you should it become lost.

**Image 2:** An epoxy shell label attached to the center of the fourth right pleural scute. In this animal, the label contains only a simple identification number, whereas many pet owners also include their contact information. This animal also happens to have a radio tracker affixed to its vertebral scute.
Treating our canine patients has become more expensive over the years, especially with new medications. Researchers have been evaluating older drugs and found that losartan and propranolol can have other uses.

Losartan is traditionally a blood pressure medication, but this angiotensin receptor blocker also has immunomodulatory actions involving monocytes and macrophages that inhibit monocyte recruitment in tumors. Normally, there are numerous macrophages and monocyte cells in the tumor microenvironment (TME), which makes them good therapeutic targets. By targeting these cells for removal or reprogramming, we can change the immunosuppressive effects of the TME to better respond to the immune system.1

Findings from a recent study evaluating the combination of losartan and toceranib in dogs with pulmonary metastasis from osteosarcoma showed that high-dose losartan with toceranib had a clinical benefit rate of 50%, and survival was longer with the combination than in studies involving treatment with toceranib alone,2 making this combination a unique treatment option for dogs with advanced osteosarcoma. Since this study’s findings, researchers have been evaluating a similar combination with losartan and sunitinib in a pediatric osteosarcoma clinical trial.

Propranolol is a β-adrenergic blocker that helps regulate heart rhythm and in the past has been used as a blood pressure medication (although it has been replaced by newer antihypertensives). This drug has been documented to downregulate myeloid-derived suppressor cells in tumor tissues as well.3 Propranolol acts as an immune modulator by depleting and reprogramming a type of immune suppressive cell known as myeloid-derived suppressor cells (MDSCs). When MDSCs are depleted, it removes this important brake on tumor immunity, allowing T cells to function more effectively to control tumor growth. The FDA approved propranolol as a systemic treatment for infantile hemangiomas in 2014. Propranolol has also been found to sensitize sarcoma cells to doxorubicin, making it more effective in vivo.4 Ongoing research for propranolol and doxorubicin in dogs with hemangiosarcoma is taking place at the University of Minnesota.5

A study from the Flint Animal Cancer Center at Colorado State University combined losartan and propranolol with a canine tumor-cell lysate vaccine to treat gliomas. Dogs did not have surgery or radiation therapy for their tumors. The study found an overall clinical benefit rate of 80% with this immunotherapy combination alone, and the combination was also found to be well tolerated clinically.

Losartan and propranolol are relatively inexpensive drugs that have been available for a long time and can be purchased from most human pharmacies. Pet owners can give these pills at home. Although the drugs also appear to be safe in dogs, their use requires regular monitoring for kidney and heart function. It is exciting to see that older, more affordable medications can be used to help treat canine cancer when combined with other therapies.

References available online at dvm360.com

written by
Rachel Venable, DVM, MS, DACVIM (Oncology)

Venable is board certified as a medical oncologist by the American College of Veterinary Internal Medicine. She obtained her veterinary degree from the University of Missouri in Columbia, graduating cum laude, and pursued further training as a small animal intern at the University of Georgia in Athens. She then completed a 3-year medical oncology residency at Colorado State University Flint Animal Cancer Center in Fort Collins, during which she also earned a master’s degree and studied new cancer therapies and clinical trials. She continues to seek out clinical trials and cutting-edge therapies for her patients. Venable has authored numerous publications and served as a speaker on the local and national levels. She is the founder of Pet Cancer Care Consulting, an innovative teleconsulting service that consults with the family vet and pet owner together to give personalized responses and needed information to make an informed decision on treatments.

Repurposing old drugs for new cancer treatments

A boarded oncologist provides insight into how affordable, older medications can open the door to alternative options for managing these diseases.
TOGETHER FOR PETS AWARD

Congratulations to this veterinarian and author of “What Does A Real Doctor Look Like?” who is helping open kids’ eyes to the possibilities of the veterinary profession. She will receive a $10,000 grant from Blue Buffalo.

WHERE DO YOU WORK?
I am a mom and a wife but I am also the Chief Veterinary Officer of Fuzzy Pet Health.

WHY DID YOU BECOME A VETERINARIAN?
I chose to become a veterinarian rather than going into human medicine because of the privilege of being able to euthanize. It’s the aspect of being able to say, “you don’t have to suffer a second longer” and then being able to help them die pain free and with dignity.

WHAT’S YOUR PASSION?
My passion is veterinary medicine and where I see it being able to go. I believe that for this field to continue to thrive we have to be able to bring in new clinicians that do not fit the previous mold of veterinarians.

HOW DO YOU MAKE A DIFFERENCE?
I believe that both my work in telemedicine and the messages in my children’s books help to punctuate the amazing work that is veterinary medicine.

WHAT EXCITES YOU ABOUT THE FUTURE?
This is the PERFECT time to be in veterinary medicine! Veterinary care is changing for the better. There’s still a lot to do but I’m excited to be a small part of the positive change.

Blue Buffalo salutes the veterinarians who go above and beyond to advance the profession and improve the lives of our pets.
Rehabilitation of the cranial cruciate deficient stifle and targeted therapeutic exercise

written by Chris W. Frye, DVM, DACVSMR

The cranial cruciate ligament (CCL) has several mechanical roles. It counters hyperextension, internal rotation, and cranial translation of the tibia relative to the femur and provides important proprioceptive feedback for neuromuscular control of the limb.1,5 Deficiency in the ligament is nearly always degenerative in dogs, progressing toward ligament laxity, joint instability, inflammation, pain, and osteoarthritis.6 Consequently, canine CCL disease alters both kinetic (weight-bearing forces) and kinematic (motion) properties of the normal hindlimb, resulting in lameness. A deeper understanding of the normal canine physiology and anatomy allow for the development of more targeted physiotherapy protocols.

The knee consists of both passive and active stabilizers.7 Examples of passive stabilizers include ligaments, joint capsule, menisci, adhesion/cohesion properties of joint fluid, and finite joint volume. Active stabilization is provided by the surrounding muscle and tendon units. The role of proprioception is vital for active stability and relies in part on information from mechanoreceptors within the soft tissues of joints including the capsule, ligaments, menisci, surrounding muscle/tendon units, and associated skin.2 These mechanoreceptors provideafferent feedback to the central nervous system regarding joint and limb position and velocity, contributing to spinal reflexes and supraspinal motor control on both the conscious and unconscious level. Active stabilization may be further enhanced by feed-forward mechanisms such as sight and conscious anticipation of a certain movements during specific activities, work, or sport.6 Mechanoreceptors have been identified in the canine CCL and tend to be concentrated in the proximal third of the ligament.7 CCL stretch elicits reflexive hamstring contraction in people, and a similar reflex may be present in dogs. The hamstring group has been identified as agonists of the CCL in both people and dogs during mechanical testing.8-9 Dogs with CCL deficiency have been shown to have a decreased hamstring contraction and those dogs with deafferent hindlimbs have more rapid progression of osteoarthritis when already CCL deficient.1,10 In other words, dogs lacking proprioceptive feedback from their CCL have poor neuromuscular joint control and osteoarthritis progresses more rapidly.

The ideal solution for dogs suffering from CCL disease remains surgical stabilization whenever possible. Standard surgical solutions for dog CCL disease differ from those for the human ACL. As direct ligament replacement in dogs fails to provide ideal outcomes, other interventions such as tibial plateau leveling osteotomy (TPLO) or a type of extracapsular repair are used to minimize instability.11 Even in those surgeries providing consistently good clinical outcomes, some degree of residual instability remains.2,11 Furthermore, not all surgical interventions address the CCL’s role countering medial rotation or hyperextension.2,11 To accomplish good clinical outcomes, the current surgeries must alter kinetic and kinematic parameters of the normal knee.3,11,12,13 For all these reasons, rehabilitation aimed at improving active stabilization by re-education of proprioception and neuromuscular control should nicely augment surgery to further optimize outcomes.

To best suit the patient, physical therapy targeting the hamstring groups, especially the biceps femoris, may help reduce unwanted or remaining translational, internal rotational, and hyperextensive movements.4,14 Furthermore, some patients are not surgical candidates for medical or financial reasons and may benefit more with the addition of physical therapy. In fact, weight loss and targeted therapeutic exercise increased function including objective peak vertical force measurements in a group of overweight dogs with CCL disease that did not undergo surgery.12 Human physiotherapy for ACL deficiency or postsurgical rehabilitation often targets the hamstring group and begins with open-chain (non-weight-bearing) concentric contractions and moves toward lower load eccentric contractions in midrange of motion.15 Unfortunately, studies describing CCL rehabilitation in dogs lack well-defined and repeatable protocols, have often not been prospective or controlled, and have variability in the type of surgery, study timeline, outcome measures, patient cohort, and exercise routine.7,15-22 On the other hand, none of the published canine studies report increased complications associated with rehabilitation and most of them demonstrate some benefit when assessing outcome measures such as range of motion, weight bearing, and strength.

Without further prospective research into canine rehabilitation for cruciate deficiency, we cannot confidently define nonsurgical or postoperative protocols; however, our understanding of the biomechanics of the stifle joint, its neuromuscular control, and insight into human physiotherapy provide a foundation to make reasonable recommendations.

Beyond a diagnosis, this clinician identifies impairments such as atrophy or loss of extension, as well as functional limitations such as inability to sit with a normal posture (abducts affected leg during sit test). Physiotherapy goals and exercises are then created to address these impairments and limitations. For example, in a TPLO repair we may have atrophy, disuse, incomplete extension of the stifle, pain, and postoperative inflammation. Physiotherapy may target this with oral analgesia, cryotherapy, passive or active range of motion exercise, strengthening exercises, and activities that encourage limb use.15 Given the known role of the hamstring group in stifle stability, many of the strengthening exercises will preferentially target these muscles and begin with isometric and concentric loading before moving toward eccentric loading. Examples of isometric and concentric hamstring contractions in dogs include weight shifting while standing, Cavalletti rails, and underwater treadmill. Examples of eccentric hamstring contractions include sitting down and walking backward; progressing toward performing these exercises while facing up an incline increases their load and intensity. Lastly, we must adjust our exercise therapy as the patient improves, which requires periodic reassessment. More advanced strengthening and proprioceptive activity is typically initiated once the patient attains the desired postoperative healing and has achieved certain goals set by the rehabilitation specialist such as jogging pain-free, climbing stairs normally without pain, bearing equal weight at a trot, etc. Working and sporting dogs require further consideration and longer duration of staged rehabilitation. The number of exercises given for home therapy must be safe and catered to both the client and patient. I typically find that leash-walking combined with 2 or 3 other activities is the maximum weekly home regimen in which we may expect 60% to 80% compliance. Additionally, scheduling the rehabilitation rechecks with
the surgical rechecks or imaging furthers this compliance and allows the client or patient to progress into or continue an active hospital/clinical program in addition to home PT. Below I have included a fairly generic example of a home TPLO postoperative rehabilitation program with the exercises described. It remains important to remember that some dogs may have different problems and comorbidities such as weight, endocrine, cardiac, or other orthopedic/neurological disease that would warrant a more individually catered protocol.

### NONSPECIFIC TPLO DISCHARGE INSTRUCTIONS UNTIL 8-WEEK RECHECK

These are general recommendations of therapeutic exercises to assist the typical patient during recovery from TPLO surgery on a single leg. These instructions assume normal progress in an otherwise healthy patient without any compensatory orthopedic abnormalities. These recommendations are not patient or client specific and therefore cannot necessarily be expected to provide an optimal recovery situation, but they are a good starting point if your dog is recovering in a typical fashion. If during recovery your dog is having difficulties using the surgical limb, it’s best to recheck with your surgeon and/or seek advice from a canine rehabilitation expert after discussing progress with your surgeon.

### EXERCISE RESTRICTION

From now until instructed otherwise, it is essential to restrict any exercise that is not specifically addressed as part of the patient’s physical therapy protocol. Often, patients will begin feeling better before healing is complete. All postoperative patients should adhere to the activity restriction guidelines provided by their surgical team. We understand that these may be difficult, but it is imperative for complete healing without complications.

#### 1 to 2 weeks postoperatively

- **Passive range of motion exercises** (10 to 20 repetitions, 2 to 3 times daily): Begin by reclining the patient on one side with the surgical leg up toward the sky. Place the surgical leg through a slow, bicycling motion as tolerated, flexing and extending the knee within a comfortable range. This may be done for 10 to 20 repetitions twice daily on the affected leg(s). This exercise helps bring blood supply to the joint, breaks down postsurgical adhesions, has some strengthening effects, and increases joint range of motion.
- **Controlled leash-walking** (5 minutes, twice daily): Begin slow, controlled leash-walking with sling support of the rear limbs on relatively flat surfaces with good footing. Walking times may be increased by 5 minutes weekly if well tolerated and up to 3 times daily. Avoid stairs or other such obstacles if possible.
- **Weight-shifting exercises** (5 minutes, twice daily): This is often a 2-person exercise whereby 1 person stays at the front of the dog for guidance and support and then the other person straddles the back end of the dog. The person in the back will gently push the hip of the standing dog toward the surgical leg to force the dog to put more weight onto the surgical leg. After weight is transferred to the surgical leg, the dog will readjust to its previous posture and the activity may be repeated. This exercise will increase strength on the surgical leg, balance, and confidence in using the leg.

#### 3 to 4 weeks postoperatively

- **Continue all previous instructions**
- **Sit-to-stand exercises** (start now, every 2 to 3 days): Have the dog begin sit-to-stand exercises, doing 5 repetitions, 2 times per day. Increase the exercise by 5 repetitions per session per week as tolerated. This exercise will help increase flexion of the stifles and increase hindlimb strength. If favoring a leg by sticking it out to the side, use a wall on that side of the body to prevent that movement. If your dog does not want to sit completely to the ground, you can back your dog against a flight of stairs and make them sit on the first step of the staircase. This will not be as effective in getting full flexion and extension of the bad knee but will help build strength in attempting to rise from a seated position.
- **Underwater treadmill therapy** (twice, weekly): Your dog may be an excellent candidate for underwater treadmill therapy twice a week due to his surgery and depending on the presence of disease in the opposite knee. If he is not progressing through rehabilitation to our expectations, water therapy may be indicated. This exercise will help regain normal walking (gait function) and foot placement. In addition, it maintains normal range of motion, increases muscle mass, and removes excess weight off the affected body through buoyancy.

#### 4 to 8 weeks postoperatively

- **Continue all previous exercises except for passive range of motion.**
- **Hill walking** (3 to 4 times, weekly): Leash-walk the patient up mild to moderate inclines 5 minutes per day and increase this by 5 minutes per week as tolerated. It may become part of the already established daily walking times. This exercise will place more weight on the hindlimbs for strengthening and encourage stifle flexion and range of motion while ascending the hill.

### 8 weeks recheck

At 8 weeks, the patient should recheck with their surgical team to ensure appropriate healing of the surgical site including postoperative imaging. If the x-rays show proper healing of the bone, more aggressive strengthening exercises may be added to his protocol.

### General rehabilitation recommendations until 8-week recheck

- **Cryotherapy** (cold-packing as needed for postexercise flare-up): In the event that your dog does have a difficult day of exercise and seems lamer after an exercise session, you may ice the incision and knee in a sealed bag with crushed ice for 10 to 15 minutes as needed for flare-up and local pain control. A thin barrier about 2 paper towels thick (or a thin tea towel) may be used between the ice bag and the skin. Icing reduces inflammation and helps control pain.
- **Setbacks**: Events such as persistent or worsening pain, increased or persistent swelling, abnormal discharge at surgical site, inappetence, vomiting, diarrhea, and black tarry stool require follow-ups with your local veterinarian or the Cornell Orthopedic Service. Setbacks could be minor or much more significant such as implant failure, bony fracture, or infection.
- **Mild soreness after stepping-up exercise**: If a mild soreness of the surgical leg occurs within a few hours of stepping up an activity, treat with a day’s rest followed by reducing that exercise by 50% for 7 days followed by postexercise cryotherapy. If the soreness resolves, increase the activity back to pre–step-up level over the next 7 days. If soreness persists or worsens, contact the orthopedic service or your local veterinarian.

References available online at dvm360.com
Dermatology cases are a common presentation to the general practitioner. Although a vast number of patients have an underlying allergic condition that may present with a secondary pyoderma, other pathology can occur in the skin, including autoimmune diseases, genetic disease, and neoplasia. When cytology, skin scrape, trichogram, and culture have not yielded a diagnosis, biopsy should be considered.

Joya Griffin, DVM, DACVD, of the Animal Dermatology Clinic in Louisville, Kentucky, and star of the Nat Geo Wild television series Pop Goes the Vet With Dr. Joya, discussed tips for maximizing the use of histopathology in dermatology cases during a session at dvm360®’s 2022 Atlantic Coast Veterinary Conference in Atlantic City, New Jersey.

Maximizing the use of dermatopathology

In patients with unusual, severe, or nonresponsive dermatologic lesions, histopathology can be an important test to obtain a definitive diagnosis and guide treatment.

Dermatology cases are a common presentation to the general practitioner. Although a vast number of patients have an underlying allergic condition that may present with a secondary pyoderma, other pathology can occur in the skin, including autoimmune diseases, genetic disease, and neoplasia. When cytology, skin scrape, trichogram, and culture have not yielded a diagnosis, biopsy should be considered.

Joya Griffin, DVM, DACVD, of the Animal Dermatology Clinic in Louisville, Kentucky, and star of the Nat Geo Wild television series Pop Goes the Vet With Dr. Joya, discussed tips for maximizing the use of histopathology in dermatology cases during a session at dvm360®’s 2022 Atlantic Coast Veterinary Conference in Atlantic City, New Jersey.
appropriate management, or to obtain a definitive diagnosis prior to starting treatment that carries significant adverse effects.

Prior to performing a biopsy to submit for histopathology, the clinician should perform a full dermatologic database on all patients, including skin scraping, cytology, and skin cultures, if indicated. Secondary infections should be addressed with antibiotic therapy and may require several weeks of treatment prior to performing biopsy. Ideally, corticosteroid therapy should be withdrawn prior to biopsy, Griffin noted.

MAXIMIZING THE YIELD OF HISTOPATHOLOGY

Griffin reminded clinicians that a typical dermatopathology report will contain a morphologic diagnosis and a list of differential diagnoses. The final diagnosis can be achieved by combining this information with clinical history, lesion distribution, and lesion appearance. Griffin recommends establishing a relationship with a skilled dermatopathologist to maximize results. She noted that sending a detailed clinical history—including previous therapy and responses, a lesion map, and photographs—can be extremely helpful for the pathologist. “[The pathologist] only sees 6 mm of tissue. We are seeing the whole dog,” said Griffin.

Multiple samples should be submitted that are representative of all types of lesions on the patient. “Lesions have lives,” said Griffin. For example, a pustule becomes a crust, which becomes a collarette. Submitting a sample from each type of lesion provides maximal information. Griffin noted that many veterinarians are taught to sample at the edge of the lesion, but she only recommends this in cases of ulcerated lesions, where the center of the lesion may be necrotic and offer no helpful information. In most cases, “your pathologist doesn’t need normal [skin],” said Griffin. When possible, submitting a lesion in its entirety is preferred, especially in cases of solitary nodules and small lesions.

Some types of disease processes require special considerations when selecting sample sites. In cases of depigmentation, samples should be collected from gray areas or the margin between pigmented and nonpigmented areas. For patients with alopecia, samples should be collected from fully alopecic areas, areas of thinning hair coat, and areas of normal hair coat to capture the entire disease process.

TIPS FOR SAMPLE COLLECTION

Histopathology samples can often be obtained with local anesthesia along, or with sedation, though patients with large lesions or abnormalities in sensitive areas such as the paw pads or mucocutaneous junctions may benefit from general anesthesia. Griffin reminded veterinarians that skin biopsies are not sterile. The area should not be surgically prepped, as close clipping and scrubbing can result in loss of important information on the skin surface. Hair in the areas of sampling can be trimmed with scissors or a #40 clipper blade.

Samples should be handled gently and placed in formalin quickly to avoid creating artifact. The punch biopsy instrument should be rotated in one direction with even pressure. Griffin noted that the sample should be handled gently from the base to avoid crushing artifact. Cautery should be avoided. Samples are also at risk of freezing if shipped over a longer period, such as the weekend, in cold temperatures, so timing of submissions can be important and rubbing alcohol can be added to help prevent this artifact.

Finally, Griffin recommended taking large samples. Six- to 8-mm punch biopsies are preferred, except in areas prone to scarring or that are difficult to close, such as paw pads and pinnae.
The best of the best of 2022
Here are our top articles and podcasts for the past year
written by Caitlin McCafferty, Associate Editor; and Sydney Yankowicz, Assistant Editor

ARTICLES & VIDEOS

1. FDA warns pet owners about fluorouracil risks
By dvm360® staff
Our top article of 2022 is a reminder from the FDA for veterinary professionals, pharmacists, and other health care workers about the serious risks that pets face when they are exposed to FDA-approved prescription topical medicine 5-fluorouracil (fluorouracil).

2. News wrap-up: This week’s veterinary headlines, plus feline sterilization at 5 months is now new normal
By dvm360® staff
In our March 4, 2022, weekly recap, this article highlighted the top articles that week, including research showing that feline sterilization at 5 months may be a best practice, updates on the EHV-1 outbreak that hit California, and common myths surrounding pet poisoning.

3. Survey finds striking misconceptions surrounding veterinary technicians
By dvm360® staff
A survey conducted by the North American Veterinary Community asked owners nationwide if they knew who cared for their pet at the veterinary clinic. The results showed significant misconceptions surrounding the education, responsibilities, role, and skills of these veterinary professionals.

4. First monoclonal antibody for animals is approved by FDA to control pain in cats
By dvm360® staff
Earlier this year, the FDA approved frunetvemab injection (Zoetis; Solensia), making it the first treatment for the control of pain associated with osteoarthritis in cats and the first monoclonal antibody animal drug approved by the agency for use in any animal species.

5. Do we need a paradigm shift in canine neutering?
By Kelly Johnson, DVM, MS, DACVS-SA
In this article submitted by NorthStar Vets, a dvm360® Strategic Alliance Partner, Kelly Johnson, DVM, MS, DACVS-SA, discussed whether canine neutering, the prevailing standard practice in the United States, is appropriate for every case.

6. Completing a neurological exam is like following a cooking recipe
By Caitlin McCafferty, Associate Editor; and Julia Burke, Assistant Editor
In this interview from the Fetch dvm360® conference in Charlotte, North Carolina, Fred Wininger, VMD, MS, DACVIM (Neurology), described the similarities between a successful neurological exam and following a recipe.

7. FDA approves new combination injection for sedation and pain relief in dogs
By dvm360® staff
This year, officials with the FDA approved medetomidine and vatoxan hydrochlorides injection (Zenalpha; Vetcare Oy) for use as a sedative and anesthetic in dogs while they undergo certain clinical examinations and procedures and minor surgical procedures.

8. FDA approves long-acting transdermal buprenorphine for cats
By dvm360® staff
The FDA announced earlier this year it approved buprenorphine transdermal solution (Zorbium; Elanco Animal Health) for controlling postoperative pain in cats. This signaled Elanco’s expansion into pain management offerings.

9. Sage Veterinary Imaging unveils new treatment center in Salt Lake City area
By dvm360® staff
Sage Veterinary Imaging (SVI) opened a third treatment center in Sandy, Utah. SVI collaborated with local veterinarians to provide the latest research-grade technology for highly detailed images.

10. Data analysis links purebred dogs to higher rate of cancer
By dvm360® staff
Data collected by Nationwide’s pet insurance team this year indicated that purebred dogs are more likely to receive a diagnosis of cancer than nonpurebreds. The results found that purebreds have a risk that is almost 2 times higher than crossbred or mixed-breed dogs.
**Surgical management of gastric dilatation and volvulus**
*By Timothy Ericksen, DVM*

This case walkthrough featuring a 6-year-old great Dane male, presented by NorthStar Vets, a dvm360 Strategic Alliance Partner, gives insight into treating a patient that is diagnosed with gastric dilatation and volvulus.

**Veterinary Neurology offers free webinar series to benefit children in Ukraine**
*By Caitlin McCafferty, Associated Editor*

To help UNICEF raise money for children affected by the war in Ukraine, Veterinary Neurology offered a free webinar series. In this interview with dvm360, Simon R. Platt, BVMS, FRCVS, Dipl ACVIM (Neurology), Dipl ECVN, explained the series and how much they had raised as of the time of the recording.

**Iatrogenic hypothyroidism in cats**
*By Heather Kvitko-White, DVM, DACVIM*

This article on iatrogenic hypothyroidism in cats explains that it results from certain treatments, plus what we miss when our patients receive the treatments.

**3 must-sees on veterinary diabetes**
*By dvm360 staff*

To help you find diabetes treatment help in one place, we compiled a list of 3 must-watch videos on diabetes treatment. From learning the appropriate insulin for feline patients to a deeper dive into glucose monitoring, there is a lot to learn!

**Emergency surgery saves 6-week-old puppy with displaced organs**
*By dvm360 staff*

When a pet owner noticed her 6-week-old foster Golden Retriever puppy Calvin began gagging, struggling to breathe, and then foaming at the mouth one day after playing outside, the puppy was rushed to the hospital at the UC Davis School of Veterinary Medicine. After running tests, the staff at UC Davis discovered he had abnormal tissue structure on the left side of his chest and a defected diaphragm.

**UC Davis spearheads formation of nephrology and urology specialty college**
*By dvm360 staff*

The American Veterinary Medical Association’s American Board of Veterinary Specialties announced this year it has provisionally recognized the American College of Veterinary Nephrology and Urology. This initiative was spearheaded Larry Cowgill, DVM, PhD, a professor at the UC Davis School of Veterinary Medicine.

**What ingredients to look for in dog food and treats**
*By Sydney Yankowicz, Assistant Editor*

When it comes to nutrition in our canine patients, ensuring their diet has all the best ingredients can lead to beneficial health effects. Here is what veterinary professionals and clients can look for when it comes to ingredients in their pets’ food.

**How to avoid this common anesthesia mistake**
*By Bob Abalurdia, Director, Custom Projects*

During this video interview, Darci Palmer, BS, LVT, VTS, shared common anesthesia mistakes that one can make and what they can do instead. Plus, she offers tips to help veterinary professionals avoid making mathematical errors.

**Koalas now listed as endangered species on Australian east coast**
*By dvm360 staff*

In February 2022, Susan Ley, Australian minister for the environment, announced that koalas are listed as an endangered species on the east coast of Australia. This decision comes 10 years after koala populations in Queensland, New South Wales, and the Australian Capital Territory were deemed vulnerable under the Environment Protection and Biodiversity Conservation Act.

**Making the skin and gut connection**
*By Julia Burke, Assistant Editor*

During a lecture at the 2022 American Veterinary Medical Association convention, Meghan K. Solc, DVM, DACVD, explained how the connection between gastrointestinal and skin health can enhance dermatology treatment measures.

**A deep dive into cat allergies**
*By Steve Dale, CABC*

Steve Dale, CABC, discussed common client misconceptions about pet allergies. He explained on this episode how pet parents might expect cats (and dogs) to sneeze because that’s what people are used to with human allergies.

**Percutaneous laser disc ablation: a proactive approach to minimizing IVDD in dogs**
*By Gaemia Tracy, DVM, DACVIM, (Neurology)*

Gaemia Tracy, DVM, DACVIM, (Neurology), joined The Vet Blast Podcast to talk about intervertebral disc disease (IVDD) in canine patients. He explained percutaneous laser disc ablation and more.
Blue Buffalo honors National Pet Cancer Awareness Month

The event, hosted at New York’s AKC Museum of the Dog, featured an esteemed veterinary oncologist highlighting decades of promising strides in the field

Written by Julia Burke, Assistant Editor
Guest speaker Ann Hohenhaus, DVM, DACVIM (SAIM, Oncology), CVJ, delivered her insights on veterinary oncology at the event.

accepted for a residency in internal medicine. And if you wanted to be a surgical oncologist, you just did a surgery residency and did lots of surgery on pets with cancer. And there was no radiation oncology college. Those people actually did diagnostic imaging residencies, and then treated pets with radiation.”

She added that when she was a resident there were also no chemotherapy drugs available for dogs, so human drugs were used on pets, mostly through trial and error. There were also few radiation oncology machines to treat pets, so veterinary oncologists would use human radiation therapy facilities on nights and weekends to care for their patients.

Hohenhaus emphasized that the veterinary oncology world is completely different today and incredible progress has been made in treating pet cancer. “There are now nearly 600 board-certified oncologists. We have 115 board-certified radiation oncologists, which is not nearly enough, but it’s better than the 0 that we started with before. Our newest oncology specialty is the surgical oncology fellows—and there are 52 members,” she shared. Hohenhaus also mentioned that specialty certification in oncology has blossomed outside of the US, including in Europe and Asia.

Additionally, there have been improvements in diagnosing cancer and providing individualized treatments. Hohenhaus cited that there are currently 4 veterinary-specific oncology medications: 2 approved drugs, a third with conditional approval, and a cancer vaccine.

Despite this encouraging information, there is much more to uncover in cancer research, according to Hohenhaus. She highlighted how Blue Buffalo and its partners have played a role in contributing to this cause. This includes Blue Buffalo donating $6 million to the Blue Buffalo Clinical Trial Office at The Ohio State University College of Veterinary Medicine, which has funded clinical trials to advance pet cancer care. What’s more, since 2016, Blue Buffalo and Petco have partnered with the Cornell University College of Veterinary Medicine to help pet owners who could not otherwise afford the cost of their pets’ cancer treatments with a $650,000 gift that has funded care for 250 pets. To date, Blue Buffalo has helped raise over $30 million to spread awareness, fund cancer research, and help pets get the treatment they need.

These are just a few instances. Throughout the years, Blue Buffalo has and continues to team up with additional organizations focused on pet cancer research, including the Morris Animal Foundation and the Animal Cancer Foundation, and with Petco Love, the company helps covers cancer treatment costs for pet owners who cannot afford it.

In her interview with dvm360®, Hohenhaus concluded on a promising note: “What I want people to take away from our conversation tonight is that there are treatments for pet cancer, [and] there are more oncologists than there ever were before. We now have radiation therapy specialists for animals, we have surgery specialists, and all those things available to the public mean that pets get better care…we should think positively about treating pets with cancer.”
Although many practice owners own their real estate, this changed considerably over the past decade. The COVID-19 pandemic presented challenges many practices did not expect, but the challenges resulted in an increase in clients and business. Many practices have been sold to corporate groups or independents where the practice seller maintains ownership of the real estate, with the new practice owner being the tenant. This structure is common because it allows the buyer and seller to focus on the primary transaction of the business, the sale. Also, many sellers like to separate the sale of the practice from that of the real estate to spread the tax liability over multiple years, with the added bonus of continuing to receive a regular income from the property. Although these are compelling reasons to hold the associated real estate, there are some potential negatives. Many
return on investment (ROI) than the associated property. Based on this, they often push owners to hold the real estate, presenting it as a good way to keep the cash flow coming in without having to be a producer at the practice. However, most groups partner with real estate groups that specialize in veterinary real estate that often will purchase properties at market value, making it feasible to sell both the practice and real estate simultaneously should the practice owner want to part with both.

Cash from the sale of a practice may provide for retirement, but few like seeing the principal received from the sale going down each month. That’s why holding the real estate can be appealing to many sellers. Rent payments provide income that allows the practice sale proceeds to be invested rather than used for everyday expenses.

The sale or retention of the real estate should never be a deal breaker in the practice sale process. Sellers should consult their accountants, financial planners, and, potentially, a veterinary practice consultant to help determine whether it makes sense to sell or lease the property. It is worth noting that not all veterinary real estate is created equally.

There is no clear-cut yes or no answer for every seller. Several factors come into play regarding the decision, such as age. For example, a 50-year-old seller may need income coming in on a regular basis long term so they don’t deplete the principal from the sale prematurely. This may not be a significant concern to a 70-year-old seller, who is at a more traditional retirement age.

Risk tolerance is also important. If you are a seller who will worry about the new owner moving down the street when your 5-year lease is up, perhaps the closing of selling both is valuable.

Other key criteria need to be evaluated. For example, moving and building fresh is very expensive. Are there reasons a seller might want to leave the facility in the near term? Moving can make sense if the building is dated, doesn’t allow for growth, or has inadequate parking, or if demographics dictate a better location for the practice. That said, moving is more of a last resort as opposed to a first choice.

The profession is quickly moving toward state-of-the-art facilities that appeal to clients and team members alike. Investing in maintaining and updating facilities can add significant value to the ultimate sale of a practice. Owners of outdated facilities may benefit from a sale of the real estate in conjunction with the practice sale. At this stage, a corporate buyer will be more motivated to assist in finding a buyer for the real estate.

The alternative may be that in 5 years the seller, who is at a more traditional retirement age, will be looking for a buyer by themselves, while the practice has moved into an updated facility nearby. As Kenny Rogers famously sang, “It depends on whom you hold ‘em” and “Know when to fold ‘em”.

Lease terms are extremely significant and should be reviewed with an attorney who is familiar with the norms for your area. A 10-year lease, if obtainable, may give peace of mind to a 60-year-old seller, as opposed to a 5-year lease. Also, if the landlord is responsible for the roof, walls, HVAC, driveway, and so on, then they must realize that these items can potentially chew up a good part of a year’s rent, so rent will likely be higher to account for this.

Corporations are different because they make more money by owning multiple profitable clinics and usually do not want to deal with the less-profitable real estate pieces. Their main concern is negotiating a favorable lease.

Favorable and fair leases are achievable if both sides are flexible. Owners with a building in a heavily trafficked location may not care about a 5-year term on a lease, because if the hospital practice wants to move, it will be relatively easy to find a new tenant or to sell. Other sellers may want the certainty of knowing that they will have an income stream for at least 10 years, and at that point if the lease is extended, great. If not, then they can sell.

Perhaps of equal or greater importance than the length of the lease is what the landlord and tenant are responsible for in terms of maintaining the facility. Many are familiar with the term triple net lease, which implies the tenant is responsible for property taxes, building insurance, and building maintenance in addition to rent and utilities. A true triple net lease means the landlord is not responsible for any costs associated with the building. This appeals to landlords because if a roof or driveway needs replacing, that can eat up a good portion of the rent for the year. Most landlords seek a 6% to 10% ROI each year, with the additional benefit of paying down the principal owed on the building, which allows for equity to be built over the years that it is leased.

A corporate tenant may be OK with the terms above, but a longer-term lease and a true triple net lease will typically be reflected in a lower annual rent, which should provide for better practice profit. Corporations are motivated by increased EBITDA (earnings before interest, taxes, depreciation, and amortization) and will often be open to negotiation if it can improve the bottom line.

Independent buyers may have a different perspective. A shorter-term lease with an option to purchase can be appealing as buyers often see the value of owning the real estate vs being in a storefront lease in a property that they can never own.

Veterinary real estate can be an excellent investment, and demand for it has steadily increased over the past decade. Rent and mortgage defaults throughout the great recession and during the COVID-19 pandemic have been scarce, and this has only enhanced the value of these properties. In line with this, businesses that focus solely on veterinary real estate ownership are becoming prevalent.

As discussed, for practice sellers, the right lease terms, the right facility, and the right location help define whether it is worth keeping the real estate long term vs selling at the time of practice purchase. In addition, age, risk tolerance, and desire for closure may impact the decision to sell the property or not. Overall, the market remains very healthy for both the sale of veterinary practices and the associated real estate.
In 2021, more than 23 million Americans adopted pets. A year later, the total annual spending on veterinary care has reached record highs. This increased demand comes on the heels of a decade during which institutional investors, including private equity funds, pumped billions into veterinary practices. Both trends have impacted veterinary practice operations in many ways, and both will continue to affect the sector for years to come. Notwithstanding the pace of change in the veterinary sector, most veterinary real estate continues to be owned by veterinarians. As the veterinary sector continues to evolve within the current volatile economic environment, veterinary real estate owners often find themselves considering alternative ways to manage their properties.

Terravet Real Estate Solutions is a leading real estate group that owns, manages, and develops veterinary real estate, including large general practices and 24/7 specialty emergency hospital buildings. The team at Terravet—comprised of real estate, legal, and finance professionals—has a decade-long track record of...
Experts in Veterinary Real Estate

Terravet Real Estate Solutions is dedicated to helping veterinarians make sound real estate decisions that ensure strong financial futures. Terravet is not a broker—we are owner/operators of veterinary real estate. We work closely with you to determine the value of your veterinary property and develop a custom solution that reflects your financial, business, and personal goals.

- **10+ YEARS EXPERTISE** in buying, owning, and operating veterinary real estate
- **COMMITTED CAPITAL** to ensure funding is readily available to facilitate a quick closing process
- **DEDICATED MISSION** to improving health by channeling resources to facilities where care is delivered
- **DIVERSE PORTFOLIO** that includes 1 million square feet of veterinary/healthcare real estate in 30 states
- **STRONG LEADERSHIP TEAM** comprised of accomplished practice owners, operators, and real estate professionals
collaborating with veterinary operators to invest in their real
estate and improve the quality of their facilities.

Terravet Real Estate Solutions and its veterinarian
partners recently launched Terravet REIT Inc, a private
real estate investment trust (REIT) to facilitate additional
options for veterinary real estate owners to diversify their
real estate holdings beyond the traditional binary choice of
either selling or continuing to hold their property.

WHAT IS TERRAVET REIT?

Launched in July 2022, the REIT and its affiliated oper-
at ing partnership began with a small group of top-tier
veterinary buildings. Terravet Real Estate Solutions
expects the REIT to grow to a portfolio of more than 20
buildings valued in excess of $100 million by the first
quarter of 2023, and to continue to grow thereafter.
Terravet Real Estate Solutions acts as the day-to-day
manager of the REIT, which is controlled by a separate
Terravet REIT board, which includes veterinarians, prac-
tice-operators, and advisers with decades of veterinary and
real estate experience, including:

- Randy Bimes, DVM, chair of the Community
  Veterinary Partners Medical Advisory Board and
  former coowner of Quakertown Veterinary Clinic in
  Quakertown, Pennsylvania
- Hank Wright, DVM, founder of The Pet Hospitals in
  Memphis, Tennessee
- Neil Tauber, a cofounder of VCA Animal Hospitals
- Terry O’Neil, partner at Katz, Sapper & Miller, and
  head of their Veterinary Services Group

HOW DOES TERRAVET REIT WORK?

Terravet REIT operates through an umbrella partnership
real estate investment trust (UPREIT) structure. Some
single-property owners can contribute their facility to
the REIT in a potentially tax-advantaged manner under
this structure and reap the benefits of diversification. The
UPREIT structure has been used for many years by private
and public REITs to build diverse portfolios across different
real estate asset classes. However, Terravet REIT is focusing
its use of this structure on veterinary real estate, with a goal
of building a portfolio of buildings that are diversified by
geography and tenant but primarily leased to veterinary
practices and hospitals.

As a perpetual life vehicle, Terravet REIT is focused
on high-quality veterinary practice real estate with the
average value of each property expected to be in excess
of $2.5 million. Terravet Real Estate Solutions works to
source appropriate real estate, focusing on purpose-built or
thoughtfully converted facilities that best meet the needs
of veterinarians and patients, most often in suburban and
urban areas and housing practices with a strong operating
history and reputation.

Terravet REIT expects to grow by referral, expanding
through a network of entrepreneurial veterinarians
nationwide, with the Terravet Real Estate Solutions team
focusing on adding the strongest available properties to
the portfolio.

HOW ELSE DOES TERRAVET
WORK WITH VETERINARY
REAL ESTATE OWNERS?

In addition to its work on behalf of Terravet REIT, Terravet
Real Estate Solutions continues to work with veterinary
real estate owners who wish to sell their properties to an
experienced veterinary real estate group that knows what
veterinary operators require for success. These owners, like
contributors to Terravet REIT, may want to relieve them-
selves of the ongoing responsibilities related to veterinary
property ownership. Managing taxes, insurance, and
lease renewals, and renovation and expansion requests
can be time-consuming and expensive. After selling to
Terravet Real Estate Solutions or contributing a property
to Terravet REIT, these responsibilities are handled by
Terravet’s professional team.

LOOKING TO THE FUTURE
OF VETERINARY REAL ESTATE

Veterinary real estate has proven to be resilient time and
time again. However, the veterinary sector is changing
rapidly, and that has resulted in challenges and opportuni-
ties for veterinary real estate owners. At the same time,
the commercial real estate market will continue to be impacted
by changes in work patterns, the growth of e-commerce,
inflation, interest rates, and various other factors. Terravet
is excited to continue exploring avenues to best respond to
the challenges facing veterinary operators and real estate
owners, including now working to offer an alternative to
the binary decision to sell or hold one’s real estate, enabling
veterinary real estate owners to diversify while staying
invested in veterinary real estate. ☢
As a feline practitioner, I see a lot of sick cats. The toughest cases always involve those felines whose owners say they “haven’t been to a vet in years and recently stopped eating.” We run lab work, and, congratulations, your pet is in stage 4 renal failure and needs a dental. How do you know which disease came first? Which is the bigger problem? It’s a tough reality check knowing that if they had only brought their cat in for routine physical exams and annual wellness diagnostics, we could have caught the chronic kidney disease (CKD) sooner.

We all understand the benefits of annual diagnostic testing: It establishes healthy baselines, allows us to monitor trends in organ function, and helps us catch diseases earlier. But how do you convince owners of its importance? What if there were another type of screening test that didn’t involve venipuncture that might increase compliance?

When first implementing annual wellness bloodwork in our clinic, the concept was simple. The owner needed to understand the benefit of early detection of disease, and it had to be affordable. The conversation started with the receptionist: “It looks like Fluffy is due for his annual exam, vaccinations, and annual diagnostics.” The day of the appointment, the technician would explain, “Fluffy is due for his annual exam, rabies vaccine, and annual diagnostics. Dr. Saffire will talk about what diagnostics are recommended based on Fluffy’s age and exam findings.”

Then it’s my turn: “Fluffy looks great on exam today. I see that Fluffy is due for a vaccine, but I would also like to talk to you about performing wellness labs. He is another year older, and a lot can change in a year. I’d like to run our senior wellness panel, which will allow me to gather information on his overall health status, including information on his red and white blood cells, blood sugar, kidneys, liver, and thyroid. A urine sample will also be collected. Are you OK with this?” If the owner consents, labs are performed.

I follow up each visit with a detailed summary of results so the owner understands the value in what was done. I would also like to talk to you about preventive diagnostics because their cat recently had labs performed or the owners weren’t prepared for the additional cost. My response: “That’s no problem; I understand you weren’t prepared for this additional expense today. Since Fluffy is otherwise doing well, I would be OK skipping labs this year, but I’m going to create a reminder so that you can plan to have it done next year.” The following year, those owners will usually say yes.

CKD and periodontal disease are common in feline medicine, and the 2 often present together. Other risk assessment tests for CKD and periodontal disease are being developed, including a noninvasive, oral swab-based screening tool that evaluates genetic predispositions, health markers, and oral microbiome.

The importance of wellness testing in veterinary medicine cannot be understated. It enables early disease detection, leading to earlier treatment and, hopefully, longer life expectancy. Wouldn’t it also be helpful to have the information that a patient is more at risk of developing certain diseases to confirm the importance of annual monitoring to clients? Stay tuned as this research unfolds, and in the meantime, train your staff to discuss annual wellness diagnostics with your clients at every point of contact.

REFERENCES

Say yes to annual wellness diagnostics and oral microbiome tests

One clinician’s approach to persuading clients to be proactive with preventive diagnostics

written by
Ashlie Saffire, DVM, DABVP (feline)

Saffire is a feline medicine specialist and serves on the board of directors for the American Association of Feline Practitioners. She is a tutor for the University of Sydney’s Feline Medicine Distance Education Course and serves as ABVP Feline Residency adviser at Cats Only Veterinary Clinic in Columbus, Ohio.

The importance of wellness testing in veterinary medicine cannot be understated.
Talking sedation-free shock wave therapy for small animals

Jennifer Vitucci, DVM, CCRT, joins dvm360 Live!™ to explain how she uses shock wave therapy for pain management and injuries

Written by Bob Alaburda, Director, Custom Projects

On a recent episode of dvm360 Live!™, Jennifer Vitucci, DVM, CCRT, performed a demonstration of the PulseVet electrohydraulic shock wave device and discussed the advantages of extracorporeal shock wave therapy (ESWT) in providing a non-invasive treatment option for injuries and pain management. ESWT has been utilized in equine medicine for more than 20 years for the treatment of soft-tissue and musculoskeletal injuries as well as pain management. The technology focuses sound waves at the treatment area to increase blood flow, decrease inflammation, reduce pain, and stimulate soft-tissue healing and bone growth.1-3 “When [sound energy] is absorbed into our body, it initiates and amplifies our body’s own healing process,” said Vitucci. “It releases all these regenerative cytokines and growth factors for healing, or happy healthy enzymes, as I like to call them.”

Until recently, such treatments required sedation in small animals, as the high-energy sound waves could potentially cause discomfort. However, a new PulseVet Shock Wave handpiece, the X-Trode, was released at the end of last year, which spreads the same energy over a larger focal area, allowing small animals to benefit from ESWT without the need for sedation.

ESWT CANDIDATES

Vitucci said she finds ESWT useful for patients with bone, tendon, and ligament injuries. “[Shock wave therapy] is great for partial cruciate tears that come in; they may not be not surgical candidates,” said Vitucci. “Normally, we can only offer them medicine and rest or basic rehab. PulseVet Shock Wave is something that can actually improve their healing, reduce their pain and improve their quality of life.”

She added that it can also be an option for geriatric patients with chronic osteoarthritis, especially those who have been on nonsteroidal anti-inflammatory drugs and are no longer able to tolerate them as well. In a previous interview with dvm360® chief veterinary officer Adam Christman, DVM, MBA, on The Vet Blast Podcast, Vitucci suggested using ESWT for wound healing, such as with lick granulomas or degloving injuries. Vitucci added that there are no adverse effects as a result of ESWT and no recovery time after treatment. “That’s the best part,” she said. “It’s very safe. [The client doesn’t] have to worry about going home and something happening.”

PRACTICE BENEFITS OF ESWT

ESWT is a nonsurgical, nonmedical, noninvasive treatment option for pain and injury cases. One of the main benefits of electrohydraulic shock wave therapy, according to Vitucci, is that it requires only 1-3 total treatments, taking less than 5 minutes per treatment area. Additionally, there is no special equipment required, and the device is very mobile. The clinician simply applies ultrasound gel to the treatment area (which may require shaving in hairier dogs to make good contact), and the device itself is “point and shoot” with preset options. Vitucci demonstrated the device on Christman, showing that it causes no physical discomfort, only some rhythmic noise as the sound waves are generated.

Christman commented that the speed and simplicity of treatment would allow a hospital to offer ESWT as a convenient service item that can be provided by technicians with quick room turnover time. “They literally just need to know what they’re treating, how big the dog is, and away they go,” said Vitucci.

REFERENCES

Advancing Veterinary Shock Wave Therapy Through Evidence-Based Medicine

Over 15 YEARS of Unmatched and Ongoing Clinical Research

Sedation-free, noninvasive healing for your patients.

Canine Treatment Areas

The PulseVet® shock wave technology has been clinically proven to enhance the quality and speed of healing in various musculoskeletal indications, such as:

- Ligaments
- Tendons
- Osteoarthritis
- Lick Granulomas
- LS Disease
- Non-Union Fractures

To learn more about the PulseVet system or set up a demo, call or click

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Hospital design with staff in mind
Five merit award winners of our 2022 Hospital Design Competition

written by Sydney Yankowicz, Assistant Editor

Our 2022 Hospital Design Competition winners were recognized at the Fetch dvm360® Conference in Kansas City, Missouri, in August. The honorees included 5 merit award winners: Animal Care Center of Downers Grove in Illinois; Animal Emergency & Referral Associates in West Caldwell, New Jersey; Cypress Fairhaven Animal Hospital in Texas; Veterinary Clinic of Myrtle Beach in South Carolina; and South Creek Animal Clinic in Spring, Texas.

Here is a closer look at each of these merit award recipients:

Animal Care Center of Downers Grove (ACCDG) is a full-service animal care center, meaning it includes full medical and advanced surgery features as well as boarding, grooming, and day care. “The design was intended to be modern and ultraprofessional. However, inside we wanted a warm feel throughout the front and back to make the hospital a place that was inviting for both the clients and employees,” said Tony Kremer, DVM, ACCDG partner, and owner of 10 other veterinary hospitals in Illinois and Ohio.

Animal Emergency & Referral Associates (AERA) started out as a small, after-hours emergency clinic. The clinic later grew to be a 24/7 hospital, providing a wide range of services including emergency, anesthesiology, cardiology, critical care, dentistry and oral surgery, internal medicine, neurology, and soft tissue and orthopedic surgery. They also offer MRI, CT diagnostic and radiology imaging, physical rehabilitation, radiation oncology, and an in-house blood donation program.

“The hospital design was inspired by the goal of creating a hospital that is conducive to practicing the highest level of medicine possible by creating an efficient and sensible flow between each area of the hospital,” said Skylar King, marketing manager for AERA. >>
GI SUPPORT THAT’S EASY TO STOMACH.

DETECT, PROTECT, AND CONNECT.
THREE SIMPLE STEPS FOR A CONTINUOUS CIRCLE OF CARE.

Detect
There are many causes of GI disorders, and you are the expert at determining the underlying cause. Select the best fit for your patients from Royal Canin’s complete Gastrointestinal line.

Protect
Recommend Royal Canin Gastrointestinal nutrition to help protect and support GI health by providing gut-friendly nutrition with functional ingredients.

Connect
Nourish your relationship when you send pet owners home with support. Keep learning with continuing education courses, TechTalks, podcasts, and more. Get started with free CE from Royal Canin Live!

Scan for more.
“Involving staff with decisions along the way, from fluid pump choices to paint color, made this our new home and a place we love to come to,” she said.

**CYPRESS FAIRHAVEN ANIMAL HOSPITAL**

Cypress Fairhaven Animal Hospital is a 17,000-sq ft animal hospital, with an entire second floor dedicated solely to cat care. The hospital has 10 doctors of veterinary medicine on staff who perform dental procedures and surgery 6 days a week. It offers regular, urgent, and emergency appointments and drop-offs in the sound-limiting canine bunkhouses.

Lauren McDevitt, practice manager of Cypress Fairhaven, told *dvm360* about her favorite element of the hospital, stating, “As a high-capacity, fast-paced hospital, our most unique and favorite element is the 19 exam rooms; they render our lobby virtually unused, as we’re able to get appointments, including urgent care and emergencies, directly into an exam room and check out clients in the room, as well.

“We’ve implemented the use of a lot of technology to facilitate a productive workflow across our sprawling facility. Staff wear radios and have access to security camera feeds we call ‘the people finder.’ We even developed our own digital whiteboard app that integrates with our [personal information management system] and allows us to track the progress and efficiency of our patients and staff from any workstation or cell phone.”

**SOUTH CREEK ANIMAL CLINIC**

South Creek Animal Clinic is a small animal practice that exclusively treats canines and felines and offers general medicine and surgery, including radiographs and laser therapy.

Thad Gloriod, DVM, owner of South Creek Animal Clinic, explained the exterior and interior designs of the clinic in an interview with *dvm360*. “Our hospital exterior is a warehouse design with brick and steel. On the interior, we have a sort of coffeehouse vibe. We get compliments often on our artwork, and the most common comment we receive is that this doesn’t look like a veterinary hospital inside, which we take pride in,” he said. “We have exposed steel in the lobby that is painted to accent it as well as a fire suppression pipe and valve, which is a neat aspect of the design to bring the warehouse feel indoors but softened. We made the lobby ceiling almost 16 ft high, which gives the lobby the feeling of being significantly roomier,” he said.

**VETERINARY CLINIC OF MYRTLE BEACH**

Veterinary Clinic of Myrtle Beach contains high-quality digital radiography, in-hospital blood testing, and ultrasound for thorough body cavity evaluations. Amanda Thompson, DVM, is the mobile veterinary ultrasonographer, who provides extended ultrasound studies of the abdomen and heart whenever needed.

In addition to the medical services it provides, Veterinary Clinic of Myrtle Beach has separate areas in the facility that provide clean boarding space for dogs and cats. This allows clients to have a stress-free vacation, knowing that their pet is supervised by the veterinary staff.
Examining an innovative treatment option for chemotherapy-induced canine diarrhea

Boarded oncologist Dr Sue Ettinger discusses her in-clinic experience with the new drug

**Written by Bob Alaburda, Director, Custom Projects**

**WHAT IS CANALEVIA-CA1®?**

Crofelemer delayed-release tablets (Canalevia-CA1) are conditionally approved by the FDA for chemotherapy-induced diarrhea in dogs and can be prescribed by general practitioners. Ettinger explained to host and dvm360® chief veterinary officer Adam Christman, DVM, MBA, “It’s locally acting and it’s an antisecretory drug, so it works on the chloride channels to restore water balance, so they don’t have that watery diarrhea.”

Ettinger also commented that she appreciates that it is a natural and organic product. The drug is made from sap harvested from a *Croton lechleri* tree, which grows in rainforests in South America. Ettinger said, “Jaguar…Health is working to sustainably grow this and working with the indigenous people there to plant new trees. I think 2 new trees are planted for every tree that’s harvested for the sap, so it [is] really, really cool.”

**PUTTING IT INTO PRACTICE**

In the next segment of dvm360 Live™, Ettinger and Christman were joined by Christian Nahas and his dog Sambuca. Ettinger explained that Sambuca had been diagnosed with an intrapelvic sarcoma. She called it a “high-grade tumor” that was “pretty aggressive.” After determining that the tumor was nonsurgical, Sambuca received stereotactic radiation therapy, followed by chemotherapy to prevent metastasis. The tumor has since decreased by 55%, Ettinger said.

Nahas explained how the chemotherapy caused bouts of diarrhea for Sambuca. Ettinger then prescribed Canalevia-CA1, which was given to Sambuca over the course of 3 days. Nahas said, “Every time we gave it to her…her stool improved. Whatever that does, it works.” He added that he noticed results the day following the first dose.

**TAKE C.H.A.R.G.E. REGISTRY AND CANINE CANCER CARE INDEX**

In addition to new drugs in the oncology domain, Ettinger spoke passionately about recent and upcoming research she hopes will give the veterinary profession a broader perspective on canine cancer in the future. She began with the Take C.H.A.R.G.E. (Canine Health and ReGistry Exchange) initiative.

“What we’ve been missing in veterinary oncology and veterinary medicine is a registry to be able to know how many cancer cases are out there in dogs,” Ettinger said. “[This initiative is] starting to compile medical records state by state, so we can look at age, breed, gender, and the different cancers and really start to know how many cancers there are in our pets.” The index started with a retrospective review of 35,900 anonymous canine patient records and 830 confirmed cancer cases. The database continues to grow as clinics and pet owners upload new cases, according to the official website. Ettinger said that the patient data is anonymized for privacy and that clinics can easily sign up to contribute online.

Explaining one of the interesting initial takeaways from the index, Ettinger said, “They looked at the incidence, the newly diagnosed cancer cases in dogs vs people, and this going to kind of blow your mind: It was 2.8% in dogs and 0.57% in [humans].” She continued, “People do feel like, is there more cancer being diagnosed in pets? And that’s exactly why we need this registry, so we can break that down and unpack it much more.”

As to the importance of compiling such data, Ettinger summed it up, saying, “I know cancer is scary, but information is power.”

**REFERENCES**


**Fidelis Nutritionals Freeze-Dried Raw Diet Dog Food**

This high-protein freeze-dried raw food is formulated specifically for large active dogs to help support stamina, immunity, agility, and alertness. The US-made, grain-free natural dog food contains added vitamins, minerals, and taurine, and it is complete and balanced for all life stages. It is available in 2 recipes, including cage-free chicken and free-range beef.

🔗 [fidelispet.com/shop/food](http://fidelispet.com/shop/food)

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**Frunevetmab injection (Solensia)**

The first monoclonal antibody treatment approved by the FDA for control of feline osteoarthritis (OA) pain, frunevetmab injection (Solensia; Zoetis) is administered monthly by a veterinarian. It generally enhances cats’ mobility, comfort, and well-being by targeting a key driver in OA pain: nerve growth factor. Frunevetmab injection is available as a 7-mg/mL solution in a single-use 4-mL glass vial.

🔗 [www2.zoetisus.com/products/cats/solensia](http://www2.zoetisus.com/products/cats/solensia)

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**Embark Dog Age Test**

The Embark Dog Age Test estimates a dog’s calendar age by measuring DNA methylation so pet owners and veterinarians can offer age-appropriate care. The insights include a dog’s calendar age and estimated birthday, their life stage (from puppy to adult to senior), nutrition and supplement suggestions, activities to keep them fit and active, and tips for preventive health care.

🔗 [shop.embarkvet.com/products/dog-age](http://shop.embarkvet.com/products/dog-age)

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**Petivity Smart Litterbox Monitor System**

The Petivity Smart Litterbox Monitor System uses artificial intelligence via a monitor placed under the litter box to capture and translate behavioral data (e.g., significant changes in weight, frequency, waste type, and elimination schedule) into actionable insights to help cat parents provide proactive care. The system automatically notifies the owner on the smartphone app if a change in their cat’s behavior requires attention.

🔗 [petivity.com](http://petivity.com)

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**Pet Poison Helpline Toxin Trends**

Pet Poison Helpline’s Toxin Trends is an online tool that informs pet parents and veterinary professionals on various toxins in their local communities. Users can see which specific cities the Pet Poison Helpline calls originated from, and which months of the year had the highest call volumes. The common clinical signs for each exposure are listed plus frequently asked questions.

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• For the first 30 minutes after application ensure that dogs cannot lick the product from application sites on themselves or other treated animals.
• Children should not come in contact with the application sites for two (2) hours after application. (See Contraindications, Warnings, Human Warnings, and Adverse Reactions for more information.)

INDICATIONS:
Barrier for Dogs is indicated for the prevention of heartworm disease caused by Dirofilaria immitis and the treatment of Dirofilaria immitis circulating in heartworm-positive dogs. Barrier for Dogs kills adult fleas and is indicated for the treatment of flea infestations (Ctenocephalides felis). Barrier for Dogs is indicated for the treatment and control of sarcoptic mange caused by Sarcoptes scabiei var. canis. Barrier for Dogs is also indicated for the treatment and control of the following intestinal parasites species: Hookworms (Ancylostoma caninum) (Uncinaria stenocephala), Roundworms (Toxocara canis) (Toxascaris leonina) and Whipworms (Trichuris vulpis).

Barrier for Cats is indicated for the prevention of heartworm disease caused by Dirofilaria immitis. Barrier for Cats kills adult fleas (Ctenocephalides felis) and is indicated for the treatment of flea infestations. Barrier for Cats is also indicated for the treatment and control of ear mite (Otodontes cynotis) infestations and the intestinal parasites species Hookworm (Ancylostoma tubaeforme) and Roundworm (Toxocara cati). Ferrets:
Barrier for Cats is indicated for the prevention of heartworm disease in ferrets caused by Dirofilaria immitis. Barrier for Cats kills adult fleas (Ctenocephalides felis) and is indicated for the treatment of flea infestations in ferrets.

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WARNINGS:
Barrier for Dogs: For the first 30 minutes after application: Ensure that dogs cannot lick the product from application sites on themselves or other treated dogs, and separate treated dogs from one another and from other pets to reduce the risk of accidental ingestion. Ingestion of this product by dogs may cause serious adverse reactions including depression, salivation, dilated pupils, incoordination, panting, and generalized muscle tremors. In avermectin sensitive dogs, the signs may be more severe and may include coma and death.

Barrier for Cats: Do not use on sick, debilitated, or underweight cats. Do not use on cats less then 9 weeks of age or less than 2 lbs. body weight. Do not use on sick or debilitated ferrets.

HUMAN WARNINGS: Not for human use. Keep out of the reach of children. Dogs: Children should not come in contact with the application sites for two (2) hours after application. Cats: Children should not come in contact with the application site for 30 minutes after application.

CAUSES eye irritation. Harmful if swallowed. Do not get in eyes or on clothing. Avoid contact with skin. Wash hands thoroughly with soap and warm water after handling. If contact with eyes occurs, hold eyelids open and flush with copious amounts of water for 15 minutes. If eye irritation develops or persists, contact a physician. If swallowed, call poison control center or physician immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison control center or physician. People with known hypersensitivity to benzyl alcohol, imidacloprid, or moxidectin should administer the product with caution. In case of allergic reaction, contact a physician. If contact with skin or clothing occurs, take off contaminated clothing. Wash skin immediately with plenty of soap and water. Call a poison control center or physician for treatment advice. The Safety Data Sheet (SDS) provides additional occupational safety information. For a copy of the Safety Data Sheet (SDS), to report adverse reactions, or consumer questions call Aurora Pharmaceutical at 1-888-215-1256.

PRECAUTIONS: Do not dispense dose applicator tubes without complete safety and administration information. Use with caution in sick, debilitated or underweight animals. The safety of Barrier for Dogs has not been established in breeding, pregnant, or lactating dogs. The safe use of Barrier for Dogs has not been established in puppies and dogs less than 7 weeks of age or less than 3 lbs. body weight. Barrier for Dogs has not been evaluated in heartworm-positive dogs with Class 4 heartworm disease.

Cats may experience hypersalivation, tremors, vomiting and decreased appetite if Barrier for Cats is inadvertently administered orally or through grooming/licking of the application site. The safety of Barrier for Cats has not been evaluated in breeding, pregnant, or lactating cats. The effectiveness of Barrier for Cats against heartworm infections (D. immitis) after bathing has not been evaluated in cats. Use of this product in geriatric cats with subclinical conditions has not been adequately studied. Ferrets: The safety of Barrier for Cats has not been established in breeding, pregnant, and lactating ferrets. Treatment of ferrets weighing less than 2.0 lbs. (0.9kg) should be based on a risk-benefit assessment. The effectiveness of Barrier for Cats in ferrets weighing over 4.4 lbs. (2.0 kg) has not been established.

ADVERSE REACTIONS: Heartworm Negative Dogs: The most common adverse reactions observed during field studies were pruritus, residue, medicinal odor, lethargy, inappetence and hyperactivity.

Heartworm Positive Dogs: The most common adverse reactions observed during field studies were cough, lethargy, vomiting, diarrhea (including hemorrhagic), and inappetence. Cats: The most common adverse reactions observed during field studies were lethargy, behavioral changes, discomfort, hypersalivation, polydipsia and coughing and gagging. Ferrets: The most common adverse reactions observed during field studies were pruritus/scratching, scabbing, redness, wounds and inflammation at the treatment site; lethargy; and chemical odor.

For a copy of the Safety Data Sheet (SDS) or to report adverse reactions call Aurora Pharmaceutical, Inc. at 1-888-215-1256 or www.aurorapharmaceutical.com.

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zymox.com/products/feline-cats-kittens

Project WAG (Wellbeing and Growth)

This Zoetis initiative provides veterinary professionals with online wellbeing resources that promote self-care, all in 1 place. They include peer-to-peer and self-care resources, community-based resources, and educational resources. The goal is to empower veterinary professionals to establish healthy boundaries in the workplace, connect with the community, and find more joy in their daily work.

www.projectWAG.org

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The top Medical World News™
segments of 2022

Here is a look back at some of the past year’s standout episodes from dvm360® on the digital health care channel.

**WELLBEING CHECKUP™: THE POWER OF REFRAMING**

Sonja Olson, DVM, sat down with dvm360® to discuss reframing a mindset and how shifting into this kind of perspective can help improve veterinary professionals’ mental wellness. She also shared positive initiatives in the field aimed at promoting a healthier profession.


**DEEP DIVE INTO VETERINARY GENETICS TESTING**

This episode of Medical World News Deep Dive™ features Christina Lindquist, MS, associate director of forensics at the University of California, Davis, Veterinary Genetics Laboratory (VGL); and Teri Kun, MS, forensic scientist and DNA technical lead at VGL, informing viewers on how a criminal stepping in dog feces helped them assist police in solving a triple-homicide case. The case also landed them on an episode of Forensic Files II.

[www.medicalworldnews.com/view/deep-dive-into-veterinary-genetics-testing](www.medicalworldnews.com/view/deep-dive-into-veterinary-genetics-testing)

**INSIDE BOND VET**

Philippa Pavia, VMD, head of medical strategy and board-certified veterinary surgeon at Bond Vet, outlined the modern elements of Bond Vet clinics and how they help provide comfort and practical function for staff, pets, and pet owners alike during this episode of Inside the Practice®.


**AFTER HOURS® WITH THE STREET VET**

On this segment of After Hours®, dvm360® is joined by Kwane Stewart, DVM, who explains how he began providing free veterinary care to homeless animals in Los Angeles, California, leading him and his brother to cofound Project Street Vet.

[www.medicalworldnews.com/view/after-hours-the-street-vet](www.medicalworldnews.com/view/after-hours-the-street-vet)

As our latest season of Medical World News™ ends, dvm360® reflects on some of our favorite segments from this season and seasons past! Join dvm360® guests to help improve your mental well-being, hear about modern hospital design, learn about genetics testing, or get inspired by a veterinarian who cares for street animals.

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Intesto-Guard and Diet for Treatment of Chronic Enteropathy in Dogs

Clinicians at Iowa State and Ohio State Universities have recently completed a clinical trial using Intesto-Guard for the treatment of chronic enteropathy (CE) in dogs. This disorder is a common cause of persistent gastrointestinal signs and intestinal inflammation in dogs. Since accumulating evidence links dysbiosis to mucosal inflammation, probiotics, prebiotics, or their combination (synbiotics) may reduce intestinal inflammation and ameliorate dysbiosis in dogs with CE. The aim of this study was to investigate the effects of a synbiotic-IgY supplement (Intesto-Guard) on clinical signs, inflammatory indices, and mucosal microbiota in dogs with CE.

Dogs with CE were enrolled into a randomized double-blind, placebo-controlled study. Twenty client owned dogs were fed a hydrolyzed diet and administered supplement (Intesto-Guard) or placebo (diet) for 6 weeks. Dogs were evaluated at diagnosis and at 2- and 6-weeks post-treatment. Outcome measures included clinical activity, endoscopic and histologic scores, intestinal (fecal calprotectin, CP) and systemic (serum C-reactive protein, CRP) inflammatory markers, and composition of the mucosal microbiota using fluorescence in situ hybridization (FISH).

Eleven supplement- and nine placebo-treated dogs completed the trial. After 6 weeks of therapy, clinical activity and endoscopic scores decreased in both groups, however, there were no differences detected between the groups. Compared to placebo-treated dogs, dogs administered supplement showed decreased CP at 2-weeks post-treatment, decreased CRP at 2- and 6-weeks post-treatment, and increased mucosal Clostridia and Bacteroides bacteria as well as decreased Enterobacteriaceae in colonic biopsies at trial completion.

The IG supplement was safe and well tolerated in dogs with CE. Results suggest a beneficial effect of the supplement on inflammatory responses in the intestines of the dogs, as well as increased beneficial and decreased inflammatory mucosal bacteria in dogs with CE. These data are preliminary and should be replicated using larger randomized trials to confirm these results.

D. Sahoo¹, K Allenspach¹, J. Mochel¹, V. Parker², A. Rudinsky³, J. Winston³, M. Ackermann³, R. Hellmann³, L. Yuan³, A. Mochel⁴, S. Morgan⁵, K. Scheunemann⁵, A. Jergens⁶
¹Iowa State University; ²Ohio State University; ³NADC; ⁴University of Leipzig
Veterinary infectious diseases in 2023: Will the surge continue?

Here is a look at what disease spikes could be on the horizon for veterinary and human medicine.

The past several years have encouraged all of us to expect the unexpected when it comes to infectious diseases. After all, how many once-in-a-lifetime pandemics can we fit into a single lifetime?

For veterinarians, this is all just another day at the clinic, barn, or field. On a disease evolutionary scale, humans have endured COVID-19 quickly followed by monkeypox and Sudan ebolavirus with surges of seasonal influenza and respiratory syncytial virus (RSV) added as the icing on the cake for 2022.

Speaking of surges, just as we are seeing massive outbreaks of seasonal respiratory viruses in humans, we are seeing the same dogs relative to outbreaks of canine infectious respiratory disease complex (CIIDRC).  

As life returns to some version of normal post COVID-19, not only are people back to infecting each another with more traditional respiratory disease, but so are our pets. This is especially true for those spending more time at places such as doggie daycares and dog parks, and less time quarantining with their owners at home.

Veterinary medicine has had to weather those storms and deal with our own unique outbreaks on top of it all. We have seen massive outbreaks of avian influenza virus, with millions of wild and domestic birds infected over the past several years, including the 2022 H5N1 outbreak that defied expectations when it comes to infectious disease. This makes it the golden age of diagnostics and epidemiology as we have a public accustomed to testing and receiving diagnostic information, and an ever-expanding array of options to provide that information across the spectrum of veterinary medicine.

COVID-19 and monkeypox.  

Although it would be comforting to think 2023 is going to finally provide us all with the break we need, it seems like it may be the year it gets worse before it gets better. The translocation of millions of Floridians, whose lives, homes, and pets were tragically impacted by Hurricane Ian, has the potential to be a superspreader event. Only time will tell if we see mass migration of endemic animal diseases from Florida, both regionally and nationally, as was seen after Hurricane Katrina in 2005.6  

Even if mass disease migration is not seen, case reports of leptospirosis in people and animals that navigated the floodwaters are likely to rise. Those cases will be distributed locally and regionally depending on what infrastructure remains operational and how quickly those affected are able to return home.

We should expect cases of Pythium insidiosum to rise in humans and pets, especially those that became trapped in floodwaters before relocating, and/or encountered standing water during cleanup operations.

Even as the floodwaters become a memory, cases of mosquito-borne disease are likely to remain elevated, in some cases for years to come. Heartworm disease will likely remain elevated for some time, especially with animals that may have been lost during the storm and subsequently turned up in shelters after living outdoors. Eastern equine encephalitis virus and West Nile virus cases in equids will likely multiply in many of these areas on top of the ongoing cases in humans and animals that have been seen up and down the Eastern seaboard and into the Midwest.9

Foodborne zoonotic disease outbreaks will also continue to be problematic for pets and pet owners. This bears mentioning not only due to the number of owners feeding raw or homemade diets beyond the budgets of many pet owners.

Salmonella, Escherichia coli, Campylobacter, and Listeria will continue to elevate pet and owner infection risk levels, especially in those feeding raw diets.

While the forecast for 2023 seems ominous, or more of the same for so many of us, optimism should be the order of the day. Never have we had so many pet owners, farmers, and other animal caretakers understand the basics of diagnostic testing.

At this point many had polymerase chain reaction and lateral flow tests, with most getting a crash course in respiratory disease transmission. This makes it the golden age of diagnostics and epidemiology as we have a public accustomed to testing and receiving diagnostic information, and an ever-expanding array of options to provide that information across the spectrum of veterinary medicine.

REFERENCES


A Pocket of Prevention

“A pocket of prevention” is a recurring column brought to you by the American College of Veterinary Preventive Medicine (ACVPM). The ACVPM is an AVMA-recognized veterinary specialty organization offering board certification in preventive medicine with the option of a specialty in epidemiology. Becoming a Diplomate of the ACVPM means joining some of the most distinguished veterinary professionals in preventive medicine and public health at national and international levels. For more information, go to acvpm.org.

written by

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Wildlife care everywhere, plus AMR Vet Collective

Updates on an initiative to increase veterinary capability to help wildlife in natural disasters, and an online portal encouraging practice of good antimicrobial stewardship

WILDLIFE CARE EVERYWHERE

Vets Beyond Borders (VBB), an Australian not-for-profit charity focused on helping animals and communities, has partnered with WWF-Australia to deliver Wildlife Care Everywhere, a wildlife training and resource package for veterinary clinics in regions of need across Australia. The project aims to prepare veterinary professionals in the capture, treatment, and care of wildlife during events caused by extreme weather, such as bushfires.

The initiative comprises 5 different components to upskill veterinarians by providing them with additional training and equipment for essential veterinary care for wildlife. The first component is wildlife treatment and care training for veterinary professionals delivered by the Taronga Conservation Society Australia, who have also partnered with other regional zoos and wildlife sanctuaries for the practical training aspects of the blended online and in-person course.

The second component of Wildlife Care Everywhere is training in the basic principles of the Australasian Inter-Service Incident Management System (AIIIMS). This training aims to increase participants’ awareness about emergency management procedures so that veterinarians and veterinary nurses understand how they fit into the framework of a coordinated response, managed by state government authorities.

The third and fourth parts of Wildlife Care Everywhere are darting and wildlife capture management. “VBB is providing specific training for 60 veterinarians across Australia to be licensed to use dart equipment, and we have funding for 20 darting tranquiller rifles and storage safes across Australia. We’re trying to complement what already exists, so we’ve identified gaps across the country where these will be located,” VBB Chief Executive Officer Sally Colgan, BVSc, explained to dvm360.

“The final component of the program is a mobile triage unit fully equipped with veterinary equipment, consumables, and temporary animal housing to create a simple pop-up wildlife triage center, which will be able to be used by our volunteers and partnered response agencies.”

Colgan sees the Wildlife Care Everywhere initiative as an important part of improvements being rolled out by different wildlife and veterinary groups across Australia. These are intended to boost veterinary wildlife emergency response capacity and capability.

“This initiative is part of a game-changing process which is happening. With assistance from WWF-Australia, we’re putting 100 vets through the Taronga training course. But is 100 vets across Australia enough? I don’t think so, but it is important to increase the number of veterinarians and veterinary nurses who are wildlife capable and wildlife aware and ready to assist. We’re trying to create a cohort of vets who are trained and willing to be deployed and assist as volunteers when needed,” said Colgan.

For further information on the VBB Wildlife Care Everywhere initiative, visit https://vetsbeyondborders.org/news/wildlife-care-everywhere/.

AMR VET COLLECTIVE

The AMR Vet Collective is a community of veterinarians, researchers, and academics who came together to support best practices in relation to preventing antimicrobial resistance. The group has sourced and curated a selection of online resources and training modules encouraging good antimicrobial stewardship.

“The term antimicrobial stewardship is not commonly used in daily language. The idea behind it is a lovely one—that some are responsible for the caretaking of a resource that is of benefit to all. We can liken it to being a custodian, and that is perhaps a term that people are more familiar with,” explained Jacqueline Norris, PhD, MVS (Melb), BVSc (Hons), a professor of veterinary microbiology and infectious diseases at the University of Sydney, and one of the experts behind the development of the AMR Vet Collective.

“We know that some people tune out at the mention of stewardship or assume that being ‘good’ at stewardship is about being a master pharmacologist or internal medicine specialist. Part of what we want to do is to empower those people who are leaders or who want to be leaders in antimicrobial stewardship—but we also know that this isn’t for everyone. One of our core messages is that it doesn’t have to be that hard! We all have the capacity to reduce selection pressure and minimize antimicrobial resistance.”

AMR Vet Collective’s aim is to translate the science, share stories, and connect veterinarians with high-quality antimicrobial stewardship resources sourced globally and created locally. The organization’s website provides a one-stop-shop for resources suitable for veterinary clinics and for use with animal owners to help educate them about antimicrobial resistance—a handy resource as World Antimicrobial Awareness Week, November 18 to 24, approaches.

The collective’s associated Online Vet AMS Course was created by veterinarians and academics from all the Australian and New Zealand veterinary schools. It includes modules covering the core concepts in antimicrobial resistance, antibiotic prescribing and the microbiome, infection prevention and control, and putting the theory into practice—implementing an antimicrobial stewardship program.

“So please jump onboard, ‘like’ and ‘follow’ our social media accounts, have a listen to our podcast, take a look around the website, and sign up to the free online learning program. We all need to work together to protect our antimicrobials. Antimicrobial stewardship is a team sport, and you are a key player,” said Norris.


Tucak is a science communication adviser for Wildlife Health Australia and a practicing veterinarian in Cottesloe, Western Australia.
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See the needle, see the target and improve your success rate.
King Animal Hospital is a small animal practice in a suburban community. There were 4 veterinarians and 20 support staff members. The competitive practice was progressive and had grown quickly to serve the expanding community and recent increased pet ownership. The veterinary clinicians at King Animal Hospital were both highly skilled and uniquely personable. They were a diverse group prioritizing client relationships and interactions. It was typical for one of the doctors to give her clients her cell phone number so they could contact her directly when necessary. Another clinician often invited pet owners to dance recitals where his passion for ballroom dancing was put on display. There was always a risk in giving pet owners this type of access for fear of them abusing the privilege for non-mergent situations. The positive side, of course, was a devoted clientele with tremendous practice allegiance.

Recently, it was brought to the owner’s attention that a longtime veterinary staff member, Dr. House, had decided to leave the practice. He had the opportunity to obtain an ownership stake in a practice about 15 miles away in a different town. He had given the owner his mandated 60-day notice and would not be in violation of a mutually agreed upon 10-mile restrictive covenant. This was a setback for the practice owner. He felt that he had always treated Dr. House fairly and saw his leaving as a bit of a betrayal. He understood that the staff veterinarian was deciding his future career path. Nevertheless, the hospital owner felt that he was owed a discussion about how he could assist Dr. House with his future endeavors. He was disappointed that Dr. House simply made a decision without any consultation with his boss.

The 60 days passed, Dr. House departed from the practice, and King Animal Hospital continued to thrive and survive. The next immediate challenge that presented itself was how to inform clients who inquired about Dr. House’s whereabouts. The receptionist and doctors were constantly asked where he had gone. They were not sure how they should respond and asked for direction from the practice owner.

The practice owner was still angry about losing his valued associate. He instructed the staff to inform clients that Dr. House had moved on and no longer worked at King Animal Hospital. When asked how they could contact Dr. House, they were told to say that they did not have that information. They were further advised to tell clients that they could contact the local veterinary association to see if they had an updated contact for Dr. House. Several of the staff members were not happy with the information they were instructed to give to the clients. They asked to meet with the hospital owner to discuss the situation.

The hospital owner felt no obligation to send his clientele to Dr. House by offering contact information. Several staff members felt it was important to be honest and transparent with their clientele and inform them of Dr. House’s new workplace. At the same time, they found it important to emphasize to these clients that King Animal Hospital continues to be available to assist them with all their veterinary needs. It was decided that a professional and ethical approach to this problem was to first contact Dr House, they were told to say they did not have that information. They were further advised to tell clients they could contact the local veterinary association to see if they had an updated contact for Dr. House. Several of the staff members were not happy with the information they were instructed to give to the clients. They asked to meet with the hospital owner to discuss the situation.

The hospital owner felt no obligation to send his clientele to Dr. House by offering contact information. Several staff members felt it was important to be honest and transparent with their clientele and inform them of Dr. House’s new workplace. At the same time, they found it important to emphasize to these clients that King Animal Hospital continues to be available to assist them with all their veterinary needs.

It was decided that a professional and ethical approach to this problem was to first contact Dr. House and ask if inquiring clients could be given a contact number. Second, it would be stressed to all inquiring clients that it was the wish of the King Animal Hospital to continue to care for their valued pets. Finally, there would be no derogatory inference when commenting about Dr. House’s departure.

Just how much obligation do you have to a departing veterinary staff member? Do you think that King Animal Hospital did too little or too much when it came to client information about the whereabouts of a newly departed veterinarian? We would like to know.

Rosenberg’s response

The reality is that veterinary medical practices are businesses. Valued staff, even beloved staff, come and go. Regardless of the emotions attached to these events, practice staff members must always act in a professional and ethical manner. The practice owner in this dilemma initially was dishonest with his inquiring clientele. He soon realized that the ethical approach was to honestly inform clients while at the same time encouraging them to continue their pet care at his clinic. Ill will among colleagues never serves clients, pet patients, or the veterinary community.
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