Trends magazine

Referrals, simplified.

How a Generalist and a Specialist are changing veterinary referrals using GuardianVets **7**

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THIS ISSUE

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Trends magazine

Vol. 37, No. 12
DECEMBER 2021

Trends magazine provides timely perspectives on the art and business of companion-animal veterinary practice to all members of the practice team. trends.aaha.org

Trends magazine, American Animal Hospital Association
12575 W. Bayaud Ave., Lakewood, CO 80228-2021
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Journal Highlights Abstracts of the current issue of *JAAHA*, *Journal of the American Animal Hospital Association*, are reprinted with permission. For masthead information, editorial review board, authors' guidelines, and subscription information, see the online publication at aaha.org or jaaha.org.

Subscriptions *Trends magazine* is provided to AAHA members as a member benefit (annual membership dues include $60 for a subscription). Annual nonmember subscriptions: $70. Single copies: $20. To subscribe, call 800-883-6301.

Postmaster *Trends magazine*® (ISSN 1062-8266) is published 12 times per year (January, February, March, April, May, June, July, August, September, October, November, December) by the American Animal Hospital Association, at 12575 W. Bayaud Ave., Lakewood, CO 80228. Periodicals postage paid at Denver, Colorado, and at additional mailing offices. Canadian Post Agreement Number 40041253; send change-of-address information and blocks of undeliverable copies to P.O. Box 1051, Fort Erie, ON L2A 6C7. Printed in the USA. Postmaster: Send address changes to *Trends magazine*, 12575 W. Bayaud Ave., Lakewood, CO 80228-2021.

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[1] Data on file at Boehringer Ingelheim. [2] Data on file at Boehringer Ingelheim. [3] Ascarid for Dog. Companion Animal Parasite Council. https://capcvet.org/guidelines/ascarid/. Accessed December 2, 2020. [4] Hookworms for Dog. Companion Animal Parasite Council. https://capcvet.org/guidelines/hookworms/. Accessed December 2, 2020.

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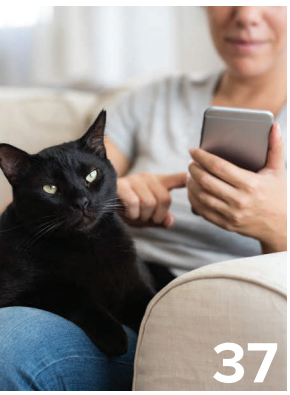

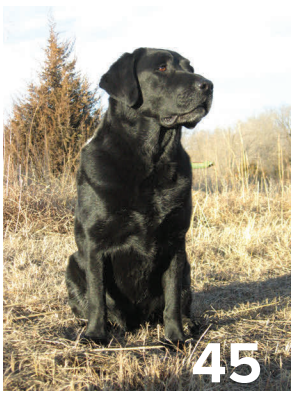

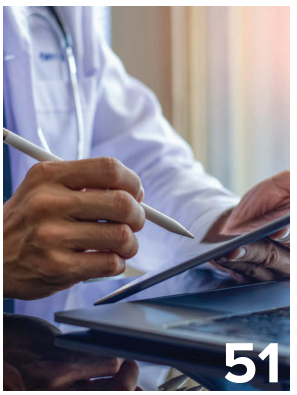

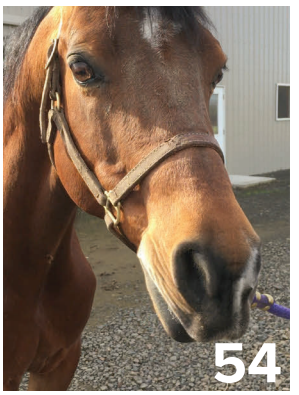

the usual

Referrals, simplified.

Specialist referrals just got a whole lot easier.

Dr. Aaron Smiley DVM and Dr. Ben Bergstrom DVM, MS, Diplomate ACVO utilize virtual care via GuardianVets to make referral easier, reduce wait times, and increase access to speciality care.

The cornerstone of the new referral workflow is an asynchronous conversation between the generalist, the client, and the specialist. “Traditionally a client is either physically sent to me or I give advice to the referring veterinarian. This system works, but there are a lot of inefficiencies”, says Dr. Bergstrom. “Now I can assess the problem with Dr. Smiley’s help and communicate directly with the client.”

“It’s so much easier for me and the client. Just few messages and my client and I have access to a specialist. No travel or waiting to get an appointment. This is a game changer!” says Dr. Smiley.

Both doctors agree that case selection is important. “Not every case can be managed virtually, but technology is allowing us to do a lot more today than in the past.

The **GuardianVets Connect** platform is still within beta mode and currently only available by invitation. To sign up for early access, visit www.guardianvets.com/connect.

Burned Out?

How some leading AAHA practices are managing high call volume and overwhelming demand.

Phones that never stop ringing. Upset clients that cannot access the care that they need. Veterinary nurses leaving the field in droves.

It seems like veterinary practices across the world have completely lost any semblance of work-life balance. But now there is some hope.

An AAHA Recommended company called GuardianVets has created on-demand veterinary support to help your practice cope with increasing client needs. The company offers various solutions, from Virtual CSRs to after-hours support and work with hundreds of hospitals across North America.

When asked about their experience, one AAHA general practice in Hawaii stated that “**GuardianVets has been great to ease client’s minds since we don’t offer emergency services after-hours.**” Another AAHA emergency hospital in Washington that added GuardianVets in order to assist with tremendous call volume states “We don’t know what we would do without you all!”

Visit www.guardianvets.com to learn more.

from the editor's desk

YOU'VE SEEN THEM IN AIRPORTS, ON THE STREET, AND IN POLICE CARS.

They are hard-working and loyal, dedicated to their work and those they work with. They perform rescues, provide invaluable help to disabled persons, sniff out explosives, and even look for dead bodies in disaster zones. These heroes are so amazing, they even earned their very own set of AAHA guidelines!

This issue we are proud to present an executive summary of the brand new *2021 AAHA Working, Assistance, and Therapy Dog Guidelines*. The guidelines lay out in detail the many considerations practices must take into account when treating working dogs. There are most likely working dogs in your area, so being familiar with how to treat them will be a great help if you are interested in treating these animals. The full guidelines are in the Nov/Dec issue of *JAAHA*, and also available on aaha.org.

In addition to the summary, we also have an article on laser treatments for working dogs. The article looks at some of the specific injuries and conditions working dogs can sustain, and some of the modalities that practices are using to treat them.

In this issue we have another new topic, the value of chiropractic treatments for dogs, as well as a look at the growing field of telemedicine known as teletriage.

WE WANT YOUR OPINION!

The *Trends* team is always interested to hear what our readers have to say about the topics *Trends* is covering—and what we are not covering. Feel free to reach out any time with your thoughts or ideas for article topics.

And don't forget to nominate your own Employee of the Month to win $100!

COMING NEXT MONTH

Next month we will have articles on pet insurance, working dogs, and practice management software. We will also have Part 2 of the feature on rural veterinarians, and a profile of AAHA's new president, Adam Hechko, DVM.

As always, let me know what you think at trends@aaha.org.

—Ben Williams, Editor

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View from the President

The Year in Review

What have you celebrated with your team this year? As 2021 winds down and we look forward to 2022, we must take time to celebrate our successes. In my opinion, veterinary medicine is the best profession anyone can choose. We get to challenge our minds with science and communication on a daily basis while having a tremendous positive impact on people's and animals' lives. Through our shared passion for animals, we build strong bonds with families and the communities we practice in.

The pandemic has created many challenges, from workflow, to increased stress, to rapid growth. Many teams are tired and may even forget why they chose to work in veterinary medicine. Let's help each other remember how important we are to the lives of our patients, their families, and each other.

Taking time to stop and celebrate our successes helps remind us why we chose this career path. We tend to forget or take for granted all the amazing things we achieve throughout the day. Talking to people outside our industry has helped me remember that our day-to-day activities put smiles on people's faces or relieve stress when an owner is worried. Let's not forget, the small actions we take that we consider "just doing our jobs" can have a big effect on people. Sharing these moments and celebrating them with each other can bring help joy and fulfillment to our day.

There are so many ways to celebrate success in our industry. It can be giving a gift card or any other act of appreciation for a team member. We can have a party for a pet when it's released after a long stay in the hospital. Celebration does not always have to be tied to a medical outcome. Acknowledging teamwork when one team member goes out of their way to help another is also cause for celebration. Do you let your team know when positive reviews or cards come to the office? Maybe consider reading these words of affirmation during a team meeting for all to hear.

If daily celebration seems daunting, consider incorporating time during monthly staff meetings. Add a recuring agenda item that your team can expect called "Celebrating Our Successes." It can be time to share good things from the last month about each other, our patients, or the families that love them.

My challenge to the veterinary industry is to find ways each day to celebrate all the amazing things we do to help pets, build stronger bonds with families, and help communities that have struggled with all the challenges that COVID-19 has presented to us. Once you start this journey, others will follow, and we can reclaim the passion we had that first day we walked into our veterinary practices.

Adam Hechko, DVM, is AAHA's president for 2021–2022. A proud graduate of The Ohio State University College of Veterinary Medicine and an avid Buckeye fan, Hechko earned his DVM degree in 2006 following the completion of his undergraduate degree from the University of Findlay in 2002. Since 2006, Hechko has served as owner and medical director for North Royalton Animal Hospital, a four-doctor small animal practice that includes a pet resort, daycare, and grooming in North Royalton, Ohio.

Promoting AAHA Accreditation in Day-to-Day Practice

Practice Manager Trisha Rodney Merchant, CVPM, at Animal Hospital of Pensacola in Pensacola, Florida, wanted to bring awareness to her hospital's AAHA accreditation and remind the team why their practice is "AAHA Proud."

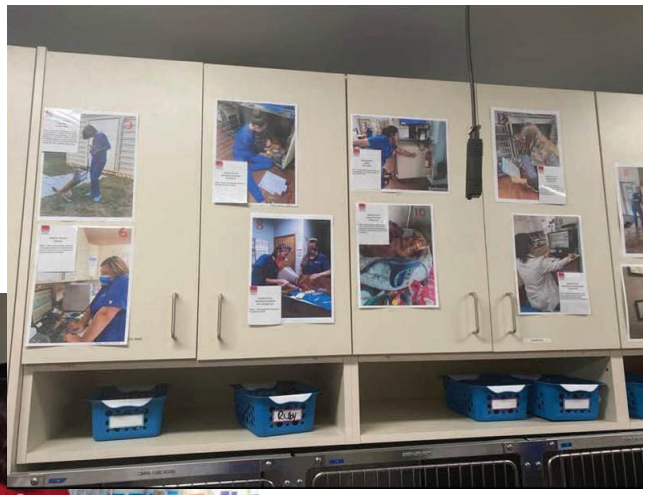
She selected 31 different *AAHA Standards of Accreditation*—one for every day of the month—and each day, team members took pictures of themselves performing or fulfilling that standard. When the team met the goal of documenting every standard for the month, they decided to celebrate by implementing "AAHA, It's Friday," a special celebration of their AAHA accreditation every Friday.

"We have purchased every team member a set of red scrubs and had them review all the standards and pick out a special one that means something to them to put on the back of the scrub tops," Merchant said.

The standards selected include "Pain management is individualized for each patient" and "The practice utilizes a Certified Veterinary Practice Manager (CVPM)."

"This is truly a great effort by one of our members to promote externally and internally the value of accreditation. The pictures they have posted throughout the hospital reflecting their adherence to AAHA standards are fantastic as well," said Anthony Merkle, CVT, regional manager for AAHA's Member Experience team.

For more ways to celebrate AAHA accreditation, visit aaha.org/publicity.



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AAHA MEETINGS AND EVENTS

DECEMBER

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Veterinary Management Institut

Veterinary Management Institute

Please visit aaha.org to register and get up-to-date information.

DEAR AAHA

Dear AAHA,

What is AAHA's guidance on cleaning circuit tubing?

—Circuit Tubing in South Bend

Have a question you'd like AAHA to answer? Email us at dearaaha@aaha.org.

Dear Circuit Tubing,

Thank you for your question! First and foremost, we suggest contacting the manufacturer of the breathing systems. Different systems have varying protocols so it's always best to get specifics. For general guidance, you might check out the book Anesthesia and Analgesia for Veterinary Technicians, Fifth Edition by John Thomas, DVM, and Phillip Lerche, BVSc, PhD, DACVA (2016, Elsevier Health Sciences).

—AAHA's Member Experience Team

AAHA's New Centralized Online Document Storage System Eases Evaluations

AAHA's online evaluation tool now includes a digital document management system so practices can upload and store videos, PDFs, Word documents, and more in support of their AAHA-accreditation evaluation.

AAHA launched this digital option to reduce the time and effort members spend compiling documentation in preparation for AAHA evaluations. Having the documents digitally in advance also gives the AAHA team more time to review and suggest personalized strategies for continuous improvement of the practice over time, which is the ultimate aim of accreditation.

For example, prior to their evaluation, a hospital could upload a video tour that gives their AAHA practice consultant a look at the current workflow. Use of the digital service is not mandatory but is encouraged to make the accreditation process easier, more efficient, and more targeted to each practice's specific needs.

Email practice.accreditation@aaha.org for more information on the new document management system or anything else regarding accreditation.

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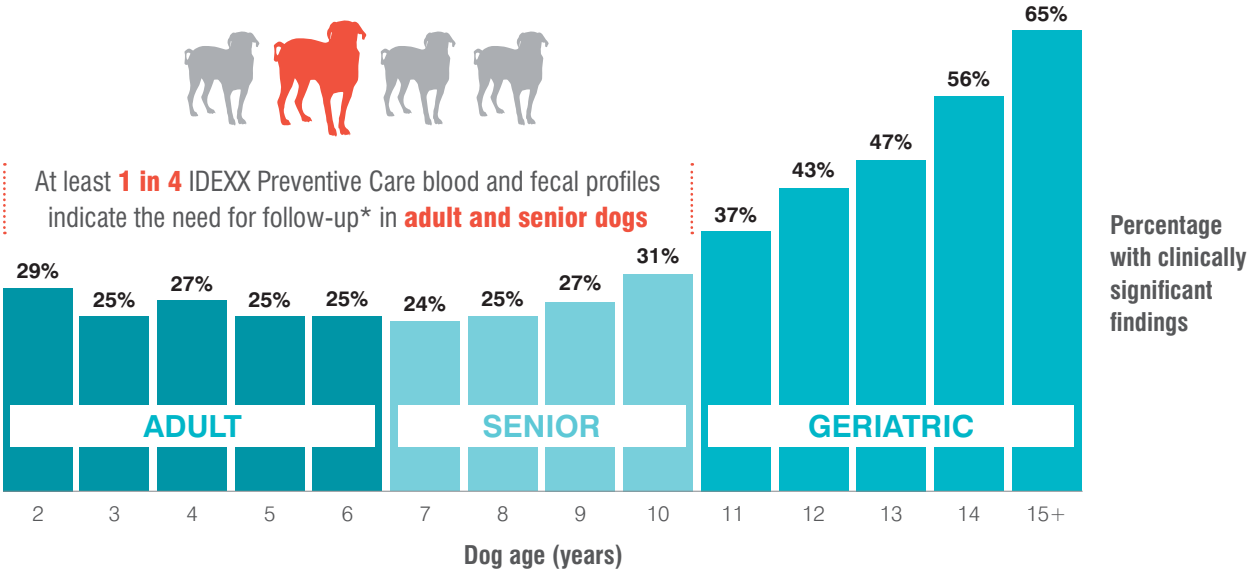
New evidence supports the value of preventive care profiles on all adult dogs

Preventive care profiles aren't just for senior and geriatric patients



Dogs as young as 2 years of age had clinically significant findings based on results of preventive care bloodwork and fecal testing[1]

Of the nearly 30,000 canine profiles included in this analysis, there was little variation in the rate of clinically significant findings between adult dogs and senior dogs.

The study was based on an analysis of IDEXX Preventive Care profiles (including the following categories: Chem 22 including the IDEXX SDMA® Test, IDEXX CBC testing with reticulocyte parameters, the Lab 4Dx® Plus Test, and Fecal Dx® antigen testing) run as part of wellness visits. While the number of clinically significant findings for each of these testing categories varied by age, all categories were important for adult, senior, and geriatric dogs.

These results are similar to a previous analysis that included cats as young as 2 years[2]

The previous analysis from more than a quarter of a million wellness visits that included a chemistry profile with an IDEXX SDMA® Test and a CBC, revealed significant findings required follow-up in:

1 in 7 adults (cats aged 2–8 years; dogs aged 3–6 years)
1 in 5 seniors (cats aged 9–13 years; dogs aged 7–10 years)
2 in 5 geriatrics (cats aged 14+ years; dogs aged 11+ years)

Routine preventive care testing has distinct medical benefits

There is ample evidence to support routine preventive care visits that include diagnostic testing. Results of routine bloodwork and fecal testing help veterinarians detect diseases and conditions, leading to earlier interventions that help patients of all ages live healthy lives for as long as possible. Once a veterinarian has baseline values, she/he can monitor trends and, if necessary, create individualized treatment plans. If no abnormality is detected, veterinarians and staff can—and should—celebrate the good news with clients. By communicating the value of every test result, practices reinforce the importance of routine wellness checks and the central role that clients play in the health of their pet. It's a win-win!

Review preventive care data and case studies at **idexx.com/1in4**

*Due to "clinically significant findings," which would indicate the need for follow-up, further consideration, or a change in action by the clinician. Clinical significance based on rules determined by an IDEXX veterinarian panel.

References

1. Data based on analyses of **29,795** canine wellness profiles (Chem 22 including IDEXX SDMA® Test, IDEXX CBC testing with reticulocyte parameters, the Lab 4Dx® Plus Test, and Fecal Dx® antigen testing) associated with wellness visits; testing performed at IDEXX Reference Laboratories on July 13, 2016–February 28, 2019. Represented U.S. regions by proportion of included profiles: Northeast (32.0%), South (41.3%), Midwest (17.4%), West (7.6%), and region not reported (1.7%).

2. Data on file at IDEXX Laboratories, Inc. Westbrook, Maine USA.

Elevate End-of-Life Care

New End-of-Life Care accreditation model from AAHA

AAHA ACCREDITED END-OF-LIFE CARE
The Standard of Veterinary Excellence

> 40% of pet owners wouldn't return to a veterinary hospital where they had an unsatisfactory pet euthanasia experience.

AAHA's new **End-of-Life Care accreditation** model is designed to help you elevate these services, so patients and clients receive appropriate supportive and emotional care at the end of life.

Learn more and apply: **aaha.org/eolc**
Questions? Email **eolcaccreditation@aaha.org**

notebook

iVET360 Releases Survey of Veterinary Practice Managers

iVET360 has released the veterinary industry's first ever Practice Manager Report and made it available to download for free. This survey includes responses of 683 practice managers in 49 states, providing, as the company states, data that reveals the state of the veterinary industry beyond just revenue numbers. They report that the survey responses show some expected pain points, such as recruiting and hiring, but also includes surprising information about how practice employees are managing—or not managing—the massive changes in the industry brought on by the pandemic.

Even so, the point of the survey wasn't to underline how difficult things have become, according to Heather Romano, iVET360 managing director, human resources and training.

"We wanted to use this survey to help practice managers understand that they are not alone in their challenges," Romano explains. "We also felt a need to accurately identify the issues and their causes so we could then assist the industry in finding solutions."

The iVET360 human resources and training team analyzed the data, and, as part of the report, they offer insight and advice about how the industry got to this point and what practice managers and owners can do to alleviate some of the pressure on themselves and their employees. iVET360 states that they hope to publish the Practice Manager Report annually. To download the report, go to ivet360.com.

VA to Train Dogs to Work with Vets with PTSD

President Joe Biden recently signed a bill into law that will allow some veterans with mental health conditions to receive service dogs. The new law orders the Department of Veterans Affairs secretary to develop and launch a five-year pilot program that provides service dog training to benefit veterans diagnosed with post-traumatic stress disorder (PTSD).

The Puppies Assisting Wounded Servicemembers for Veterans Therapy Act, or PAWS Act, requires the Veterans Administration (VA) to start the pilot program in early 2022, and it must be carried out by at least five VA medical centers. The facilities will partner with accredited service dog organizations to perform the training.

Congress directed the VA to conduct a study on the issue of training service dogs to help veterans with PTSD in 2010, with the initial results published in March. The study found veterans paired with service dogs experienced a reduction in the severity of their PTSD symptoms, and they exhibited fewer suicidal behaviors and ideations.

"The research is clear on the range of benefits a service dog can provide for veterans experiencing those kinds of symptoms, which is why we're thrilled to see this pilot program become law," Christine Myran, executive director of the nonprofit Blue Star Service Dogs, said in a statement. "Providing support to our veterans is essential for helping with their transition back to civilian life, and this law will make a real difference for those making that journey."

Veteran David Crenshaw and his service dog, Doc, at a Capitol Hill news conference to promote House bill HR 1022, the Puppies Assisting Wounded Servicemembers Act, or PAWS Act, on March 3, 2021.

Photo courtesy Stars and Stripes—Joe Gromelski

Cats Less Stressed After Adoption by Families of Children with Autism

A new study at the University of Missouri shows that adding a shelter cat to the family can help lower stress and anxiety for children with autism, and it may also benefit the cat.

"It's not only important to examine how families of children with autism may benefit from these wonderful companion animals, but also if the relationship is stressful or burdensome for the shelter cats being adopted into a new, perhaps unpredictable environment," said Gretchen Carlisle, a research scientist at the MU Research Center for Human-Animal Interaction (ReCHAI) in the MU College of Veterinary Medicine. "In our study, we found the cats acclimated well to their new families and became significantly less stressed over time."

Researchers report that the findings, published in *Frontiers in Veterinary Science*, highlight the mutual benefits of human-animal interaction and build off previous MU research that found pets may help reduce stress and anxiety for both children with autism and their parents.

Carlisle explained that children with autism may have sensitivity or sensory issues and occasional problem behaviors accompanied by loud, sudden outbursts. Because of those concerns, shelter cats that have been screened for a calm, easygoing temperament may increase the likelihood of a better long-term match for both the children and the cat.

AAVMC Provides Veterinary School Pipeline Update

The American Association of Veterinary Medicine College (AAVMC) recently published a paper that provides an analysis of the current veterinary school enrollment status. In it, they state that enrollment in undergraduate institutions is in the midst of major change. The COVID-19 pandemic has resulted in a smaller cohort of undergraduate enrollees, they say, with significant enrollment loss for students from historically underrepresented backgrounds. They report that the veterinary medical school pipeline will also be shaped in the late 2020s by fewer undergraduate students thanks to smaller birth cohorts starting in 2008. Following are some highlights from the data; to see the entire paper, visit aavmc.org.

- Undergraduate institutions saw a 4.9% decline in overall enrollment during the pandemic as of spring semester. This is the largest decline in a decade.
- Enrollment of college-aged students declined by 5%.
- Men experienced the largest gender drop in enrollment: 5.5%. Women decreased by 2%.
- White and Asian students, students from affluent backgrounds, and students with higher grades were most likely to sit out of enrollment during the pandemic.
- Enrollment of low-income students dropped by 29% during the pandemic.
- 42% of students who withdrew from classes in fall 2020 did so because of changes in income due to the pandemic.

QUOTE OF THE MONTH

"If you don't build your dream, someone else will hire you to help them build theirs."

—Dhirubhai Ambani, entrepreneur

SurkovDimitri/iStock via Getty Images

New Study Examines Whether Dogs Understand Intent

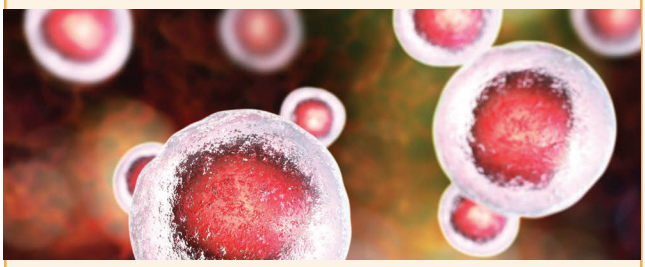
In a new study, researchers in Germany conducted a series of experiments to see whether dogs seem to understand whether humans do things on purpose. The study is published in the journal *Scientific Reports*.

For the study, researchers attempted to pass a treat to a dog through a hole in a screen, and then either "accidentally" dropped it, tried to pass it but the hole was blocked, or intentionally withdrew the treat and said "ha ha!" In the last instance, the canines waited longer to walk around the screen to get the treat and were more likely to stop wagging their tail. Researchers report that the finding indicates dogs can figure out whether we're doing something on purpose or by accident—and thus have some insight into what we're thinking.

The researchers, including Juliane Bräuer, head of the dog studies lab at the Max Planck Institute for the Science of Human History in Jena, Germany, acknowledge that more research is needed and there could be other factors that contributed to the dogs' responses.

Dogs went around the partition to retrieve treats faster when they thought they were withheld by accident.

Dogs were fed several tasty treats through the gap before the experimenter started to withhold the reward in a way that looked either intentional or unintentional. In similar experiments with chimps, the animals angrily pounded on the glass or left the experiment in a huff when the treats were deliberately denied them.



Researchers Explore Promising Treatment for MRSA "Superbug"

A new Cornell study has found the antimicrobial properties of certain stem cell proteins could offer a potential treatment to reduce infection in skin wounds.

Treating wounds with the secretion of a type of stem cell effectively reduced the viability of methicillin-resistant *Staphylococcus aureus*—better known as MRSA—according to a new study from researchers at the Baker Institute for Animal Health, part of the College of Veterinary Medicine (CVM). Moreover, the researchers found that the secretion stimulated the surrounding skin cells to build up a defense against the bacterial invader. The study appeared in *Stem Cells Translational Medicine*.

"The results showed that secreted factors from equine mesenchymal stromal cells (MSCs), a type of stem cell, significantly decreased the viability of MRSA in our novel skin model," said first author Charlotte Marx, a postdoctoral researcher in the lab of corresponding author Gerlinde R. Van de Walle, associate professor of microbiology and immunology at the CVM.

"Moreover," Marx said, "we demonstrated that equine MSC secretions increase the antimicrobial activity of the skin cells by stimulating immune responses of the surrounding resident skin cells."

Researchers say that the study may point to a possible new approach for treating MRSA. While many people carry MRSA without serious consequences, for those whose health is compromised, this "superbug" can be fatal.

Photos courtesy of Josepha Erlacher. Photo courtesy of Dr_Microbe

Researchers Discover Treatment That May Be Viable for Human Brain Cancer

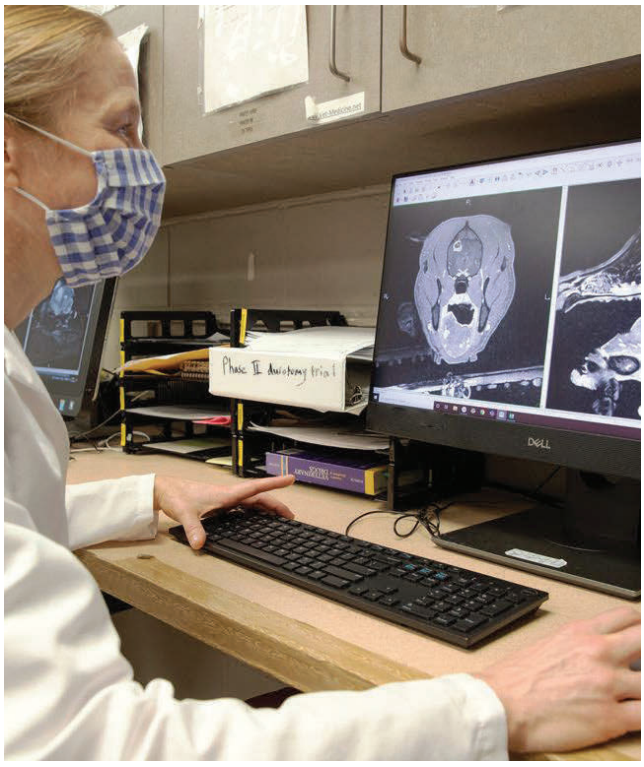
A team of researchers at Texas A&M University, Northwestern University, and ImmunoGenesis has discovered a treatment for glioblastoma that they report has promising implications for the human version of the aggressive cancer that grows in the brain. The results were published in *Clinical Cancer Research*, the journal of the American Association for Cancer Research.

The researchers tested a STING (stimulator of interferon genes) drug injected directly into the glioblastoma of five dogs that had previously been diagnosed with the cancer, which is the second-most common type of brain cancer in dogs. STING agonists can induce immunological responses that allow the immune system to fight otherwise immunologically resistant cancer cells.

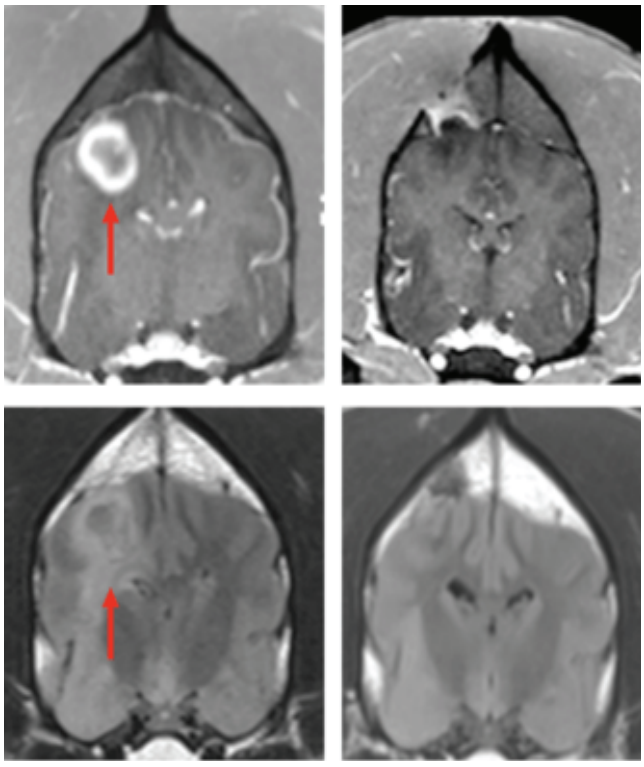
Magnetic resonance imaging scans taken of the patients over the course of the 10-month trial revealed that some of the dogs, even with a single dose, responded to the treatment with apparent reductions in their tumor volume, including one response in which the tumor appeared to completely disappear. Based on these results, the team concluded that this therapy can trigger an antitumor immune response and may be highly effective on recalcitrant tumors such as glioblastoma.

"With this therapy, we were trying to take tumors that do not, on their own, generate a lot of immune response and turn them into tumors that do by injecting them with this immunotherapy agent," researcher and Texas A&M assistant professor of neurology Beth Boudreau, DVM, PhD, said.

Because of the simple delivery of the STING agonist and the marked volume reduction of the tumor, the researchers also believe this strategy may provide a viable adjunct therapeutic approach for human glioma. In the next phase of the project, researchers plan to explore using a similar approach in clinical trials of human glioma patients who have undergone a surgical debulking.

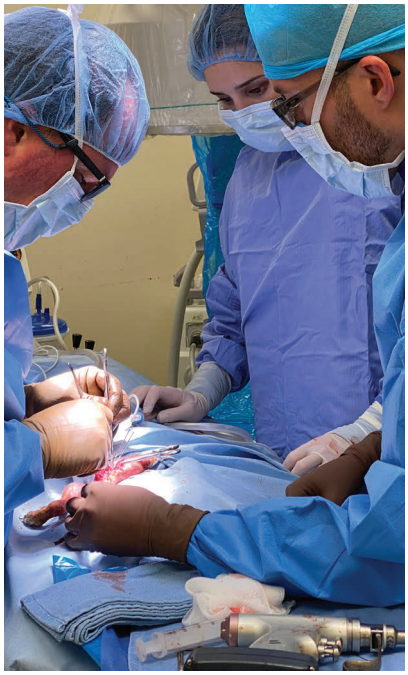


Beth Boudreau, DVM, PhD, assistant professor of neurology at Texas A&M's College of Veterinary Medicine & Bio-medical Sciences.



Dog with glioblastoma, showing the large bulky tumor (top left panel) and diffuse infiltration (bottom left panel) treated with the STING agonists and 12 weeks later, showing the disappearance of the bulky tumor (top right panel) and associated infiltration (bottom right panel).

Photo courtesy of Texas A&M College of Veterinary Medicine & Biomedical Sciences. Photo courtesy of American Association for Cancer Research.



Surgeons work on Siggi, a rat terrier puppy born with front paws upside down.

A Second Case of Upside-Down Paws Treated at Oklahoma State's Veterinary College

In early 2019, Oklahoma State University's College of Veterinary Medicine treated Milo, a foxhound puppy born with the rare condition of front paws facing upward instead of downward. Erik Clary, an OSU Veterinary Teaching Hospital small animal surgeon and an associate professor of small animal surgery and bioethics, performed successful corrective surgery on Milo. Earlier this year, a Dallas animal rescue group came into possession of Siggi, a 13-week-old rat terrier puppy also with her front paws upside down. They brought the animal to OSU for examination.

"As with Milo, Siggi's problem looked like it was in the paws, but it was actually in her elbows," Clary said. "For reasons not fully understood, these patients' elbows come out of joint early in life and the result is severe rotation of the lower front limbs and an inability to walk. At most, they might muster a crawl that seems most uncomfortable and is poorly suited for a dog's life."

Four-pound Siggi received a 64-slice computed tomography (CT) exam that gave Clary and his team information on the shape and alignment of her limb bones. They found that unlike Milo, Siggi had significant deformity of the bones in the lower part of her elbow, complicating the joint issue. "The CT helped us plan a more complex procedure that would require an intentional break high up in her ulna bone to de-rotate the limb," Clary said.

Clary and his team performed the surgery, protecting Siggi's elbows with splints and an orthopedic fixator device while her ulna bones healed. At her subsequent checkup, Clary confirmed the bone healing with X-ray exam and removed Siggi's splint. "At that stage, the task then became one of teaching her how to walk and she proved a fairly quick learner. Lorraine, her medical foster with Dallas Dog RRR, did a fabulous job implementing an incremental rehabilitation regimen that now has Siggi doing many things that puppies like to do, including chasing a ball in the yard. Truly, I could not be more pleased with Siggi's progress," Clary says.

Photos courtesy Oklahoma State University CVM

159637-002

VETMEDIN®

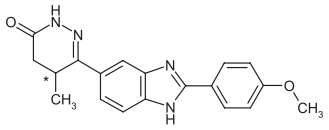
(pimobendan)

Chewable Tablets

Cardiac drug for oral use in dogs only

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

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



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

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

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

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

Dosage and Administration: VETMEDIN should be administered orally at a total daily dose of 0.23 mg/lb (0.5 mg/kg) body weight, using a suitable combination of whole or half tablets. The total daily dose should be divided into 2 portions that are not necessarily equal, and the portions should be administered approximately 12 hours apart (i.e., morning and evening). The tablets are scored and the calculated dosage should be provided to the nearest half tablet increment.

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

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

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

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

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

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

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

See Table 1 for mortality due to CHF (including euthanasia, natural death, and sudden death) and for the development of new arrhythmias (not present in a dog prior to beginning study treatments) by treatment group and type of heart disease (AVVI or DCM) in the 56-day field study.

Table 1: CHF Death and New Arrhythmias in the 56-Day Field Study

	VETMEDIN® Group	Active Control Group
Dogs that died due to CHF	14.3% n = 175	14.4% n = 180
	9 of 126 dogs with AVVI	16 of 130 dogs with AVVI
	16 of 49 dogs with DCM	10 of 50 dogs with DCM
Dogs that developed new arrhythmias[a]	39.4% n = 175	45.0% n = 180
	45 of 126 dogs with AVVI	59 of 130 dogs with AVVI
	24 of 49 dogs with DCM	22 of 50 dogs with DCM

[a] New arrhythmias included supraventricular premature beats and tachycardia, atrial fibrillation, atrioventricular block, sinus bradycardia, ventricular premature beats and tachycardia, and bundle branch block

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

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

To report suspected adverse reactions, to obtain a Safety Data Sheet (SDS), or for technical assistance, contact Boehringer Ingelheim Animal Health USA Inc. at 1-888-637-4251. For additional information about adverse drug experience reporting for animal drugs, contact the FDA at 1-888-FDA-VETS or online at http://www.fda.gov/reportanimalae.

Clinical Pharmacology: Pimobendan is oxidatively demethylated to a pharmacologically active metabolite which is then conjugated with sulfate or glucuronic acid and excreted mainly via feces. The mean extent of protein binding of pimobendan and the active metabolite in dog plasma is >90%. Following a single oral administration of 0.25 mg/kg VETMEDIN tablets the maximal mean (± 1 SD) plasma concentrations (Cmax) of pimobendan and the active metabolite were 3.09 (0.76) ng/ml and 3.66 (1.21) ng/ml, respectively. Individual dog Cmax values for pimobendan and the active metabolite were observed 1 to 4 hours post-dose (mean: 2 and 3 hours, respectively). The total body clearance of pimobendan was approximately 90 mL/min/kg, and the terminal elimination half-lives of pimobendan and the active metabolite were approximately 0.5 hours and 2 hours, respectively. Plasma levels of pimobendan and active metabolite were below quantifiable levels by 4 and 8 hours after oral administration, respectively. The steady-state volume of distribution of pimobendan is 2.6 L/kg indicating that the drug is readily distributed into tissues. Food decreased the bioavailability of an aqueous solution of pimobendan, but the effect of food on the absorption of pimobendan from VETMEDIN tablets is unknown.

In normal dogs instrumented with left ventricular (LV) pressure transducers, pimobendan increased LV dP/dtmax (a measure of contractility of the heart) in a dose dependent manner between 0.1 and 0.5 mg/kg orally. The effect was still present 8 hours after dosing. There was a delay between peak blood levels of pimobendan and active metabolite and the maximum physiologic response (peak LV dP/dtmax). Blood levels of pimobendan and active metabolite began to drop before maximum contractility was seen. Repeated oral administration of pimobendan did not result in evidence of tachyphylaxis (decreased positive inotropic effect) or drug accumulation (increased positive inotropic effect). Laboratory studies indicate that the positive inotropic effect of pimobendan may be attenuated by the concurrent use of a β-adrenergic blocker or a calcium channel blocker.

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

The determination of effectiveness (treatment success) for each case was based on improvement in at least 2 of the 3 following primary variables: modified NYHA classification, pulmonary edema score by a masked veterinary radiologist, and the investigator's overall clinical effectiveness score (based on physical examination, radiography, electrocardiography, and clinical pathology). Attitude, pleural effusion, coughing, activity level, furosemide dosage change, cardiac size, body weight, survival, and owner observations were secondary evaluations contributing information supportive to product effectiveness and safety.

Based on protocol compliance and individual case integrity, 265 cases (134 VETMEDIN, 131 active control) were evaluated for treatment success on Day 29. See Table 2 for effectiveness results.

Table 2: Effectiveness Results for the 56-Day Field Study

	VETMEDIN® Group	Active Control Group
Treatment Success on Day 29	80.7% n=134	76.3% n=131
	88 of 101 dogs with AVVI	77 of 100 dogs with AVVI
	20 of 33 dogs with DCM	23 of 31 dogs with DCM
Treatment Success on Day 56	71.1% n=113	67.2% n=110
	66 of 85 dogs with AVVI	56 of 85 dogs with AVVI
	13 of 28 dogs with DCM	17 of 25 dogs with DCM
No increase in furosemide dose between Day 1 and Day 29	78.3% n=130	68.6% n=126

At the end of the 56-day study, dogs in the VETMEDIN group were enrolled in an unmasked field study to monitor safety under extended use, without restrictions on concurrent medications.

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

Palatability: In a laboratory study, the palatability of VETMEDIN was evaluated in 20 adult female Beagle dogs offered doses twice daily for 14 days. Ninety percent (18 of 20 dogs) voluntarily consumed more than 70% of the 28 tablets offered. Including two dogs that consumed only 4 and 7% of the tablets offered, the average voluntary consumption was 84.2%.

Animal Safety: In a laboratory study, VETMEDIN chewable tablets were administered to 6 healthy Beagles per treatment group at 0 (control), 1, 3, and 5 times the recommended dosage for 6 months. See Table 3 for cardiac pathology results. The cardiac pathology/histopathology noted in the 3X and 5X dose groups is typical of positive inotropic and vasodilator drug toxicity in normal dog hearts, and is associated with exaggerated hemodynamic responses to these drugs. None of the dogs developed signs of heart failure and there was no mortality.

Table 3: Incidence of Cardiac Pathology/ Histopathology in the Six-month Safety Study

Severe left ventricular hypertrophy with multifocal subendocardial ischemic lesions	One 3X and two 5X dogs[a]
Moderate to marked myxomatous thickening of the mitral valves	Three 5X dogs
Myxomatous thickening of the chordae tendineae	One 3X and two 5X dogs
Endocardial thickening of the left ventricular outflow tract	One 1X, two 3X, and two 5X dogs
Left atrial endocardial thickening (jet lesions) in 2 of the dogs that developed murmurs of mitral valve insufficiency	One 3X and one 5X dog
Granulomatous inflammatory lesion in the right atrial myocardium	One 3X dog

[a] Most of the gross and histopathologic findings occurred in these three dogs

Murmurs of mitral valve insufficiency were detected in one 3X (Day 65) and two 5X dogs (Days 135 and 163). These murmurs (grades II-III of VI) were not associated with clinical signs.

Indirect blood pressure was unaffected by VETMEDIN at the label dose (1X). Mean diastolic blood pressure was decreased in the 3X group (74 mmHg) compared to the control group (82 mmHg). Mean systolic blood pressure was decreased in the 5X group (117 mmHg) compared to the control group (124 mmHg). None of the dogs had clinical signs of hypotension.

On 24-hour Holter monitoring, mean heart rate was increased in the 5X group (101 beats/min) compared to the control group (94 beats/min). Not counting escape beats, the 3X and 5X groups had slightly higher numbers of isolated ventricular ectopic complexes (VEs). The maximum number of non-escape VEs recorded either at baseline or in a control group dog was 4 VEs/24 hours. At either Week 4 or Week 20, three 3X group dogs had maximums of 33, 13, and 10 VEs/24 hours, and two 5X group dogs had maximums of 22 and 9 VEs/24 hours. One 1X group dog with no VEs at baseline had 6 VEs/24 hours at Week 4 and again at Week 20. Second-degree atrioventricular heart block was recorded in one 3X group dog at Weeks 4 and 20, and in one dog from each of the 1X and 5X groups at Week 20. None of the dogs had clinical signs associated with these electrocardiogram changes.

Treatment was associated with small differences in mean platelet counts (decreased in the 3X and 1X groups), potassium (increased in the 5X group), glucose (decreased in the 1X and 3X groups), and maximum blood glucose in glucose curves (increased in the 5X group). All individual values for these variables were within the normal range. Three 1X and one 5X group dogs had mild elevations of alkaline phosphatase (less than two times normal). Loose stools and vomiting were infrequent and self-limiting.

Storage Information: Store at 20° to 25°C (68° to 77°F), excursions permitted between 15° and 30°C (between 59° and 86°F).

How Supplied:

VETMEDIN® (pimobendan) Chewable Tablets:

Available as 1.25, 2.5, 5 and 10 mg oblong half-scored chewable tablets - 50 tablets per bottle.

NDC 0010-4480-01-1.25 mg - 50 tablets
NDC 0010-4482-01-5 mg - 50 tablets
NDC 0010-4481-01-2.5 mg - 50 tablets
NDC 0010-4479-01-10 mg - 50 tablets

Approved by FDA under NADA # 141-273

Marketed by:
Boehringer Ingelheim Animal Health USA, Inc.
Duluth, GA 30096

448005-01
Revised 06/2020

US-PET-0205-2021

vetmedin®

(pimobendan) CHEWABLE TABLETS

FOR THE HEART *from the start.*

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

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

IMPORTANT SAFETY INFORMATION: VETMEDIN is for use in dogs with clinical evidence of heart failure only. The most common side effects reported in field studies were poor appetite, lethargy, diarrhea, dyspnea, azotemia, weakness, and ataxia. VETMEDIN should not be given in case of hypertrophic cardiomyopathy, aortic stenosis, or any other clinical condition where an augmentation of cardiac output is inappropriate for functional or anatomical reasons. **For more information, please see full prescribing information.**

References: [1] Häggström J, Boswood A, O'Grady M, et al. Effect of pimobendan or benazepril hydrochloride on survival times in dogs with congestive heart failure caused by naturally occurring myxomatous mitral valve disease: the QUEST study. *J Vet Intern Med.* 2008;22(5):1124–1135. [2] Häggström J, Boswood A, O'Grady M, et al. Longitudinal analysis of quality of life, clinical, radiographic, echocardiographic, and laboratory variables in dogs with myxomatous mitral valve disease receiving pimobendan or benazepril: the QUEST study. *J Vet Intern Med.* 2013;27(6):1441–1451. [3] The number of dogs treated with VETMEDIN in the US is estimated by IDEXX Laboratories, Inc. based on transaction data from a representative sample of US veterinary practices. Data on file at IDEXX Laboratories, Inc. Westbrook, Maine USA. [4] Keene BW, Atkins CE, Bonagura JD, Fox PR, Häggström J, Fuentes VL, et al. ACVIM consensus guidelines for the diagnosis and treatment of myxomatous mitral valve disease in dogs. *J Vet Intern Med.* 2019, 33:1127–1140. [5] Lombard CW, Jöns O, Bussadori CM; for the VetSCOPE study. Clinical efficacy of pimobendan versus benazepril for the treatment of acquired atrioventricular valvular disease in dogs. *J Am Anim Hosp Assoc.* 2006;42(4):249–261.

TOGETHER, WE ARE MORE THAN MEDICINE.

Boehringer Ingelheim

Photo courtesy of Search Dog Foundation

Shining a Light on Canine Heroes

Laser Therapy and Working Dogs

by Maureen Blaney Flietner

THEY ARE OUR UNSUNG HEROES—HIGHLY TRAINED, HARD-WORKING SPECIALISTS who find the lost, the trapped, the deceased; who subdue criminal suspects and enemy soldiers; who detect narcotics and bombs.

They often work through long shifts over multiple days. But away from work, they like time with a chew toy as much as the next dog.

But, unlike the family pet, working dogs require a different level of veterinary care, care that comes with a particular urgency. And that is why modalities such as laser therapy have a role in their recovery.

"When we're treating working dogs, our goal is often multifactorial," explained Tracy Darling, RVT, VTS (SAIM), CCRP, CCFT, senior director of canine operations at the National Disaster Search Dog Foundation in Santa Paula, California. The nonprofit, nongovernmental organization rescues and recruits dogs and partners them with firefighters and other first responders to find people buried alive in the wreckage of disasters.

"Our primary goal is to alleviate pain and suffering, just like with any companion animal, but also, working dogs are really valuable. We want to get them back to work, and they want to work. They really don't like to be couch potatoes. Anything that we do to shorten the duration of an injury or disease or promote mobility to get the dogs back to work quicker makes everybody happy.

"When a working dog becomes injured or ill, they often cannot effectively perform the jobs for which they have been trained and may have to be temporarily taken out of service or, in some cases, they may have to be retired from service," she explained. "That can create gaps in care or coverage for their handler or the community. Early diagnosis and treatment can be beneficial in reducing the amount of time a dog might need to be out of service."

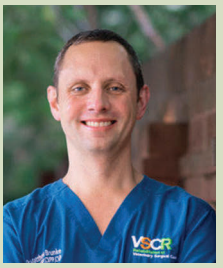
Injuries Come with the Jobs

Unfortunately, there is a wide range of injuries seen in working dogs depending on the job they perform.

Bess J. Pierce, DVM, MS DABVP, DACVIM, DACVSMR

"Musculoskeletal disease and soft tissue injuries such as wounds, muscle sprains and strains (including cruciate ligament disease), osteoarthritis, lumbosacral disease with lower back pain, and fractures are most often reported in working dogs," explained Bess J. Pierce, DVM, MS DABVP, DACVIM, DACVSMR, professor of veterinary medicine at Lincoln Memorial University College of Veterinary Medicine in Harrogate, Tennessee.

"These dogs tend to be exposed to greater risk for injury in their working environments, and traumatic injuries are relatively common," Pierce said. "Dermatologic disease such as skin and ear infections and gastrointestinal disorders are also frequently seen in this population of dogs."



Matthew Brunke, DVM, DACVSMR, CCRP, CVPP, CVA

Matthew Brunke, DVM, DACVSMR, CCRP, CVPP, CVA, is the medical director of

RichLegg/E+ via Getty Images. Photo courtesyBess Pierce. Photo courtesy of Matt Brunke.

Learn More About Caring for Working Dogs

Curious about caring for the health of working dogs? In addition to the *2021 AAHA Guidelines for Working, Assistance, and Therapy Dogs*, practitioners or hospitals interested in providing care to working dog populations can take advantage of continuing education sessions, said Pierce. Three places to check are:

- Working Dog Practitioner Program at PennVet
- Veterinary Tactical Group
- International Working Dog Breeding Association

"They highlight the important differences between working dogs and pet dogs," said Pierce. "Working dog veterinary caregivers must be well versed in behavior, occupational requirements, fitness, nutrition, specific dental care needs, and preventive care strategies of these dogs. But there is nothing more gratifying than helping working dogs."

Veterinary Surgical Centers Rehabilitation, a surgery, physical rehabilitation, and pain management practice with sites in Vienna, Leesburg, and Winchester, Virginia.

Brunke sees military working dogs and government-owned single-purpose and dual-purpose canines: patrol alone, patrol/narcotics, or explosives detection from local, state, and federal agencies. He also works with search canines. He said he is "absolutely" aware of the particular chronic or acute injuries common to the type of work the dogs do.

In his experience, acute injuries to the dogs he sees include "lacerations or trauma tears of tendons and ligaments, which, while not common, can occur and cause setbacks in training and working. Acute skin wounds also can occur."

Brunke said he also sees chronic conditions that come from repetitive stress injuries common in overtrained dogs doing bite work. Those are cervical disk issues, biceps tendinitis, and others.

"We also see issues related to lumbosacral disease that can be degenerative but also from chronic 'hupping' (when dogs search high by placing their forepaws on an elevated surface while keeping their hind paws on the ground) and dogs with degenerative osteoarthritis."

A presentation made at the International Working Dog Conference in Sweden in September 2019 by Andrea L. Henderson, DVM, MS, DACVSMR, chief of rehabilitation at the Department of Defense Military Working Dog Vet Service, detailed some of the issues that happen with military working dogs.

Henderson noted that "orthopedic and neurologic injuries represent a large proportion of causes of death/discharge from duty or prolonged recovery of military working dogs."

Contributing factors to these injuries, she reported, were breed/genetics; conformation and drive; kennel environment; cyclic, repetitive loading; hupping; jumping down; traumatic tissue load to failure; jumping from high positions; torque under high strain such as a sudden turn with a limb caught; rapid eccentric load; sudden onset of high-intensity exercise; and navigating hazardous/unstable terrain.

Photo courtesy of Search Dog Foundation

Even for dogs returning to duty, orthopedic surgery and rehabilitation can result in three months minimum out of duty and cost a minimum of $5,000 to $7,000 per patient, according to Henderson.

Kick-Starting the Healing

"With pet dogs," said Darling, "veterinary treatment may often proceed with a strategy of 'let's try and see if this helps and if it doesn't, we will dig deeper.' With working dogs, it's important to get to the bottom of things quickly to get them back to full function."

One way to help these dogs who may suffer certain conditions and injuries is with laser therapy.

Trupanion, a pet insurance provider based in Seattle, Washington, that includes working dogs among its insured, noted that the most common illness and injury claims it receives that include laser therapy as part of treatment are lameness and limping, CCL tears, masses, and arthritis.

Laser therapy is most useful as an adjunctive therapy with other treatment modalities such as rehabilitation and acupuncture and is a series of treatments of varying frequency, usually over months, according to Caroline Wilde, DVM, staff veterinarian at Trupanion.

Laser therapy is also known as cold laser or low-level laser therapy. That is meant to distinguish it from the more powerful Class 4 lasers that can lead to heating of the tissue and cause burns when improperly applied, explained Pierce.

"Laser therapy appears to stimulate cellular function, leading to production of compounds such as nitrous oxide, increased adenosine triphosphate production, and enhanced gene transcription that 'kick-start' the cell, promoting cell proliferation, migration and healing," she said.

Pierce also noted that laser therapy "inhibits the production of inflammatory compounds. Pigments within the tissue such as melanin and hemoglobin absorb light at wavelengths shorter than 600 nanometers, which is the reason that laser therapy utilizes red to near-infrared light. Haircoat, pigmentation, and thickness of tissue can affect the absorption of light and will determine the effectiveness of the therapy."

Laser therapy is a form of photobiomodulation, which is the preferred scientific term, according to Brunke. It was added to the Medical Subject Headings (MeSH) thesaurus of the National Library of Medicine in 2016 to distinguish nonthermal therapies from those using light-based devices that rely on thermal effects.

Besides laser therapy, photobiomodulation includes light-emitting diode (LED) arrays. Their power was first discovered in a NASA-funded research project to treat chronic pain.

Wavelengths are in the spectrum of red to near-infrared light (600–1,070 nanometers), explained Pierce. In these therapies, light energy is converted to chemical energy and produces downstream molecules at the cellular level. The photochemical effects triggered have been compared by some to the process of photosynthesis in plants.

Brunke said photobiomodulation "can be very WOW." He uses the therapy for its pain-relieving effects and the ability to help with wound healing.

More Well-Designed Studies Needed

Pierce said it's always gratifying to see a positive response to therapy when the dog is experiencing pain or

New AAHA Guidelines

The *2021 AAHA Guidelines for Working, Assistance, and Therapy Dogs* was published last month in JAAHA, and there is an executive summary of the guidelines in this issue of *Trends*. The 2021 guidelines discuss recommendations for dogs trained for protection, odor/scent detection, service functions for people with diagnosed disabilities or physical limitations, emotional support, and therapeutic intervention.

They also note that to the extent that is reasonable and possible, the medical care rendered to the service/working dog merits the highest priority and highest capability available.

Read and download the full guidelines at aaha.org/workingdog.

"We want to get them back to work, and they want to work."

—TRACY DARLING, RVT, VTS (SAIM), CCRP, CCFT

dysfunction. She said she finds the therapy to be most useful and best supported by the scientific literature for treating skin lesions, incisions, and wounds.

"I also use laser therapy as an adjunctive therapy for osteoarthritis, particularly in working dogs that are at greater risk for gastrointestinal NSAID-related adverse effects. Most working dogs tolerate the treatment sessions well, which can be a challenge in this high-drive population," she noted.

When used appropriately, this therapy is considered to be safe with few adverse effects. It is important to learn the theory and apply the principles of laser therapy in calculating and delivering doses to the patient, Pierce cautioned. "Don't rely solely on the preprogrammed settings on the unit. As always, it is the practitioner's responsibility to make adjustments for individual patient differences and needs. Adhere to safety protocols to protect the patient, owner, and therapist during treatment sessions."

Pierce noted that while laser therapy has been promoted as an effective treatment for a wide variety of diseases, there is a lack of well-designed, controlled studies in both the human and veterinary fields to support many of the claims and to determine appropriate and effective doses and protocols.

But the therapy does look promising.

"In humans, it has been shown to promote healing in chronic wounds such as diabetic ulcers that have not responded adequately to other therapies, and we see a similar positive response in our veterinary patients," she said.

"There is emerging evidence for its use in decreasing inflammation and providing pain relief through modification of nociceptive pathways. It continues to show promise as an appropriate modality to treat a variety of inflammatory conditions such as osteoarthritis, dermatitis, and gingivitis."

There has been ongoing interest in examining it as a treatment for drug-resistant skin infections such as methicillin-resistant *Staphylococcus aureus* (MRSA) and methicillin-resistant *Staphylococcus pseudintermedius* (MRSP). Preliminary studies have shown laser therapy to be effective in reducing numbers of pathogenic bacteria in these chronic infections. Other areas of interest are on bone healing and intervertebral disk disease, said Pierce.

Brunke, too, sees promise for the therapy. He noted that he had seen recent papers about how higher doses of photobiomodulation therapy were safer and more beneficial than lower doses for elbow arthritis and for the treatment of degenerative myelopathy.

Darling, who remotely monitors the veterinary care of about 80 search dogs across the country, said that her best advice to veterinary hospitals is to follow the evidence and utilize measurable outcomes to guide therapy.

"Patients should be monitored regularly for response to therapy, and adjustments should be made to ensure the modality is providing the expected benefits. In some cases, the dose, frequency, or technique may need to be adjusted to maximize therapeutic benefit. That being said, not every dog or every injury will benefit, and clinicians should choose the therapeutic modality or modalities most appropriate for the individual patient," she noted. ※

Maureen Blaney Flietner is an award-winning freelance writer living in Wisconsin.

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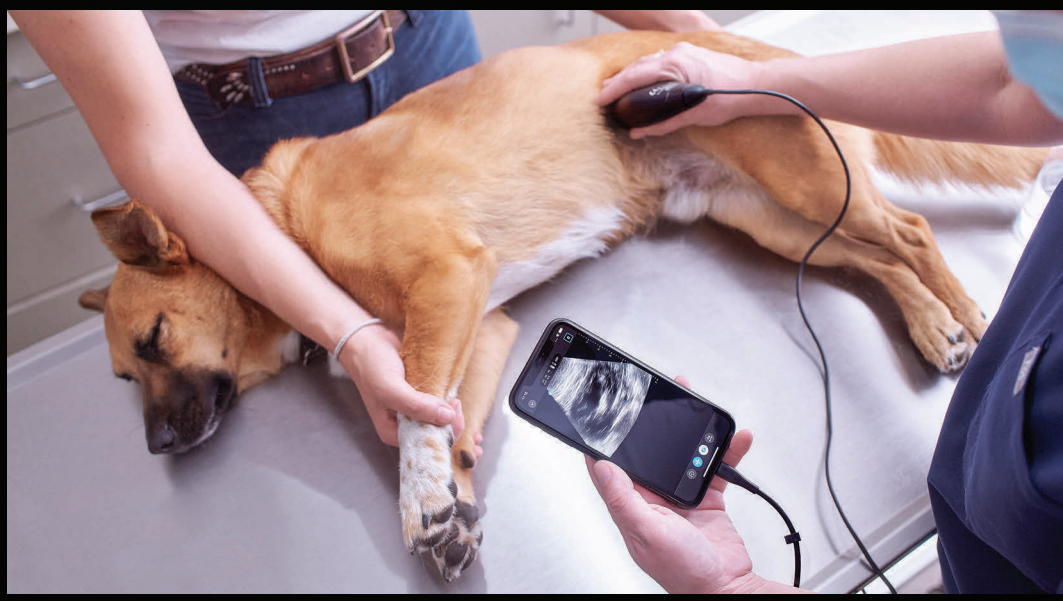

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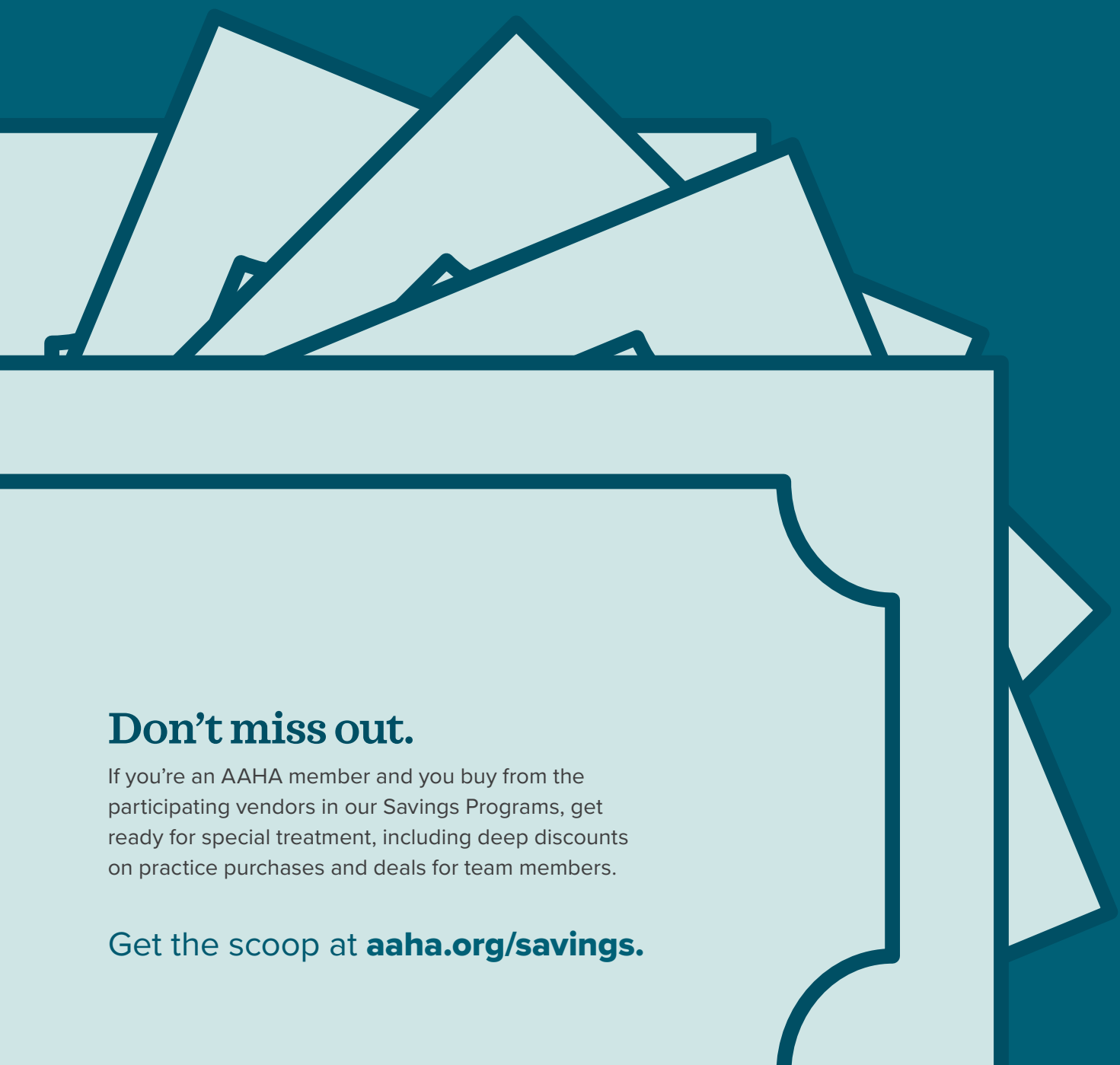

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2021 AAHA Working, Assistance, and Therapy Dog Guidelines

Executive Summary

Disclosure: These guidelines were prepared by a task force of experts convened by the American Animal Hospital Association (AAHA) and were subjected to a formal peer-review process. This document is intended as a guideline only, not an AAHA standard of care. These guidelines and recommendations should not be construed as dictating an exclusive protocol, course of treatment, or procedure. Variations in practice may be warranted based on the needs of the individual patient, resources, and limitations unique to each individual practice setting. Evidence-based support for specific recommendations has been cited whenever possible and appropriate. Other recommendations are based on practical clinical experience and a consensus of expert opinion. Further research is needed to document some of these recommendations. Because each case is different, veterinarians must base their decisions on the best available scientific evidence in conjunction with their own knowledge and experience.

This executive summary provides selected highlights of the extensive information and recommendations in the guidelines. It is not a replacement for reading the guidelines in their entirety. For the full guidelines, visit aaha.org/workingdog or the Nov/Dec 2021 issue of *JAAHA*.

AAHA Foundation, Boehringer Ingelheim Animal Health USA Inc., CareCredit, Merck Animal Health, and Zoetis supported the development of the *2021 AAHA Working, Assistance, and Therapy Dog Guidelines* and resources through an educational grant to AAHA.

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by Constance Hardesty, MSc

The *2021 AAHA Working, Assistance, and Therapy Dog Guidelines* is the first comprehensive consensus report on veterinary healthcare recommendations for working, assistance, and therapy dogs. This category of canine patients includes a broad assortment of animals, some with well-defined functions and others that provide a more general support role. (Working, assistance, and therapy dogs are collectively referred to as working dogs in the guidelines.) The guidelines discuss recommendations for dogs trained for protection, odor/scent detection, service functions for people with diagnosed disabilities or physical limitations, emotional support, and therapeutic intervention.

The working dog is not the typical patient that companion animal veterinarians encounter in clinical practice. Working dogs have a utilitarian function that generally requires specialized temperament and training, involves intimate interaction with a handler or client, exposes them to exceptional physical and emotional demands, and sometime places them in high-risk environments.

Many working dogs undergo extensive training and have rigorous physical demands placed upon them. These factors make the animals inherently valuable and impose a need for a high level of primary veterinary care.

Because working dogs have a particularly close relationship with their handlers, a trust relationship between the practice team and the working-dog client is imperative. The practice team must establish credibility with the working-dog client and earn that individual's confidence and trust in order to maintain an effective and enduring veterinarian-client-patient relationship. A practice team with working dog patients should have a training strategy that equips staff with the knowledge and skills to examine and treat the animals as well as communicate with the animal's handler and/or sponsoring organization effectively and compassionately.

The 2021 AAHA Working, Assistance, and Therapy Dog Guidelines are intended to enable veterinary practitioners to anticipate the needs of these specialized patients and their handlers, to provide the care needed to maintain their health and serviceability, and to offer useful referral recommendations when appropriate. The guidelines have four principal objectives:

- Improve the practice team's understanding of the special needs of working dogs
- Develop an understanding of the dog's special needs from the perspective of its handler or trainer
- Enhance the wellbeing and safety and decrease the stress imposed on the practice teams who care for working dogs
- Minimize the risk of infectious disease transmission and injury to working dogs by providing optimum preventive healthcare and nutrition

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Working animals are invaluable due to extensive training and handlers' reliance on them.

Special Considerations

The need to handle high-value dogs, protection dogs trained for on-command aggression, or high-energy service dogs can be intimidating to some practice team members. Care must be taken to avoid treatment decisions that impair the dog's functionality, such as mobility, detection skills, or alertness. For example, disruptions in normal anatomy or physiology that go unnoticed in a pet dog, such as dental disease or tooth fractures, being overweight, or lack of a fitness and

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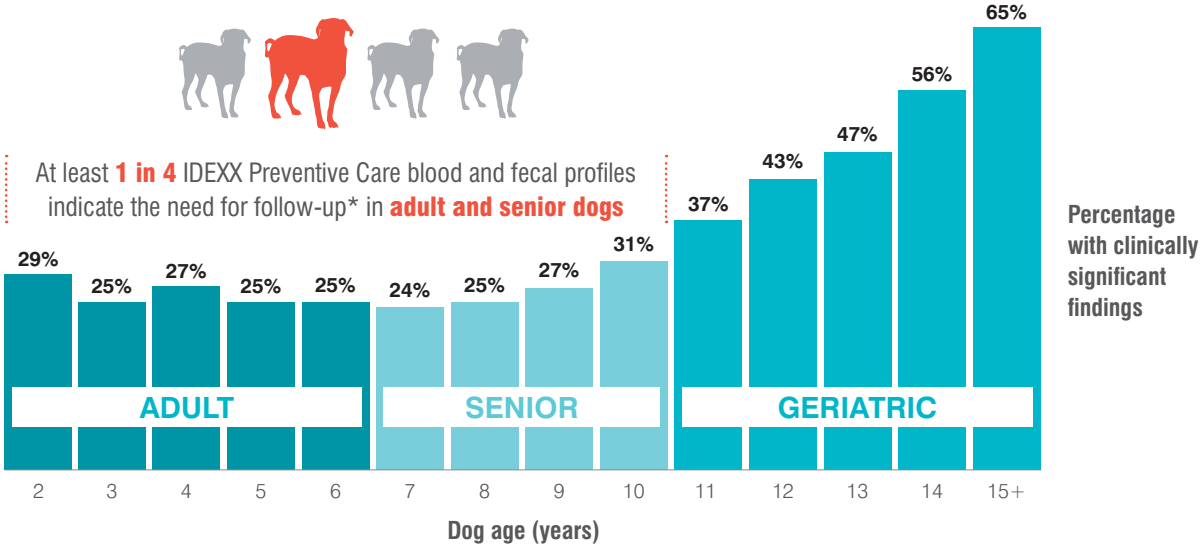
New evidence supports the value of preventive care profiles on all adult dogs

Preventive care profiles aren't just for senior and geriatric patients



Dogs as young as 2 years of age had clinically significant findings based on results of preventive care bloodwork and fecal testing[1]

Of the nearly 30,000 canine profiles included in this analysis, there was little variation in the rate of clinically significant findings between adult dogs and senior dogs.

The study was based on an analysis of IDEXX Preventive Care profiles (including the following categories: Chem 22 including the IDEXX SDMA® Test, IDEXX CBC testing with reticulocyte parameters, the Lab 4Dx® Plus Test, and Fecal Dx® antigen testing) run as part of wellness visits. While the number of clinically significant findings for each of these testing categories varied by age, all categories were important for adult, senior, and geriatric dogs.

These results are similar to a previous analysis that included cats as young as 2 years[2]

The previous analysis from more than a quarter of a million wellness visits that included a chemistry profile with an IDEXX SDMA® Test and a CBC, revealed significant findings required follow-up in:

1 in 7 adults (cats aged 2–8 years; dogs aged 3–6 years)
1 in 5 seniors (cats aged 9–13 years; dogs aged 7–10 years)
2 in 5 geriatrics (cats aged 14+ years; dogs aged 11+ years)

Routine preventive care testing has distinct medical benefits

There is ample evidence to support routine preventive care visits that include diagnostic testing. Results of routine bloodwork and fecal testing help veterinarians detect diseases and conditions, leading to earlier interventions that help patients of all ages live healthy lives for as long as possible. Once a veterinarian has baseline values, she/he can monitor trends and, if necessary, create individualized treatment plans. If no abnormality is detected, veterinarians and staff can—and should—celebrate the good news with clients. By communicating the value of every test result, practices reinforce the importance of routine wellness checks and the central role that clients play in the health of their pet. It's a win-win!

Review preventive care data and case studies at **idexx.com/1in4**

*Due to "clinically significant findings," which would indicate the need for follow-up, further consideration, or a change in action by the clinician. Clinical significance based on rules determined by an IDEXX veterinarian panel.

References

1. Data based on analyses of **29,795** canine wellness profiles (Chem 22 including IDEXX SDMA® Test, IDEXX CBC testing with reticulocyte parameters, the Lab 4Dx® Plus Test, and Fecal Dx® antigen testing) associated with wellness visits; testing performed at IDEXX Reference Laboratories on July 13, 2016–February 28, 2019. Represented U.S. regions by proportion of included profiles: Northeast (32.0%), South (41.3%), Midwest (17.4%), West (7.6%), and region not reported (1.7%).

2. Data on file at IDEXX Laboratories, Inc. Westbrook, Maine USA.

conditioning, can lead to impairment of the protection dog's performance and put the handler's life at risk.

To enable the practice team to speak the language of the working dog community, the guidelines begin with a lengthy list of acronyms and definitions. Some confusion and inconsistency are unavoidable due to the lack of universally recognized nomenclature. The list includes the various types of working dogs with a note on legal eligibility requirements. Note, however, that all definitions and allowances are subject to change with updates to regulations and policies. The guidelines task force recommends referring to the most current policy for guidance.

The bulk of the guidelines provide practice teams with essential information about each category of working dog (see sidebar). For each category, the guidelines provide a concise definition, examples of the functions they are trained to fulfill, the tasks they typically perform, how they are selected, a brief description of their training and development, what makes the dogs invaluable to their handlers or sponsoring organization, their work environment, and medical care considerations including health threats entailed in their jobs. Special emphasis is given to the animal's unique wellness and clinical needs: for example, body conditioning to help prevent job-related injuries or avoiding medications or treatments that may hinder the animal's ability to perform its tasks. In providing medical care, the veterinary team must be sensitive to the working dog's response to stimuli; for example, protection dogs may be easily aroused. The guidelines describe the special characteristics team members may encounter during the veterinary visit and recommend staff training for appropriate handling.

Essential Tables

While the guidelines provides the explanations and recommendations in detail, the tables summarize the information in an easy-to-scan format. Because of their length, the tables are summarized here; see the guidelines for the full tables.

Table 1 provides a summary of the attributes and medical skill sets that veterinary practice teams should have or develop in order to provide care to working, assistance, and therapy dogs. For example, veterinary team members should be willing to adapt waiting room policies to accommodate the patient's needs; consider that working dogs may require longer appointment times; have an appropriate confidence in working with potentially reactive dogs; observe the dogs at work, if possible; and establish and maintain good communication with the dog's handler. Recommended medical skills for both protection and detection dogs and service dogs include such things the ability to recognize systemic conditions that could alter performance as well as familiarity with the pharmaceutical effects and safety implications of drugs and sedatives/anesthetics on the dog's performance. Additional medical skills relevant to detection and protection dogs include low-stress handling and the ability to provide or recommend conditioning, rehabilitation, laser therapy, or physical therapy.

Special attention is devoted to detection dogs. To help practice teams understand these dogs' work, Table 2 provides several examples of detection dog sensory target odors (human remains, narcotics, etc.), and Table 4 lists common health risks depending on the type of

Categories of Working, Assistance, and Therapy Dogs

It is helpful for practitioners to define working and service dogs according to their specialized function or work environment:

Working dogs include *detection* or *protection* animals trained to accomplish specific, defined tasks.

Assistance dogs, categorized as either service or emotional support dogs, help persons with a diagnosed psychological or physical limitation. *Service dogs* have a specific job to accomplish, while *emotional support* dogs provide support by their presence alone.

Therapy dogs perform either *animal-assisted activities* (AAA) or *animal-assisted therapy* (AAT). The former are used for hospital visits and de-stressing interactions with people, and the latter provide goal-directed therapy, often directed by a healthcare professional such as an occupational therapist or psychologist.

work they do: for example, urban search-and-rescue or police and law enforcement in both higher-risk and lower-risk environments.

For protection, detection, and assistance/therapy dogs, Table 3 provides a suite of healthcare recommendations covering preventive care, behavior, nutrition, reproduction, common injuries, common diseases, handling, screening for heritable diseases, mental or emotional considerations, first aid, triggers for retirement, needs of handlers, needs of owners, needs of organizations, and possible exposure risks.

Healthcare of working dogs is one of the most rewarding services a veterinary practice can render.

The tables complement the guidelines' detailed discussion and recommendations, but reading the tables is not a substitute for reading the guidelines.

General Recommendations

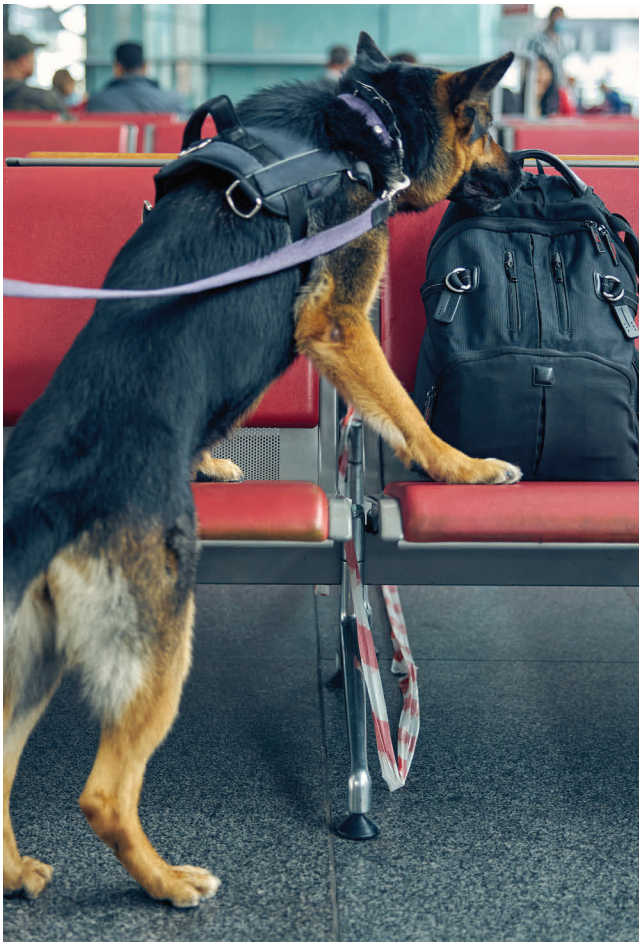
The guidelines emphasize several recommendations for all working dogs.

Make care a priority. These animals are invaluable not only because of the hours invested in their training but because their handlers may rely on them for essential tasks. To the extent possible, the medical care rendered to the working dog merits the highest priority and highest capability available. If the practice is not equipped to provide 24-hour critical support, it must at least provide basic life support and stabilization followed by immediate transfer to a facility that can provide specialized care.

Cultivate a partner relationship with the handler. The working dog's human partner will often notice subtle changes in the dog's performance or disposition that can indicate early-onset disease. Because the handler is in contact with the dog in a highly observant role, the human partner can often identify changes indicative of the dog's physiologic status that would otherwise escape the veterinarian's detection. The veterinarian should probe for these observations and give ample credibility to the dog handler's perspective. The information obtained from the handler should be recorded in a detailed patient history that can be correlated with performance.

Respect the working dog's work. Understand that handlers rely on their working dogs and provide preventive care and treatments that minimize the animal's inability to work. Detection dogs, for example, should be treated as performance athletes. Any intervention, treatment, or procedure should account for the potential impact on the dog's overall performance and anticipated return to work. Similarly, for service, assistance, and therapy dogs, where prognosis might be comparable for two different treatment options, quicker return to function should be the key factor in considering therapeutic options. Medical problems that are merely inconvenient in a family pet (e.g., soft stools) can pose significant problems for handlers who have physical limitations.

Be especially sensitive to issues around the animal's retirement or end of life. Euthanasia should be considered only in the most dire humane and devastating injury circumstances, as this will impact the working dog's entire unit or service team (police, search and rescue unit), as well as the handler. The most important consideration at the end of a dog's service life is the determination of when the dog's limitations jeopardize the safety of the handler. End-of-life decisions may be impacted by organizational policy and requirements that include chain of command notification, mandatory



Detection dogs should be treated as performance athletes.

necropsy and pathology sample submissions, preferential remains handling and care, funeral honors, and more. Because of the extremely strong animal-client bond and the client's reliance on the dog's work, client discussions about retirement of a service dog due to health concerns can be very difficult. Similarly, end-of-life decisions can be incredibly difficult and emotional.

Staff Education and Training

The veterinary team must receive education and training regarding the role of the working dog, the diverse tasks such dogs perform, and the environments in which they work, as well as applicable laws and regulations. The team must understand that every working dog is an individual with a unique set of skills that should not be confused with other types of working dogs. To advance their knowledge and skills, team members should ask the handler questions, develop relationships with local groups that train and develop the dogs, observe working dogs on the job, participate in local certification events, and attend meetings and workshops that provide training and education geared to working dogs.

Proficiency with low-stress handling is essential for practice teams that serve working dogs because patients may be easily aroused or resist handling or application of medical treatments. First-aid and triage are also essential because working dogs' job duties or environments may expose them to occupational hazards, ranging from sore pads to poisoning to lumbar strains to gunshot wounds.

No sector of veterinary practice places a greater premium on effective communication with the presenting client than the care of working dogs. The handler has an intimate knowledge of the animal's physical status and functionality and is a principal source of information on the patient's history and presentation status. It is important to understand that handlers have various degrees of education, training, and skills, so the veterinary team should tailor communications to each handler. This is critical when a handler or client has a disability that may be a barrier to understanding. Opportunities for advanced training in communications skills, including communication with individuals with disabilities, should be sought.

The practice team must establish credibility with the working-dog client and earn that individual's confidence and trust in order to maintain an effective and enduring veterinarian-client-patient relationship. When these skills and relationships are in place, the healthcare of working dogs represents one of the most rewarding and valuable services that a veterinary practice can render. ※

Constance Hardesty, MSc, is a freelance writer living in Colorado. She is also former editor-in-chief of AAHA.

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The Growing Role of Teletriage

A Better Way to Care for Patients, Improve Efficiency, and Ease the Burden on ERs

by Lavanya Sunkara

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Teletriage—the process of determining the severity of a patient's condition via telephone, chat, or video—helps both the veterinarian and the client. The veterinarian can streamline the clinic's workflow, build a stronger bond with the client, and have a better life-work balance. The pet owner can avoid long wait times and expenses at the emergency room (ER); they can calmly decide when to bring the animal to see the veterinarian rather than rushing to urgent care the moment something is amiss. It's a win-win for everyone involved.

Teletriage also reaches millions of pets who don't have a primary care veterinarian. To diagnose illnesses and prescribe medication via telehealth, the veterinarian must have an established VCPR (veterinarian-client-patient relationship) through an in-person exam in a majority of states. Veterinarians can use teletriage to help animals not covered by primary care by providing general medical advice and guiding owners in determining when they should go to the veterinarian.

> "In a working clinic, it's much more efficient to manage cases at least initially, via synchronous and asynchronous chat."
>
> ——SHLOMO FREIMAN, DVM

During the COVID-19 pandemic, virtual health has dramatically changed the way veterinarians are providing care for their patients. Although some practices have resumed in-person visits, telehealth and teletriage can still play a vital role.

Read on to find out how teletriage can help veterinarians better assess the animal's situation, streamline workflow, build loyalty with clients, and improve their life-work balance, all the while helping pets in need and providing pet owners with peace of mind.

Improved Workflow

In a typical practice, a concerned pet owner calls the receptionist and relays a problem their animal is having. If the client doesn't want to set up an appointment, the receptionist takes down the information and promises to call back after consulting with the doctor. Somewhere between the initial call and the veterinarian getting in touch with the owner, a communication gap can result in crucial information being lost. Because the veterinarian hasn't actually seen the patient, it leaves the client frustrated and the doctor unable to provide the proper assessment.

Shlomo Freiman, DVM

Shlomo Freiman, DVM, cofounder and chief veterinary officer of telemedicine app Petriage, decided to create an automated way for his clients at the Animal Hospital of Factoria in Seattle, Washington, to avoid any miscommunications and, more importantly, "to assess urgency."

"When the phone rings, if we don't know what the issue is, we cannot prioritize. Maybe somebody has scratchy skin versus an animal gasping," said Freiman. "In a working clinic, it's much more efficient to manage cases at least initially, via synchronous and asynchronous chat."

Freiman elaborated that his assistant can use the app to ask the worried client all the right questions and request a picture or a video when needed. After having read the chat in its entirety and seen the clips and images of the issue, he can then jump in and address the concern. While initial triage is occurring, Freiman can focus on emergencies and not have to worry about a pile of sticky notes detailing less time-sensitive cases.

Petriage supports live video along with synchronous and asynchronous chat. Synchronous chats occur in real time, while asynchronous messaging gives participants the freedom to start, pause, and resume a conversation as their time permits. It also provides a nurse line to help the client get in touch with the clinic either after hours or if the veterinarian is too busy. Veterinarians anywhere in the country can sign up for the Petriage platform and use it with their own clients for a monthly fee.

Practices have a wide variety of telehealth services to choose from and can even implement their own. Membership-based Small Door Veterinary in New York City offers their own proprietary telemedicine system, which is available to members in the NYC metro area. Regardless of which service is utilized, the goal is the same: better workflow.

Josh Guttman, cofounder and chief executive officer of Small Door, said that telehealth "is incredibly useful for triaging. It allows us to quickly identify cases that are safe to be monitored at home and those that require urgent care. It saves time for our veterinarians and nurses and helps us to more effectively allocate emergency appointments to the pets most in need of care."

More importantly, he said, clients are extremely satisfied.

"Countless members have shared with us how useful our teletriage features have been to help them avoid

"If you're going to get out of bed to go to the clinic, you want to know if it's actually an emergency."

—CHERICE ROTH, DVM

Photo courtesy of Shlomo Freiman, DVM. Photo courtesy of Anthony Hall, DVM, MPH. SbytovaMN/iStock via Getty Images

unnecessary hospital visits and help put their minds at ease," Guttman said.

Smarter Scheduling

When veterinarians can assess the urgency of cases, it makes room for smarter scheduling. By conducting teletriage and determining when a patient needs to come in, whether it's a week or a month from the telehealth call, a clinic can better manage the veterinarian's schedule.

Jeff Werber, DVM

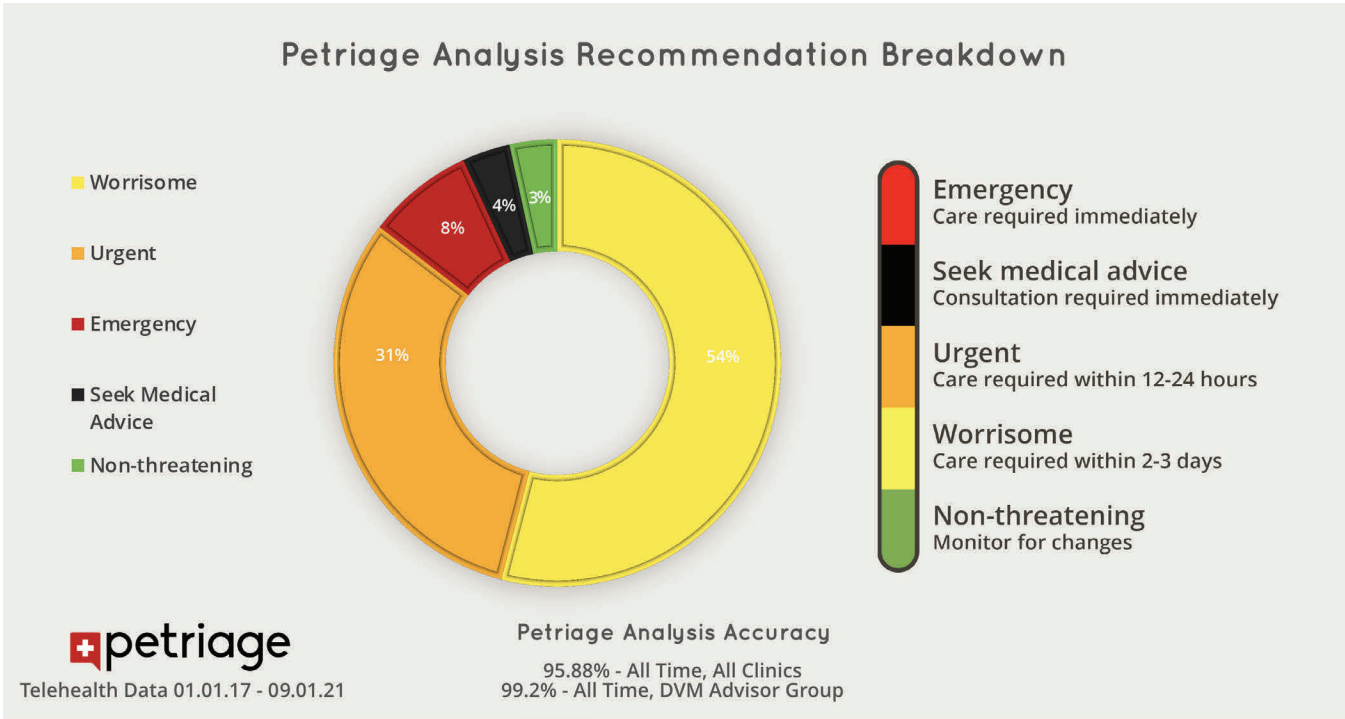
"Over 3,000 calls that I took virtually, I probably sent maybe 50 to an emergency," said Jeff Werber, DVM, chief veterinary officer at Airvet, a platform that offers on-demand video calls for pet owners. "If a picture is worth more than 1,000 words, a video is worth 100,000 words. It's amazing how many things I can pick up just by looking at the patient to know whether or not something is serious."

Airvet, which started in 2018, allows veterinarians to directly speak with their clients via video calls. Werber says the platform has also made communication during COVID-19 easier. "The technician running back and forth between the car in the parking lot and the doctor to answer questions is turning a normal 20- to 30-minute appointment into an hour and a half. No wonder they are only seeing 50 people a day," he added. Telehealth will cut that time down significantly, affording both the clinic and the client more flexibility, efficiency, and peace of mind.

Anthony Hall, DVM, MPH

Anthony Hall, DVM, MPH, and a relief veterinarian in Dallas, Texas, introduced Airvet to a clinic where he was working. They found it helped make things a "lot easier and freed up their appointment bookings." He explained that by using telehealth for things like mandatory rechecks on surgical patients, the practice can use in-person appointment slots to book clients that will spend money for their pet needs.

"It becomes more lucrative, and you're also able to help more animals at the same time, especially those in more need," Hall said.



PA Analysis Diagram courtesy of Shlomo Freiman. Photo courtesy of Jeff Werber. Photo courtesy of Anthony Hall.

Additionally, it prevents owners from taking their sick animals elsewhere if the practice's schedule is booked with unpaid rechecks.

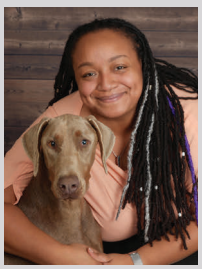
Better Engagement

According to Freiman, some of the most common complaints coming in virtually from pet owners tend to be concerns about their pet's vomiting or diarrhea. With a telehealth visit, the urgency of these conditions is easily assessed; the veterinarian can advise what to do to make the animal feel better at home and help them decide over the next 24 hours if the pet needs more urgent care.

Often, the animal is doing better the next day and the client avoids a costly and time-consuming visit to the emergency room. This honesty and transparency builds loyalty and leads to happier customers, according to Freiman. "We now have a relationship that is very different," he said. "The next time your dog has an issue and I advise you to do blood work or something else, you are much more likely to listen to me because this doctor is not always telling me to come in."

Easing the Burden on ERs

Teletriage can also significantly reduce the number of patients heading to the ER, giving them breathing room to serve pets in need.



Cherice Roth, DVM

Wait time for emergency care can be hours. "If it is something that can sit in a parking lot for four to eight hours, it may not actually be an emergency," said Cherice Roth, DVM, chief veterinary officer at Fuzzy Pet Health, a membership-based platform that offers chat sessions with veterinary technicians to address pet problems regardless of whether they are under the care of a primary veterinarian.

"ERs are closing right and left because either they don't have a doctor or they don't have a support staff, and some of them are having to turn away cases," Roth stated about the condition of veterinary medicine today. The Fuzzy platform engages with 175,000 pets via video and chat annually, out of which only 5% end up going to the emergency room, according to Roth.

"The technicians are looking for things that are life-threatening. Those are really the things that should be going to the emergency room," Roth said.

Roth knows firsthand about the importance of prioritizing cases.

"I remember being an ER doctor and having to try and treat emergency ear infections or anal gland abscesses," she said. "Those are so hard because you do want to help that pet. But then, in the next kennel, you have a pet that's in heart failure or a pet that had to go through emergency surgery."

Roth further emphasized the importance of teletriage for single practitioners in rural communities. "For these clinics, time is a commodity and often these doctors don't get time off. Because they are usually seeing their own emergency cases, teletriage can help determine whether or not they need to come in."

She added, "If you're going to get out of bed to go to the clinic, you want to know if it's actually an emergency. So that is definitely one of the ways that Fuzzy can help. We're able to say, 'we'll hold on to the on-call doctor's number, and if we determine it's an emergency, we'll give the number so you can call the doctor.'"

As far as partnerships with practices, Roth said that Fuzzy aims to "not sell them software or a platform, but to really be there to help their operational support."

Fuzzy provides unlimited telehealth and teletriage access to technicians for an annual fee. Pet owners can sign up for Fuzzy independently and clinics can encourage clients to sign up for a discounted fee. Roth hopes that the increased use of telehealth can give clinical doctors the flexibility to "maybe stay at home when their child is sick, or hang out with a relative, or not miss every family function because they're on call."

Enhancing Your Business

At the end of the day, by streamlining the clinic's workflow and making clients happier, teletriage can also enhance business. It not only allows doctors to care for patients who are in real need but also facilitates seeing more cases courtesy of smarter scheduling. While telehealth may never fully replace in-person exams, it is an incredible resource for pet owners and veterinary professionals. ※

Lavanya Sunkara is a freelance writer living in New York.

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How Does Stem Cell Therapy Work?

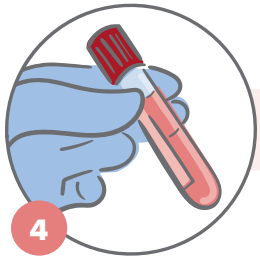
9 Steps in the Adipose-Tissue Stem Cell Therapy Process

Stem cell therapy is hailed as a miracle treatment and is also criticized as an unproven modality. Studies show that stem cell therapy can be helpful, but veterinarians should do their research and make sure they are dealing with a reputable company when exploring their options. Also be sure clients understand the risk factors and know that results vary among pets.

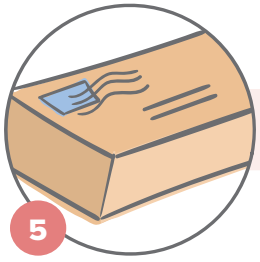
Veterinarian examines the patient and, if appropriate, recommends regenerative therapy.

Donor animal is anesthetized and prepared for surgery.

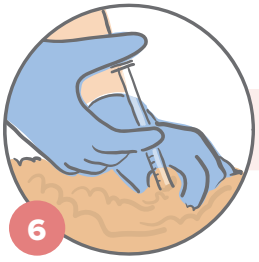
Veterinarian makes an incision, typically in the groin, stomach, or shoulder, and removes a small sample of fat (adipose) tissue, which is sent to a lab.



The sample is processed to separate fat cells and red blood cells from the stromal vascular fraction (SVF). You may also hear the term *adipose-derived mesenchymal stem cells* (ADMSC).



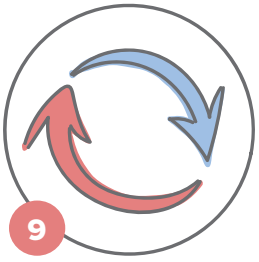
Processed cells are returned to the practice.



Veterinarian injects the processed product into diseased or damaged joints and tissues. Pets may require local anesthesia or light sedation.

Injected stem cells may suppress inflammation and improve the body's healing mechanisms.

Pet owner and veterinary team monitor the pet's mobility, pain, and other symptoms.



Treatment may be repeated if necessary.

Credits

BBC Bitesize: *How do organisms grow and develop?*, https://www.bbc.co.uk/bitesize/guides/zghqfcw/revision/4

Durzi, T., and E. Ward, "Stem Cell Therapy," https://vcahospitals.com/know-your-pet/stem-cell-therapy.

International Society for Stem Cell Research, "A Closer Look at Stem Cells," https://www.closerlookatstemcells.org/about-isscr/.

van Dongen JA, et al., "Isolation of Stromal Vascular Fraction by Fractionation of Adipose Tissue," *Methods in Molecular Biology,* 2019;1993:91-103, doi: 10.1007/978-1-4939-9473-1_8.

Voga, Metka, et al., "Stem Cells in Veterinary Medicine — Current State and Treatment Options," *Frontiers in Veterinary Science*, 7 (29 May 2020), 278, www.frontiersin.org/article/10.3389/fvets.2020.00278, doi: 10.3389/fvets.2020.00278.

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Chiropractic Care for Companion Animals

What Is the Value to Patients and Practice?

by Marie Bartling, DVM

Ruger had facet arthritis and mineral in the sublumbar ligaments along the spine, which often presents as spondylosis.

If you had to choose between having back pain or knee pain, which would you choose?

Hmmm. Back pain makes it hard to get up, and knee pain makes it hard to walk. As your pain doctor, I would try to make sure that neither one of them is debilitating to you.

We all know that physical medicine is essential to optimal health for our patients. How often have you heard someone say, “My dog is perfectly healthy, I am so sad he can’t run and play anymore.” When we have the final end-of-life discussion, statistics say that 12–15% of the time the reason is because the animal’s quality of life is suffering due to mobility problems. That’s 1 out of every 10 dogs. I would argue that this number is grossly underestimated if we take into account the impact that poor mobility has on their quality of life before that last day, especially considering that 1 out of 5 of our canine patients has arthritis.

As veterinary doctors trying to manage painful and arthritic conditions, we have to be thorough and consistent in our approach. And sometimes, we have to branch into more creative medical plans to change a dog’s quality of life. We have to alter the biology and physics of their tissues to solve their pain. This group of therapies is referred to in the rehabilitation world as physical medicine.

Photo courtesy of Marie Bartling

Some of us may not recommend therapy we know little to nothing about, but not only are physical medicine options surprisingly effective, we are also capable of doing them as general practice doctors. I have found this to be the case with physical medicine modalities such as laser, acupuncture, and manual therapy, including chiropractic care.

Getting Started

If you are thinking about adding physical medicine offerings at your practice, chiropractic care is a great place to start. To see a list of accredited programs where you can study animal chiropractic care, I recommend you investigate these websites:

- American Veterinary Chiropractic Association, animalchiropractic.org
- International Veterinary Chiropractic Association, ivca.de

To be certified, a veterinarian must pass not only the test from the college but also a formal test from one of the above organizations. It may be wise to look into testing with a certification program soon after your graduation.

Some deadlines may be easier than others; for example, the Options for Animals program affords an opportunity to test with the IVCA the day after you finish their course on-site.

Why Is Physical Medicine Important?

As veterinarians in general practice, we are taught to choose medicine to help fight disease and perform surgery that creates stability. We do not necessarily get training or feel equipped to administer the physical medicine that may be required to rebuild the body.

In some cases, I have heard colleagues and pet owners alike argue that these modalities may not even be necessary. But in human medicine, we accept the inherent value of rehabilitation and physical medicine. For example, we know that after a knee replacement or spine surgery, we have a limited amount of time to restore the range of motion and flexibility around that joint before it scars down, so we go to physical therapy. In dogs, cats, horses, and cows, it's no different. In fact, some of these species make more scar tissue and it happens even faster than in humans.

What Is Chiropractic Care?

In simple terms, chiropractic care is the manipulation of bones to stretch the soft tissues around them and restore movement to a spinal joint. Licensed chiropractors are trained in medicine, anatomy, physiology, and then technique with clinical rotations over four years, just like a medical doctor. Veterinarians who are licensed in chiropractic care also obtain an additional certification.

A chiropractor working with animals uses their hands and sometimes an activator to help create movement, exerting small and very specific rapid force on the patient's spinal joints to release the stabilizing muscles and stretch fascia. An activator is a small spring-loaded tool that can be used in specific adjustments.

A "straight" chiropractor focuses on restoring mobility to the spine and the ligaments and muscles surrounding it so that the spinal cord, nerves, and blood supply to those tissues are optimal. This allows the body to heal through its own innate system. A "mixed" chiropractor will provide several types of therapy, such as massage, stretching, myofascial release, ice and heat, and even technology like transcutaneous electrical nerve stimulation (TENS) or shockwave therapy. These methods help adjust what the muscles are doing to the bones and joints of the spine.

As a veterinarian with a broad background in general medicine, I have practiced for 15 years with a focus on physical health. I have concentrated on athletic fitness, recovery from injury, and optimal mobility for the last 10 years, first with horses and now primarily with dogs. I have studied nearly every tool available to help a body be pain free, to regenerate tissue, and to maintain strength for as long as possible. I use chiropractic modalities on a daily basis to find physical dysfunction and pain in my patients.

A practical advantage to chiropractic care is that it can be used as a standalone service that is economical and simple for clients to understand. Let's face it: not all of our clients want to sign up for weeks of intensive physical therapy and exercise for their dogs, but some will bring them in for

> Chiropractic care is the manipulation of the bones to stretch the soft tissues around them and restore movement to a joint.

an occasional adjustment. In addition, it is a low-cost treatment option that offers simple and immediate physical intervention and can have a high impact. Offering chiropractic care options can also attract new clients.

In considering chiropractic care as an option for your patients, remember, you are still a veterinarian—above all, do no harm. We all worry about what causes sudden episodes of disc disease and paralysis; be specific, be gentle, be careful. I have never seen a dog develop paralysis from an adjustment, but again, be cautious and cognizant. Make sure you know what you are treating when you can. Animals do not suffer strokes after adjustments as some people can (due to atherosclerosis), but like any treatment for conditions like intervertebral disc disease or cancer-related pain, you could miss the bigger picture by performing adjustments without diagnostics.

Let's now take a look at a common issue for dogs than can be lessened or alleviated through chiropractic care. Chronic back pain is a complicated issue because of the multiple tissue types involved and can result in reduced range of motion, impaired proprioception, and overall slower movement. Chiropractic care can be used to retain motion in the ligaments, muscles, and joints surrounding the spine and extremities, leading to a better quality of motion—and life—for the dog.

Chronic Back Pain in Dogs

Similar to humans, dogs can have back pain from muscle dysfunction, joint arthrosis, inflammatory arthritidies (facet arthritis), and intervertebral disc disease (IVDD).

We also know that chronic back pain happens secondarily because of other physical asymmetry such as hip dysplasia, and we have to remind ourselves that although we think it to be "secondary," it can be an equally debilitating source of pain that requires specific treatment.

From a practical standpoint, chiropractic education helps me to understand specific motion and the angles of spinal movement that are critical to identifying back pain and the physical limitations of the spine in dogs. Back pain is debilitating, and it's one of the main reasons that old dogs have trouble getting up off the floor.

In fact, it is less often the joints of the extremities but instead the sheer struggle to raise the whole spine off the ground that is so darned hard for older dogs. To be able to specifically identify where the dysfunction is makes not only my adjustment technique but also my technique for all my physical medicine skills better.

In my experience, back pain is, hands down, the most frequently missed cause of pain in dogs. Dogs with back pain do not limp; they just slow down. Without some careful exam skills, it can be easy to miss. In fact, about 50% of the dogs I am referred to see for "bad" behavior have occult back pain, and at least half of those come off of Prozac or similar medication after their pain is controlled. When we don't feel good, humans and animals alike are less tolerant of others.

Let's think about back pain from a structural perspective for a moment. When tissues lose elasticity around the joints of the spine, the muscles of the spine are strained and, with

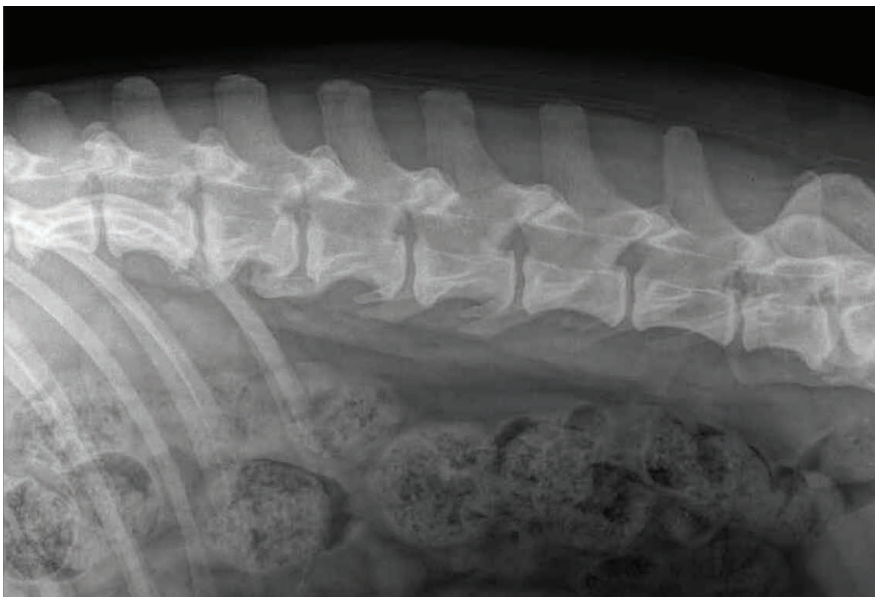
Photo courtesy of Marie Bartling

shortened ligaments, can create asymmetrical forces and friction that causes spasms. So, with rest and a medication like Rimadyl, the inflammation will subside, but it won't change the symmetry or flexibility of any of those tissues. What happens if this persists over time? The pain from muscle spasms and friction in the joints becomes a primary and chronic problem.

There are layers of muscles over the spine that span between several vertebrae with overlapping segments. The muscles that are deepest and shortest are responsible for proprioception and rotation while the outer layers are responsible for structure and movement of the overall spine. Epaxial muscle strains can occur in multiple areas at one time and can affect how the smaller proprioceptive muscles work.

The net effect of using medication or surgery without rehabilitative physical medicine is that although we can accomplish movement, it is done using different muscles that can create a cycle of overuse and speed degeneration of ligaments. Degenerative ligaments often thicken, add mineral instead of collagen, and really struggle to keep structural integrity long term. In addition, the muscles of the spine will atrophy and start to deposit more fat instead of new fibers as they remodel if they are chronically painful.

Similarly, ligaments are arranged to connect between vertebrae, on top of and underneath the vertebrae. It has been demonstrated that the ligaments between the articular surfaces of the vertebrae (facet capsular ligaments) may actually have the greatest impact on reduced motion of the spine in flexion and extension as well as some axial rotation in anatomical dissection.



Ruger's spine radiograph, showing facet arthritis and L1-3 vertebral spondylosis.

So we can see why it's important to work to regain flexibility and comfort of the spine and the range of motion of all the joints in the spine. Sometimes we are so focused on other joints that we forget about how integral the spine is to the rest of the body. Physical medicine is critical for regaining overall comfort and function because these techniques offer methods of fighting physical aging that no medication can match.

Case Study: Ruger

There is one dog I had the privilege to work with who truly exemplified the benefits of chiropractic care: Ruger. As a youngster, he was an avid hunting, hiking, swimming, and retrieving black lab. As a senior, he was a kind and gentlemanly companion. His owner David knew how important it would be for Ruger to stay active and mobile as he aged. Ruger saw me for chiropractic adjustments for a few years and then ultimately for more pain management as he needed care for arthritis.

Ruger had facet arthritis and mineral in the sublumbar ligaments along the spine, which often presents as spondylosis. As a result, his best pain relief came from chiropractic adjustments focused on movement and separation of the facets and mobilization of the sacroiliac joints. In addition to chiropractic adjustments, he received supplementation; muscle care with massage, stretching, and exercise; and rescue pain meds from time to time after fun activity.

In this X-ray, you can see the facet arthritis that accompanies the L1-3 vertebral spondylosis. We often are told that spondylosis does not cause pain; however, facet pain is real in humans, horses, and dogs. To alleviate the pain, a lot of Ruger's chiropractic treatments were focused on very small and specific movement for these joints.

Photo courtesy of Marie Bartling

Let's face it: not all of our clients want to sign up for weeks of intensive physical therapy and exercise for their dogs, but some will bring them in for an occasional adjustment.

Definition of Chiropractic

According to the Mayo Clinic, chiropractic adjustment is a procedure in which trained specialists use their hands or a small instrument to apply a controlled, sudden force to a spinal joint. The goal of this procedure, also known as spinal manipulation, is to improve spinal motion and improve your body's physical function.

Ruger also enjoyed acupuncture, laser, shockwave, massage, manual therapy, swimming, and lots of land exercises, and he lived until he was the equivalent of an 84-year-old person. He stayed off of pain drugs years longer than my average patient and lived one of the best lives I have witnessed for a dog.

Chiropractic care was the entry point to the world of canine rehabilitation for Ruger, and David told me that without that introduction, he would not have known about or tried some of the other therapies that kept Ruger trotting around in his later years. In this way, chiropractic care is a great entry-level pain-relief therapy that relieves spasms and friction in joints—no pill can do that, and as a low-cost option that shows immediate results, many pet owners will be willing to give it a try. ※

Marie Bartling, DVM, spends her days working with dogs to relieve pain and build physical health plans in Castle Pines, Colorado, at The Animal Care Center of Castle Pines. She often shares her clinical outcomes on her Facebook page and Instagram page @DrMariesHealthyDogs. Find her on the web at drmarieshealthydogs.com.

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Leadership Gold: The Business Journal

Self-Awareness Is Critical to Good Leadership

by M. Carolyn Miller

Photographer/collection via Getty Images

Self-awareness is critical to good leadership, according to Daniel Goleman, psychologist and author best known for his work on emotional intelligence. The theory of emotional intelligence posits that good leaders know how to manage their emotions, and the emotions of others.

That ability is predicated on self-awareness. And there's no better tool for that self-awareness than the business journal.

What Is a Business Journal?

A business journal is a place to record your thoughts and impressions about your work experiences, the coworkers you interact with, and the related emotions. In so doing, you will be able to understand those experiences, and yourself, better. You will also, invariably, reach some conclusions and determine logical next steps.

> A business journal is a place to record your thoughts and impressions about your work experiences . . . [so that you can] understand those experiences, and yourself, better.

A business journal also offers a way to manage stress. By writing about an experience, and the feelings related to the experience, you process any emotions, reframe the experience in a larger context, and find meaning. Even the act of writing iteself can help reduce stress.

Many great leaders and thinkers have used journals throughout history to record data, sketch ideas for inventions or processes, work through emotions, and more. In the business context, they are used similarly.

There is no right or wrong way to keep a business journal. You can write on your computer, your iPad, or paper. What's important is to take the time to do it regularly.

Begin by Setting the Stage

Make a personal commitment to journal 15 minutes a day, and put that time on your calendar. Identify when you'll journal, be it with your first cup of coffee before the workday begins or at the end of the workday.

Ideally, you should set aside the same time every day to create a journaling habit that is as critical to your workday as touching base with the team or checking email.

You also want to find a quiet place to journal where you won't be interrupted. If you're working from home, make it part of your early morning or evening ritual, when the house is quiet. If you're at work, close your office door or take a break and go outside to write.

Start Writing

There are no rules about what to write in a business journal. It's helpful, however, to use the journal as a tool for self-reflection. The questions below can help.

What is going on right now?
Close your eyes, take a few deep breaths, and feel how you're feeling. Are you happy? Are you upset with a current work situation? Are you excited about how well the team is doing? Write about that, including your role in the feeling or experience.

What is going well?
Research is showing that people who count their blessings are happier. Do that here. What's going well? What created that? How can you create more of that?

What is challenging?
What attitude, beliefs, or behaviors do you have that are contributing to the challenge? How can you change that for a better outcome?

What needs your attention?
The things that need our attention take up valuable mental space until they are resolved. Use your journal to do a "brain dump." Record the issues that need to be solved and brainstorm solutions.

What is meaningful?
What about the day did you find meaningful? Who was especially kind or giving? Record that as a reminder of how fortunate you really are. ※

M. Carolyn Miller is an award-winning freelance writer who designs and writes stories that inform, inspire, and transform. Visit cultureshape.com for more information.

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Pain Management Case of the Month: Q

Management of Chronic Pain in a 15-Year-Old Morgan Gelding

by Lindsay RD Benson, DVM, CVA, CVPP

Signalment and History

Q, a 15-year-old dressage Morgan gelding, presented with progressive ataxia in the previous month. He had not had any significant medical history prior. His owners were willing to do anything necessary to improve mobility to have Q back to eventing.

Physical Examination and Diagnostics

Physical exam revealed a grade 3/5 ataxia and paresis in all four limbs, which was more severe in hind limbs. He was resistant to backing up and had a hypermetric gait. Q weighed 435 kg, with body condition 5/9. Pain was noted on palpation at C2–C5 with decreased range of motion with lateral flexion of the neck, left greater than the right.

Neurologic examination revealed intact cranial nerves, tail, and normal anal tone. Muscle atrophy of the left pectoral and triceps muscles was present. There was hypertonicity of the neck muscles, withers, and lumbar muscles. He was noted to cross his hind limbs, indicating a decreased central proprioception and knuckled intermittently. His Colorado State University (CSU) comfort score was 3/4.

Cervical neck radiographs and myelogram diagnosed cervical vertebral malformation, “wobblers syndrome,” spinal cord compressive lesion at C7–T1 with hypoplasia

Photo courtesy of Lindsay RD Benson, DVM, CVA

of C6 transverse process. He had a moderate articular facet joint osteoarthritis at C4–C5, C5–C6, and C6–C7. Cytologic analysis of cerebrospinal fluid was unremarkable. Q underwent a Bagby Basket implant for cervical stabilization at vertebrae C6–C7. Goals of treatment postoperatively were to maintain pain and rehabilitate to move into dressage.

Treatment and Outcome

A multimodal treatment plan including analgesics, nutraceuticals, acupuncture, massage, physical therapy, laser therapy, and mesotherapy was developed knowing that the recovery postoperatively would be lengthy. Q recovered uneventfully from the procedure, with a CSU comfort score of 1.5/4. He maintained postoperatively on phenylbutazone and started on vitamin E supplementation. Seven days postoperatively, Q was noted to be quite stiff and reluctant to move, have an elevated heart rate 80 beats per minute, and have prominent muscle fasciculation in his neck, chest, and cranial thorax; his CSU comfort score was 3/4. Q was given adjunctive pain management with the addition of butorphanol constant rate infusion, which reduced his CSU comfort score to 1/4.

Q was maintained in the Anderson Horse Recover Sling System for 4 weeks postoperatively until the implant was determined to be stable with adequate remodeling of cervical vertebrae at the surgical site. During these weeks, Q was given daily physical therapy exercises in the sling and supervised periods without the sling support to encourage coordination, maintain muscle tone, and regain muscle strength. He also received massage therapy sessions by an equine massage therapist. Q was given acupuncture twice weekly to aid in his muscle stiffness and pain from his surgery and restriction of activity in the sling. A combination of dry needle, electroacupuncture, and aquapuncture were used in varying combinations of points focusing on cervical pain relief and ataxia. Adequan was administered at BL 23 (500 mg per horse IM q 4 d x 28 d, then monthly).

Once Q was stable enough to remain upright without the sling support, he was started on a daily rehabilitation program with the physical therapist. This consisted of hand walking, walking over curbs, walking up and down hills, backing, passive range of motion exercises, and carrot stretch exercises to encourage motion of the neck in all directions. Q made slow but steady progress with this program; however, he experienced short episodes of setbacks where he became stiffer and more reluctant to move, likely due to overexertion. Each time he responded well to a course of therapy with phenylbutazone, acupuncture, and massage. Q was transitioned to a maintenance pain plan prior to transport from the clinic to stable for continued recovery. A combination of continued anti-inflammatory and pain management therapy with gabapentin (5 mg/kg q 12 hours) and Firocoxib (0.1 mg/kg q 24 hours) along with a rehabilitation program focusing on cavaletti rails and stretches was applied. His acupuncture and laser therapy targeted his neck, wither, back, and pelvis areas. A class 4 laser—set at post-op (neck), neck (cervical), and joint (neck)—was used.

Q had a severe setback: Upon the trailer ride from the hospital to the stable for continued rehabilitation and care, Q's pain notably increased and his range of motion diminished; his CSU comfort scale was 3/4. All current therapies were adjusted, increasing electroacupuncture and laser therapy to twice weekly, increasing gabapentin (10 mg/kg q 8–12 hours), reducing height of daily cavaletti rails, and continuing Firocoxib (0.1 mg/kg q 24 hours). Despite adjustments made to Q's protocol, a decrease in pain score and improvement in range of motion was not achieved. Transport to a hospital setting for more extensive care was not an option due to risk of further injury, so a mesotherapy treatment at the stable was performed. Q was sedated for his treatment with Detomidine 0.015 mg/kg and Butorphanol 0.02 mg/kg IV. Mesotherapy technique with a 5 linear multi-injector, 27 G x 4 mm needles were used with solution of bupivacaine (0.02 mg/kg of 0.5%), methylprednisolone (200 mg single dose), and 10 mL Sarapin diluted in lactated ringers solution to 120 mL volume.

Two bilateral parallel rows, starting caudal to the withers along the two Chinese acupuncture bladder meridians (approximately 6 cm and 12 cm parallel off dorsal spine) and extending to pelvis, were injected to the size of 0.5 cm diameter blebs. A single row, approximately 6 cm off dorsal spine, was injected cranial to the withers. The horse grimace scale (HGS) was used to record his pain, with a significant improvement in comfort level. His HGS prior to treat was 15/16 and post treatment had improved to 4/16. The mesotherapy treatment was very successful at

moving Q to a more comfortable overall state. Unfortunately, after mesotherapy, Q became very averse to any acupuncture. He was moved to pasture and maintained well on a protocol including controlled exercise, gabapentin (5 mg/kg q 12–24 hours PRN), Adequan (500 mg IM q 2 months), and Platinum Performance Equine.

Clinical Outcome

Q was eventually able to move to comfortable pasture life and short rides after 8 months of treatment. His CSU comfort score on average is 1/4. The original goal was to attempt to move Q back to his life prior to surgery, which included longer rides and dressage. This was not achieved, as it elicited too much pain and cervical stiffness after, but the ultimate goal of leading a life with well-managed pain was accomplished. Overall, Q was maintained long term on controlled exercise and supplementation of Platinum Performance Equine daily. On days that he is more active, including the rare short ride, his trainers evaluate his pain using changes to lateral neck flexion and length of his stride, as these have historically been key indicators of increased pain for him. If a change is noted, gabapentin (5 mg/kg q 12–24 hours PRN) is used. He has rarely needed more than that for comfort. Q will likely in the future need to reinstate his acupuncture treatments and addition of periodic NSAIDs as we continue to monitor cervical osteoarthritis and mobility with aging.

Conclusion

Wobblers syndrome, or cervical vertebral stenotic myelopathy, is one of the most common causes of neurologic disease noted in horses in practice. It is most commonly seen as narrowing or stenosis of the vertebral canal and compression of the spinal cord between C3–C7, and less often C1–T2. Q had surgical intervention to attempt to correct his stenosis because of his owner's desire to alleviate pain and attempt to move him back into dressage. His postoperative treatment plan goals were to alleviate pain during

Rehabilitation Program

Cavaletti Work

Q was recommended to be worked twice a day using cavalettis at differing heights and spacing. He was worked for 20 minutes each time with a 5- to 10-minute warm-up and cool-down period of hand walking. These sessions were gradually increased to 40-minute sessions.

Warm-up was hand walking for 5–10 minutes on flat ground aiming for him to get less stiff and warmed up. At the end he was backed up for about 10 paces to work on engaging his stifles.

Morning cavalletti course consisted of 7 poles: 1 pole (single), then 10 feet, then 2 poles 2 feet apart (double) then 10 feet and a single and repeating that pattern.

- Stage One: Poles are first placed on the ground.
- Stage Two: increased to 4-inch height for 3 passes.
- Stage Three: increased 4 more inches for 3 passes. Double poles increased another 4 inches for 3 additional passes.

Afternoon cavalletti course consisted of 7 poles: 1 pole (single), then 10 feet, then 2 poles 2 feet apart (double) then 10 feet and a single and repeating that pattern, placed in an arch shape.

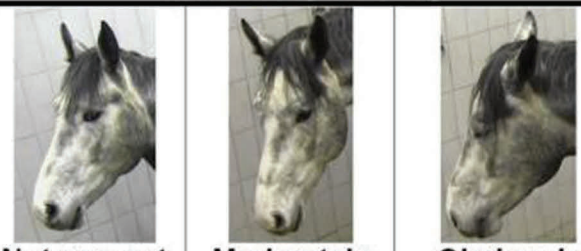
- Stage One: Poles are first placed on the ground.
- Stage Two: increased to 4-inch height for 3 passes.
- Stage Three: increased 4 more inches for 3 passes. Double poles increased another 4 inches for 3 additional passes.
- Cool-down: Walk on flat ground for 5–10 minutes to allow muscle to cool down. Application of hot pack over his neck and low back area for 5–10 minutes.

Stiffly backwards ears

Not present (0) | Moderately present (1) | Obviously present (2)

The ears are held stiffly and turned backwards. As a result, the space between the ears may appear wider relative to baseline.

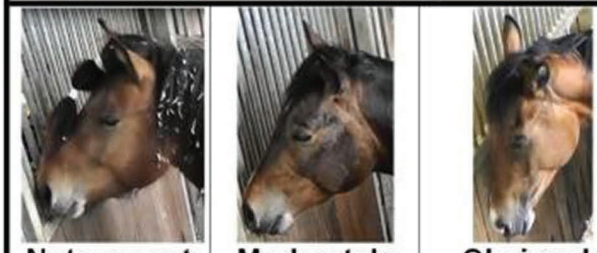
Orbital tightening



Not present (0) | Moderately present (1) | Obviously present (2)

The eyelid is partially or completely closed. Any eyelid closure that reduces the eye size by more than half should be coded as "obviously present" or "2".

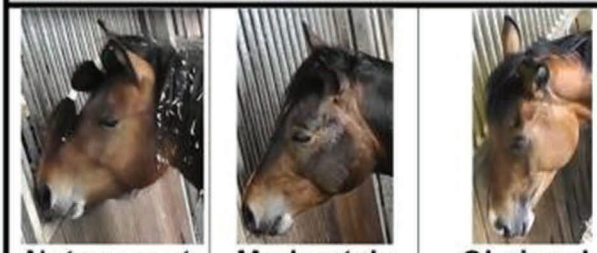
Tension above the eye area



Not present (0) | Moderately present (1) | Obviously present (2)

The contraction of the muscles in the area above the eye causes the increased visibility of the underlying bone surfaces. If temporal crest bone is clearly visible should be coded as "obviously present" or "2".

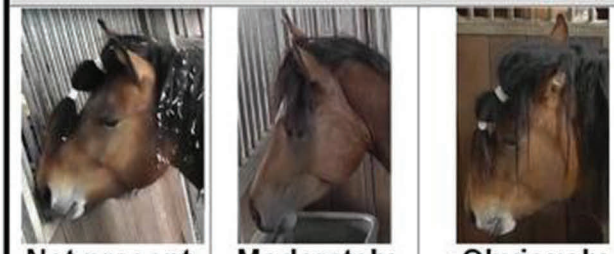
Prominent strained chewing muscles



Not present (0) | Moderately present (1) | Obviously present (2)

Straining chewing muscles are clearly visible as an increase tension above the mouth. If chewing muscles are clearly prominent and recognizable the score should be coded as "obviously present" or "2".

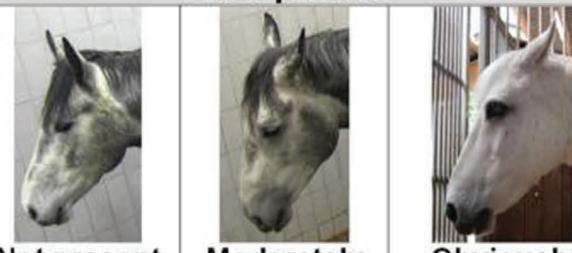
Mouth strained and pronounced chin



Not present (0) | Moderately present (1) | Obviously present (2)

Strained mouth is clearly visible when upper lip is drawn back and lower lip causes a pronounced "chin".

Strained nostrils and flattening of the profile



Not present (0) | Moderately present (1) | Obviously present (2)

Nostrils look strained and slightly dilated, the profile of the nose flattens and lips elongate.

The Horse Grimace Scale, developed by Dalla Costa et al. in 2014, shows images and explanations for each of the 6 facial action units (FAUs). Each FAU is scored according to whether it is not present (score of 0), moderately present (score of 1), and obviously present (score of 2).

> Q was eventually able to move to comfortable pasture life and short rides after 8 months of treatment.

recovery while supporting joint health and muscle strengthening by utilizing pharmaceutical therapy and integrative modalities.

Physical therapy is a large component in recovery as it can reduce postoperative scar tissue that can lead to limited range of motion.

Greater focus on monitoring and treating central sensitization would have been an area for improvement. An alternative CRI to butorphanol could have been considered to provide a greater level of analgesia; butorphanol is a mu opioid antagonist with low intrinsic activity and kappa opioid agonist, and it does not provide as much analgesia as morphine or methadone could as they are full mu opioid agonists. Q had a large setback during transport between the hospital and the stable, which may have been caused by an exacerbation of chronic pain leading to neural sensitization and release of mediators both peripherally and centrally, causing activation of N-Methyl D-asparate (NMDA), resulting in central sensitization (hyperalgesia and allodynia). Addition of Amantadine (NMDA antagonist) early on in treatment could have been considered to potentially have avoided or lessened the painful setback he experienced.

Q's case is a review of how a multimodal pain approach and coordination between the surgical center and referral hospital as well as veterinarians in multiple skill modalities can work together to achieve a comfortable daily state. It demonstrated that even with all the efforts of a multimodal approach including pharmaceutical therapy, acupuncture, laser therapy, mesotherapy, physical therapy, and constant rate infusion, the initial goal in the end may not be met. As mentioned previously, Q was not able to return to dressage and long rides, but a comfortable quality of life was achieved. ※

Lindsay RD Benson, DVM, CVA, CVPP, earned her DVM from Washington State University and is certified by the Chi Institute of Chinese Medicine as a Veterinary Acupuncturist. She is a veterinarian at AAHA-accredited Associated Veterinary Medical Center in Walla Walla, Washington.

Comments from Mike Petty, DVM, CCRT, CVPP, DAAPM

Outcome measure should be considered for every medical case that we encounter. In other words, what does the client want to see at the end of the treatment? For most things like ear infections or diarrhea, the outcome is tacit and doesn't need to be discussed. But for complex pain cases with a predisposing cause that cannot be fixed, this becomes more important: Do they want their arthritic dog to get to the point where he can use the stairs unassisted or do they want him to go on a three-mile walk? Oftentimes the success of a case hinges more on the client's desire for their animal and the feasibility of attaining it and less on the degree of comfort you have provided their animal. The outcome measure becomes even more important in the case of a performance animal like Q.

In the horse performance world, the animal is often looked at more like a commodity than a pet. It doesn't mean that the owner doesn't love their horse, but the expense and care of a horse that is in chronic pain might mean that the financial resources to get a "new" performance horse while caring for the retired horse just isn't possible. Add to that the medical costs that didn't return the horse to the desired function and it could mean the difference between retiring the horse and euthanasia. The treatment of Q and possible outcomes were discussed in this case, but it is important to put special emphasis on what will happen if the outcome measure isn't met.

Michael C. Petty, DVM, CCRT, CVPP, DAAPM, is in private practice in Canton, Michigan. He is a frequent national and international lecturer on topics related to pain management. Petty offers commentary on each Pain Case of the Month (and occasionally writes one himself). He was also a member of the task force for the *2015 AAHA/AAFP Pain Management Guidelines for Dogs and Cats*.

Photo courtesy of Lindsay RD Benson, DVM, CVA, CVPP

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References: 1. LaFleur RL, Dant JC, Tubbs AL, et al. Prevention of leptospiremia and leptospiruria following vaccination with a DAPPv + 4-way *Leptospira* combination vaccine. Presented at: Proceedings of the ISCAID Symposium; October 16–19, 2016; Bristol, UK. **2.** LaFleur RL, Dant JC, Wasmoen TL. Prevention of disease and mortality in vaccinated dogs following experimental challenge with virulent *Leptospira*. *J Vet Int Med*. 2011;25:747.

MERCK Animal Health

Employee of the Month

NAME:
Colby Barker

PRACTICE NAME:
Blueberry Creek Veterinary Hospital
Perth, Ontario

OCCUPATION:
Head Technician

YEAR STARTED IN VET MEDICINE: **2008**

YEARS WITH PRACTICE: **6**

Why Is Colby So Awesome?

Colby is a great lead for our technicians and has a wealth of knowledge gained over his years in the industry.

How Does He Go Above and Beyond?

Colby will always go above and beyond for patients, clients, and team members. He is reliable, kind, and a great team player.

In His Own Words

Why do you love your job? I love the fast-paced environment and that there is something different every day.

Favorite celebrity: Dwayne Johnson

Pets at home: Lexi, chocolate Lab, and Nelson, cat

What brought you to the profession: Love of animals

Hobbies outside of work: Fishing, demolition derby

Favorite TV show: Game of Thrones ※

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