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*Based on sales data, Fluvac Innovator EHV-4/1 had the #1 highest doses sold of all equine-specific vaccines in the U.S. Core EQ Innovator had the #2 highest doses sold of all equine-specific vaccines in the U.S.
**In a study, administering core and risk vaccines as separate injections provided up to a 4.7 times higher influenza immune response than when given in combination.

1. Animalytix segment data, 2023 Top EQ Respiratory Vaccines, MAT December 2023.
2. Zoetis Inc. Data on file, Study Report No. B951R-US-14-056, Zoetis Inc.
3. Zoetis Inc. Data on file, Study Report No. B951R-US-16-106, Zoetis Inc.
4. Zoetis Inc. Data on file. Study Report No. 14OREQBIO-1.

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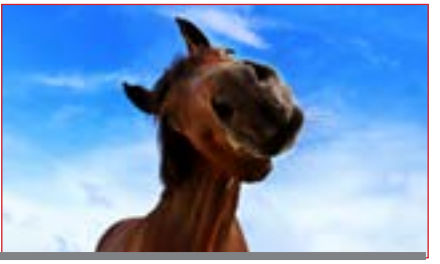

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AI Tool Recognizes Equine Recurrent Uveitis

Researchers developed a deep learning tool that is capable of reliably diagnosing equine recurrent uveitis (ERU) in horses based on photos.

Colloquially known as moon blindness, ERU is an inflammatory ocular disease in horses, which can lead to blindness or enucleation. It is 1 of the most common eye diseases in horses and has a major economic impact. Therefore, correct and swift diagnosis is important to minimize lasting damage.

Images courtesy of Ludwig-Maximilians-Universität München Equine Clinic

A team led by Professor **Anna May**, DrMedVet, DECEIM, from the Ludwig-Maximilians-Universität München Equine Clinic has developed and trained a deep learning tool that reliably recognizes the disease and can support veterinarians in making the diagnosis, the researchers report in a recent study.

In an online survey, the researchers asked 150 veterinarians to evaluate 40 photos of healthy eyes, eyes with ERU, and eyes with other diseases.

The deep learning tool was given the task of evaluating the same photos.

Subsequently, Dr. May compared the results of the veterinarians against those of the AI. She discovered that equine veterinarians interpreted the pictures correctly 76% of the time, while the remaining veterinarians from small animal or mixed practices were right 67% of the time.

"With the deep learning tool, the probability of getting a correct answer was 93%," Dr. May said.

"Although the differences were not statistically significant, they nonetheless show that the AI reliably recognizes ERU and has great potential as a tool for supporting veterinarians."

The tool is web-app-based and simple to use on a smartphone.

"It's not meant to replace veterinarians but can help them reach the correct diagnosis. It is particularly valuable for less experienced professionals or for horse owners in regions where veterinarians are few and far between," Dr. May emphasized. Through the early detection of ERU, affected horses can receive appropriate treatment more quickly, which can be decisive in slowing down the progression of the disease and saving the afflicted eyes. **MeV**

For more information:

Scharre A, Scholler D, Gesell-May S, et al. Comparison of veterinarians and a deep learning tool in the diagnosis of equine ophthalmic diseases. *Equine Vet J.* 2024; April 24. doi:10.1111/evj.14087.

https://beva.onlinelibrary.wiley.com/doi/10.1111/evj.14087

Silicone Allows Students to Practice Injections

The folks at UC Davis College of Veterinary Medicine won the $12,500 Animal Health Award from the 24th annual Big Bang! Business Competition with a silicone injection pad that enables students to learn basic injection skills without injecting a live animal.

Beginners can start by learning basic needle and syringe handling using the injection pad alone. Advanced students can apply restraint and handling concepts by mounting the pad to a live animal for a more realistic simulation. The low cost would enable a broader range of students to use the tool.

The UC Davis Big Bang! Business Competition is organized by the Davis Mike and Renee Child Institute for Innovation and Entrepreneurship and has been helping entrepreneurs for more than 2 decades. The Big Bang! is open to teams with a founder or team lead affiliated with a California college or university. The prizes are donated.

During the 8-hour marathon judging, 22 finalist teams pitched their ventures before 5 judges, who considered the teams' integrated strategy, steps toward implementation and market opportunity to determine the winners. **MeV**

More information is available here:
https://bit.ly/4eE3qTu-MeV

Is Feed Low in Starch and Sugar Right for all Horses?

Make Your Decision With Expert Advice From an Equine Nutritionist.

Many horses can see healthy changes from a diet that's low in starch and sugar, but not all horses *need* these special restrictions or *should* be fed this way. We talked with Sentinel® Horse Feeds equine nutritionist, Jeanne van der Veen, to help you make the right call on your patient's nutrition.

Q: ARE LOWER LEVELS OF STARCH AND SUGAR RIGHT FOR ALL EQUINE LIFE STAGES?

In general, horses at all life stages may benefit from a lower starch and lower sugar feed, depending on the individual horse and health issue or challenge. And the definition of what is considered "low" may vary for different life stages.

"Young, growing horses may need a more moderately low level of starch and sugar for proper development, as found in **Sentinel Safe Start** extruded horse feed," van der Veen said. "While senior horses, with their aging digestive systems and potential metabolic issues, may benefit from an even lower starch and sugar diet, as found in **Sentinel Senior** horse feed."

Q: DOES LOW STARCH, LOW SUGAR FEED PREVENT HEALTH CONCERNS, LIKE COLIC?

There are many different types and causes of colic and most aren't related to diet. But good feed management is crucial to preventing some of the more common types. Feeding a diet low in starch and sugar may reduce excess fermentation and gas production, lowering the risk of gas related colic.

Ulcers are another health concern in horses that may benefit from lower starch and sugar feeds. Feeding smaller meals more often, especially when large amounts of grain or concentrates are needed, and decreasing the level of starch and sugar in the diet may help with ulcer prevention or management.

"When looking to prevent or manage gastro-intestinal issues, feeding Sentinel 100% extruded horse feeds with low starch and low sugar content, built-in fat and fiber and added gutWise™ Technology, will provide multiple nutritional and digestive support mechanisms to help keep your horse's gut healthy," says van der Veen.

Low starch, low sugar horse feeds may benefit horses with:

- Equine Gastric Ulcer Syndrome (EGUS)
- Equine Metabolic Syndrome (EMS)
- Insulin Resistance (IR)
- Laminitis
- Digestive Disease or Colic
- Leaky Gut Syndrome (LGS)
- Cushing's Disease (PPID)
- Polysaccharide Storage Myopathy (PSSM)
- Developmental Orthopedic Disease (DOD)

Q: IF MY HORSE DOESN'T HAVE A METABOLIC CONDITION, SHOULD I CONSIDER CHANGING?

If your horse does not have a metabolic condition, you don't have to switch feed, but a low starch and low sugar feed may still be beneficial over the long term.

"A low starch and sugar diet helps maintain a healthy digestive system and microbiome," says van der Veen. "Since over 70% of the immune system is located in the gut, keeping it healthy through a low starch and sugar diet helps support and maintain the overall health, performance and behavior of the horse."

Feed Your Curiosity

Learn more about the full line of Sentinel Horse Feeds, along with expert tips and advice to ensure your patients are getting everything they need to live happy, healthy lives.

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S. EQUI Appears to Be Increasing Slightly

By Marie Rosenthal, MS

A recent study of the epidemiology of *Streptococcus equi* subspecies *equi* found the disease occurs throughout the United States, affects all ages and is prevalent among all breeds. Unfortunately, its prevalence does appear to be increasing, too, according to **Camilo Jaramillo-Morales**, DVM, MS, DACVIM, a staff veterinarian at the Veterinary Teaching Hospital of the University of California Davis.

"However, we saw decreased likelihood for a horse to test positive to *S. equi* when the horses were vaccinated," Dr. Jaramillo-Morales said at the 69th AAEP Annual Convention held in San Diego.

S. equi is a highly contagious, mucopurulent inflammatory disease of the upper respiratory tract. The pathogen travels through the nasal passages and resides in the guttural pouches and lymph nodes for some time, maybe up to 18 months or longer before causing disease. In addition, there are a "lot of silent carriers," he said, "which makes it very hard to con-

Shutterstock/Tonna Stepunina

trol and to eradicate this disease."

Several epidemiological studies have shown the disease is widespread throughout the world. In 2022, Dr. Jaramillo-Morales reported the prevalence was as high as 13.5% in Colombia, while the prevalence in the United States was about 6.4%, according to an earlier study done by **Nicola Pusterla**, DVM, PhD, DACVIM, DAVCS-Equine, and his colleagues in 2011.

The transportation and mobilization of horses around the world is probably behind its international spread, explained Dr. Jaramillo-Morales, who called *S. equi* "the most important respiratory diseases in horses worldwide."

Dr. Jaramillo-Morales and his colleagues, including Dr. Pusterla, wanted to see if *S. equi* in the United States had changed since the 2011 study. They looked at nasal swabs from 9,409 horses from around the United States with acute onset of fever and respiratory signs to describe the prevalence factors and to determine the effect of vaccination on the detection of *S. equi.* The samples are part of the ongoing Equine Respiratory Biosurveillance Program between UC Davis School of Veterinary Medicine and Merck Animal Health.

They analyzed respiratory samples provided between March 2008 and December 2020. Veterinarians from 261 practices from across the country provided samples, which were tested by quantitative polymerase chain reaction (qPCR). Most of the practices were in the West (97), but the rest of the country was also represented with 82 practices from the South, 45 from the Midwest and 37 from the East providing samples, he explained.

The veterinarians filled out a questionnaire that asked about the characteristics of the horses, including signalment, and the intended use of the horse and breed. There was a wide variety of uses, including competition, ranch, farm and breeding. Many had been transported within the 14 days before the sampling. The veterinarians reported clinical signs, which included lethargy, nasal discharge, coughing, ocular discharge, hypoxia or anorexia, as well as mandibular lymphadenopathy and fever.

There were samples from 3,305 male horses, 4,597 female horses, and no sex was reported for 1,507 horses. The samples were from several breeds with 3,341 being Quarterhorses, 1,498 being Warmbloods, 1,015 were Thoroughbreds, and 645 were Arabians. Almost 3,500 were competition horses.

"The attending veterinarian performed a physical examination and obtained a nasal swab wearing disposable gloves, and the samples were stored in a refrigerator and then shipped overnight to our labo-

ratory. After that we did DNA extraction and amplification," he explained. In addition to looking for *S. equi* bacteria, they looked for several common viral pathogens that could cause similar symptoms.

Most of the samples tested positive for equine herpes virus-4 (EHV-4) with 10.5% of samples being positive, followed by equine influenza virus (EIV) with 9.7%, and 7.6% were positive for *S. equi*.

Of the 715 horses positive for *S. equi*, 32% had a co-infection (226 horses). The most common co-infections were EHV-4 (4.8%), equine rhinovirus B (7%) and EIV (4%), he said.

"We are quite far away of controlling or containing this disease, and it's probably due to the silent carriers."

Dr. Camilo Jaramillo-Morales

"The prevalence of *S. equi* is comparable to what was reported previously, as were the demographic characteristics. And horses vaccinated against *S. equi* were less likely to test qPCR-positive for *S. equi,*" he said.

There was no significant difference in the results by sex or breed. One thing that did stick out for them was the age of the horses, however. The horses most likely to test positive to *S. equi* were middle-aged horses between 8 and 12 years old, he said.

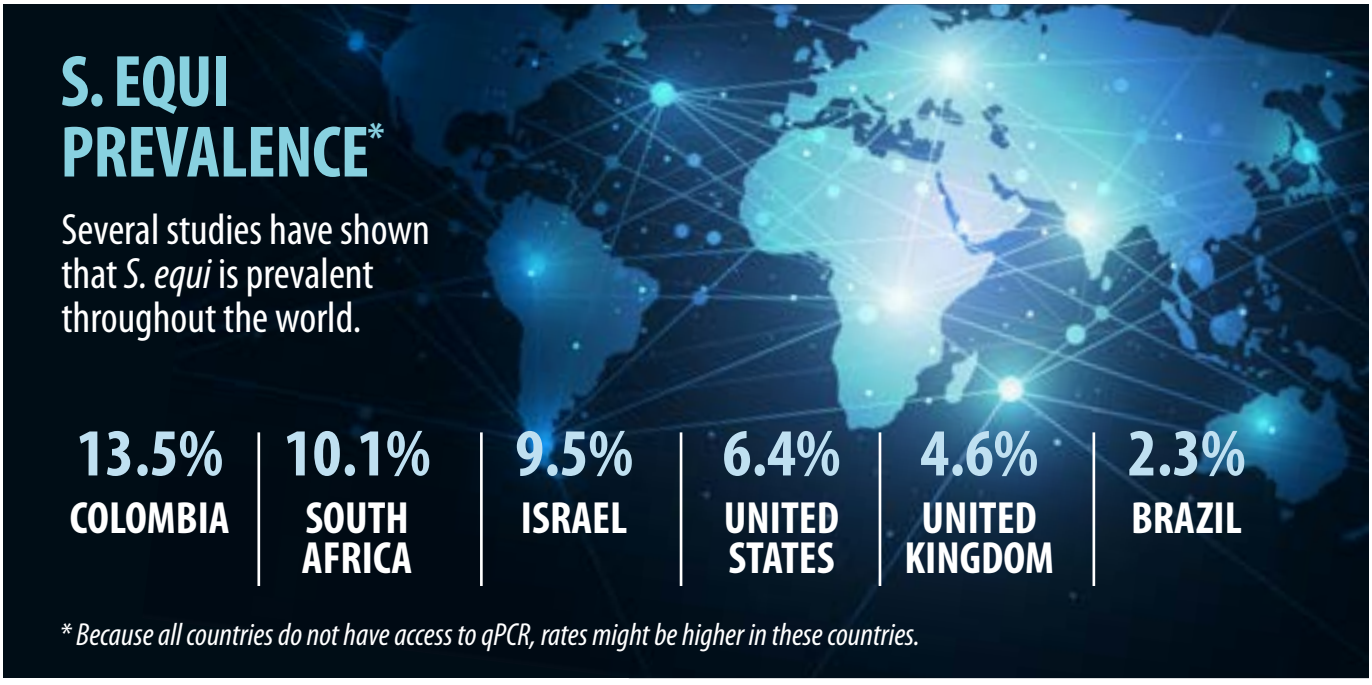
"This makes sense, right?" he asked. "The middle-aged horses are going to be more likely to compete and are going to be in contact with other horses.

"We did look at clinical signs, and there was significant difference for most of them having higher incidences of these signs in the horses that tested qPCR positive: fever, lethargy, anorexia, nasal discharge, cough and ocular discharge. There was no significant difference between the horses testing qPCR negative and positive for distal limb edema," Dr. Jaramillo-Morales said.

Among the horses that were vaccinated, 91% tested qPCR negative to *S. equi*; just 0.9% of vaccinated horses tested positive to *S. equi*.

Earlier studies found that young horses were more likely to test positive for *S. equi* than older horses, but now it appears to be affecting middle-aged horses. Dr. Jaramillo-Morales speculated that vaccination might be playing a role or perhaps, it's just more likely that middle-aged horses are traveling more and competing more often, so they are more likely to be exposed.

"In the study that we did in Colombia, we found that every year of age decreased the risk for *S. equi*, which was a bit contradictory with what we found in



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*Overall, horses in the treatment group had a statistically significant decrease in pain score (2.87 decrease compared to a 0.72 decrease in the control group) from the beginning to the end of the trial (44 days total).

Thermal imaging also demonstrated a significant impact on temperature readings both at the time of the trial as well as after exercise and application of Performance Ultra. Near the end of 30 days, horses in the treatment group had a lower average back temperature.

**Reference:

Walter, K.W., Altman, J. & Haussler, K. (2023) Reducing chronic back pain and inflammation in horses using a commercial herbal liniment. Equine Veterinary Education, 35, e499-e506.

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STUDY DEMOGRAPHICS

SEX

Males: 3,305 (51% *S. equi*+)

Females: 4,597 (35% *S. equi*+)

Not reported: 1,507 (14% *S. equi*+)

BREED

Quarterhorse: 3,341 (45% +)

Warmblood: 1,498 (62% +)

Thoroughbred: 1,015 (3.9% +)

Arabian: 645 (8% +)

Competition horses: 3,458 (42% +)

+ = positive

CLINICAL SIGNS SEEN IN POSITIVE HORSES	
PCR RESULTS CLINICAL SIGNS	**PCR-POSITIVE HORSES (715)**
FEVER (6,954)	590 (82.5%)
LETHARGY (6,246)	539 (75.4%)
ANOREXIA (5,144)	448 (62.7%)
NASAL DISCHARGE (6,510)	639 (89.4%)
COUGH (4,175)	368 (51.5%)
OCULAR DISCHARGE (2,107)	205 (28.7%)
DISTAL LIMB EDEMA (806)	62 (8.7%)

the study here in the U.S.," he said.

Although the disease did occur throughout the year, there was a seasonality with more cases occurring during the winter and the spring.

Dr. Jaramillo-Morales admitted the study had limitations; most importantly, it was not a randomized case selection, rather samples were voluntarily submitted. In addition, the samples were from nasal swabs rather than guttural pouch lavages, which are more specific. In addition, they did not have information about specific time of vaccination and the type of vaccination, so it would be difficult to draw any conclusions about vaccination and infection.

"*S. equi* remains an important infectious disease in horses in the United States, and is probably endemic for this country as well. This pathogen affects all ages, breeds and is more prevalent in middle-aged and competing horses, and that the vaccination against *S. equi* appears to be protective in this specific horse population.

"The prevalence that we found is similar to the prevalence that had been previously reported. However, it went from 6.4% to 7.6%," he said, so the prevalence appears to be increasing.

"We are quite far away of controlling or containing this disease, and it's probably due to the silent carriers," he said. **MeV**

For more information:

Jaramillo-Morales C, Barnum JK, Chappel W, et al. Voluntary biosureveillance of *Streptococcus equi* Supsp. *equi* in nasal secretions of 9409 equids with upper airway infection in the USA. *N Vet Sci*. 2023;10(2):78.

https://www.mdpi.com/2306-7381/10/2/78

Jaramillo-Morales C, Gomez DE, Renaud D, et al. Streptococcus *equi* culture prevalence, associated risk factors and antimicrobial susceptibility in a horse population from Colombia. *Equine Vet Sci.* 2022 Apr;111:103890 doi: 10.1016/j/jevs.2022.103890 E pub 2022 Feb 3.

https://pubmed.ncbi.nlm.nih.gov/35124153/

Merck, USTA Microchip 50,000 Standardbreds

Merck Animal Health and the U.S. Trotting Association reached a 50,000-microchip milestone. USTA partnered with Merck in 2018 to become the first registry to formally incorporate temperature scanning into its microchip identification program.

USTA also adopted the Global Pocket Reader Plus (GPR+) portable microchip reader, which is used with the Bio-Thermo microchip that provides a 15-digit identification number and lasts the horse's lifetime. Pairing this advanced microchip reader with the EquiTrace app and signing in with USTA-member credentials allows enhanced monitoring and healthcare features. The app will identify horses that are registered with USTA, and record temperatures from Bio-Thermo microchips. The app also allows users to consolidate secure health recordkeeping. The GPR+ scanner connects with smartphones via the USTA ChipID app, available on the App Store and Google Play, offering efficient temperature monitoring and horse identification. **MeV**

To learn more, contact your Merck Animal Health equine sales representative or visit ***https://www.merck-animal-health-usa.com/species/equine/bio-thermo.***

Ask the Financial Expert

This column is brought to you by AAEP Educational Partner CareCredit, a Synchrony solution.

What's the harm in providing a discount in 'special cases'?

BY AMY L. GRICE, VMD, MBA

Veterinarians discount their services for numerous reasons. Maybe a longtime client shares that they just paid for a major home repair and asks for a deal just this once. Or a new client has come from a different practice and claims costs were "nowhere near" what you're charging. Whatever the reason, discounts are generally a bad idea for your practice's financial health. They come directly from profit and eat away at your overall value.

The Dangers of Discounting

When you reduce fees, you send a message that your services are overpriced at the normal rate. What's more, your clients will expect the discount in perpetuity—as will other horse owners in your community when word of your generosity gets out.

Discounts can also complicate your business by adding layers of operational complexity. For example, say a large training barn insists on discounted services or they'll go elsewhere for veterinary care, and you agree to their terms. Suddenly you're invoicing under different fee structures for the same level of service.

Now imagine other farm managers in your client base hear of the discount. They'll likely want a similar deal and begin negotiating their own terms. Now you're creating different software codes for the same service at different prices for different clients, and you've got an administrative nightmare on your hands. With multiple doctors in the practice, the chaos can quickly multiply.

What's more, granting discounts to clients who bully and complain is unfair to those loyal clients who are grateful for your care. Yes, it can be hard to hold your ground with unpleasant people, and sometimes it seems easier just to give in. But remember: You train what you tolerate.

What to Do Instead

Rather than lower your prices, discuss treatment alternatives that fit your client's budget. Offering a financing option such as the CareCredit credit card lets owners spread payments over time, which may help them move forward with your full recommendation without delay.

Bottom line? Setting fair and consistent prices that allow you to pay a living wage to yourself, staff and other doctors is the first step to putting an end to discounts. Providing a client experience that delivers clear and consistent value should quickly follow. These two actions alone can help keep "special cases" from doing a number on your profit margins.

To discover more about how veterinary financing can help you, your patients, your clients and your practice, visit CareCredit's Equine Insights page.

Amy L. Grice, VMD, MBA, is owner of Veterinary Business Consulting in Virginia City, Montana; founder of the Decade One mentorship groups for equine veterinarians; and a former ambulatory practitioner for 25 years. She has held numerous leadership positions with veterinary professional organizations and is a frequent speaker at industry events.

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Purina Launches Probiotic Supplement and Microbiome Testing Kit

By Tom Rosenthal

Purina Animal Nutrition launched a live and active probiotic supplement to support gut health in horses, as well as an easy-to-use testing kit for horse owners to obtain personalized nutrition recommendations to support their horse's individual microbiome, the Arden Hills, Minnesota-based company announced.

The Purina Systemiq Probiotic Supplement and the Purina MQ Equine Microbiome Testing Kit are part of the new Purina Microbiome Quotient (MQ) Platform, which enables owners to receive research-backed insights and solutions to proactively optimize their horse's gut health, Purina announced.

The microbiome is home to millions of microorganisms that work together to support a horse's critical functions. Nearly every aspect of a horse's health and well-being, from digestion to immune function and even performance, can be traced back to its microbiome, according to Purina.

The Systemiq Probiotic Supplement is formulated specifically to remain live and active through the pelleting process to a horse's hindgut where it is needed most, making this a key differentiator in supporting recovery after exercise and occasional gastrointestinal stress, Purina announced. Research shows its patented probiotic technology supports optimal digestive and immune function in horses, when fed daily.

"With the launch of the MQ Platform, which includes our MQ Equine Microbiome Testing Kit and Systemiq Probiotic Supplement, we're helping empower horse owners to make health decisions tailored to their horse's individual needs," said **Kiley Heckman**, the innovation marketing manager, Purina Animal Nutrition. "This innovation in equine microbiome science is changing the way we think about the connection between equine nutrition, health and performance."

Previously, horse owners relied on informed guesses when assessing their horse's gut health. With the testing kit, owners can take a simple swab from their horse and fill out a health history questionnaire, and Purina's team of equine nutritionists will use next-generation sequencing and analysis to provide results and nutrition recommendations through an online portal, the company explained.

Mary Beth Gordon, PhD, senior director equine technical innovation at Purina Animal Nutrition the senior director research and new product development at Purina, said both the probiotic supplement and the testing kit are the result of 10 years of research and testing, which involved building an incredibly robust equine microbiome database containing more than 5,000 microbiome samples from horses sent to Purina by owners in all 50 states.

"From all the data that's been sent into us from all these horse owners, we were able to map the core microbiome for horses, which no one had ever done before," Dr. Gordon said.

This database gave Purina researchers the keys needed to unlock the mystery of the equine microbiome.

"Through the samples we've had the privilege of analyzing, we've learned what constitutes a healthy balance in a horse's microbiome—something that had previously been a mystery," said **Robert Jacobs**, PhD, the equine innovation manager, Purina Animal Nutrition.

"As a result, we're able to develop revolutionary new ways to support every horse's unique microbiome, whether they're out at pasture, on the road competing, at home recovering or whatever else their life and job requires," Dr. Jacobs said.

"We've also learned that every aspect of horse health and physiology is related to the microbiome," he added. "Supporting an optimized, balanced microbiome can help to promote things like exercise recovery, and a more appropriate response to inflammation and gastrointestinal disturbances."

Doug Payne, Purina Ambassador and member of the U.S. Eventing Team, was given an advance opportunity to test his horse, Quantum Leap, using the MQ Equine Microbiome Testing Kit.

"With the microbiome playing such a critical role in a horse's performance, it's great to have the ability to look a lot further in-depth," Mr. Payne said. "The amount of detail that is provided in the report is pretty incredible."

Mr. Payne also began feeding Systemiq Probiotic Supplement to Quantum Leap, a step he sees as part of a broader responsibility to give horses the best care possible.

"Whether it's a 5-star event horse or a backyard pet, I think it's our obligation as horse owners to help them feel their best," Payne said. "Regardless of what their job is, their lives can be stressful. Especially for horses that are on the road a lot, I think Systemiq Probiotic Supplement will offer a big advantage to help them better adapt to their environment." **MeV**

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1 Data on file.

2 Adequan® i.m. Package Insert, Rev 1/19.

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5 McIlwraith CW, Frisbie DD, Kawcak CE, van Weeren PR. Joint Disease in the Horse.St. Louis, MO: Elsevier, 2016; 33-48.

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PP-AI-US-0629 05/2021

Let's talk effective communication with horse owners

Three tips inspired by the AVMA's language strategy study.[1]

TIP 1

Be transparent

Horse owners often underestimate equine care expenses,[2] so they appreciate when veterinarians clearly communicate how much their veterinary care will be up front. What they don't want is to be surprised by the final bill when it's time to pay.

So, take the time to walk them through the treatment plan you recommend and its associated costs. That way you move forward with their horse's care knowing you're both on the same page.

Try Saying

Based on my findings from the initial exam, these are my recommendations for treatment. Let me walk you through what that entails and the associated costs.

This showcases your thoughtful approach to care and leaves the door open for further conversations about cost.

TIP 2

Be a trusted partner

Show clients, through your words and actions, that you are a partner in their horse's health. Let them know you care about their opinions and have empathy for their unique situations. Many horse owners feel stress about horse expenditures,[2] so if they bring up an issue with cost, approach the discussion as a team and try to find a treatment solution that works for everyone.

Try Saying

My recommendation starts with what I believe is the ideal treatment plan for your horse. I can also share a range of other options if you have concerns about cost. Together we can make an informed decision that works for both you and your horse.

Emphasizing the partnership between you and your client shows you support them in whatever choice they make. It also lets them know they're not alone in making decisions about their horse's health.

TIP 3

Share a friendly way to pay

It's important for clients to know they have an option to help them get their horse's veterinary care when they need it. After all, 90% of horse owners will keep their horse for a lifetime.[2]

When you offer a financing solution like the CareCredit health and animal care credit card, you help prepare horse owners for lifelong veterinary care.

Try Saying

There are payment options that can help you finance your horse's veterinary care. The CareCredit health and animal care credit card allows you to pay over time for equine expenses, helping you fit care into your monthly budget.

Proactively bringing up a financing option can help horse owners be better prepared for future expenses. They can feel at ease knowing there's a flexible way to pay for veterinary care.

When you offer flexible financing, clients hear "I care about you and your horse."

Engage with horse owners about veterinary costs to show them you care about their horse's health as well as their budget. Listening to their concerns is just as important as talking about solutions. Foster better communication by being attentive to their unique situation. This helps them trust you, as their veterinarian, on their journey to lifelong horse care.

A payment option you can feel confident talking to horse owners about is the CareCredit health and animal care credit card. It can be used to help your clients manage costs so their horse can get the care they need.

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[1]The Cost of Veterinary Care: Language Strategy, American Veterinary Medical Association, September 2022. We have adapted the findings of this companion animal study for relevance to equine practitioners.

[2]CareCredit Equine Lifetime of Care Study, 2023. CareCredit is a Synchrony solution.

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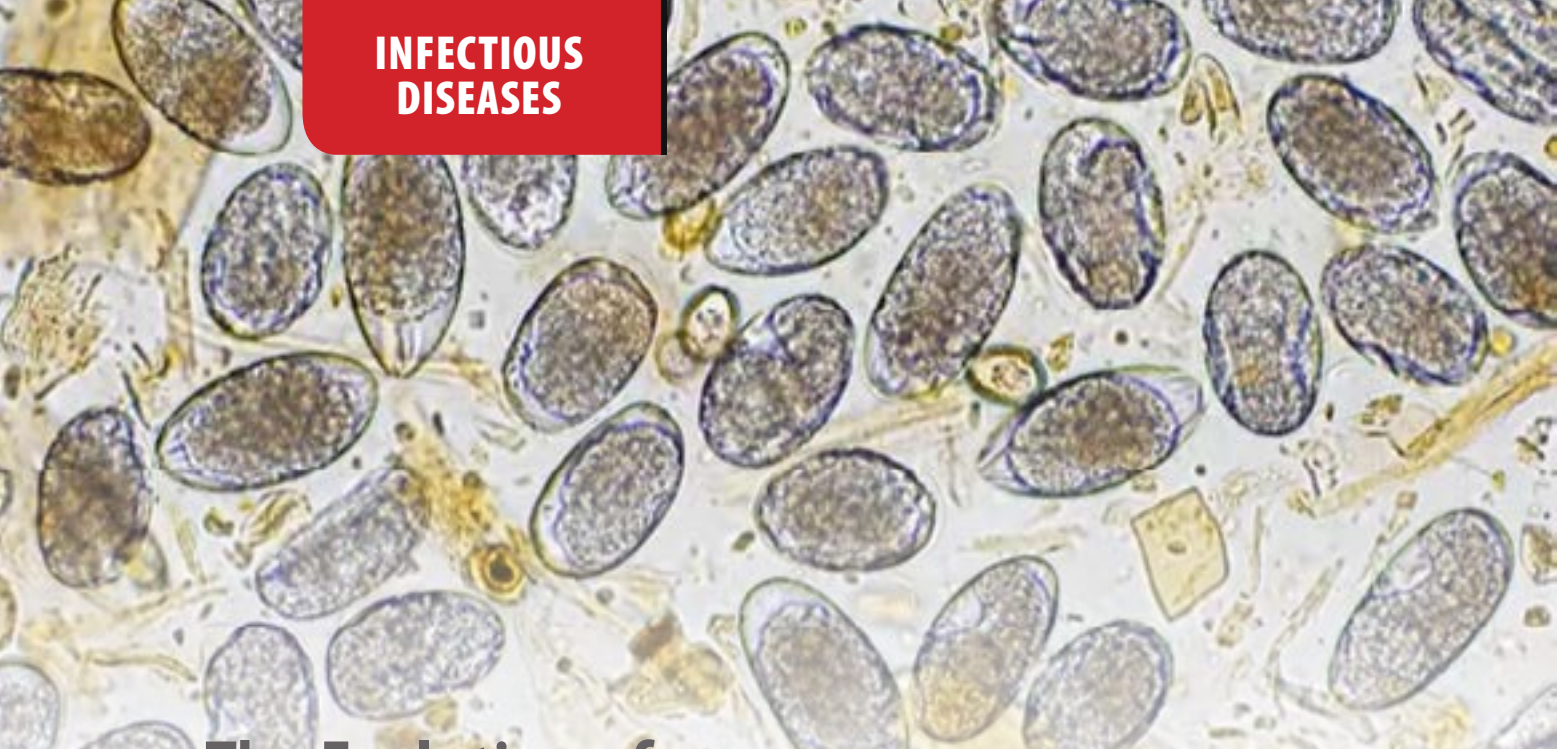

The Evolution of Deworming Strategies

A targeted strategy for deworming can reduce parasitic load and stave off resistance

When deworming products were first brought to market, all horses were dosed every 2 months. Rather than this strategy annihilating parasites found in horses and in the pasture, it led to widespread resistance in small strongyles (*Cyathostomins*), the most prevalent equine internal parasites, tapeworms, and *Parascaris*, a type of ascarid found in foals. Now, a more strategic targeted approach to deworming is taken, using a combination of testing to determine the heavy shedders in a herd and the types of parasites that are being shed at different times of the year.

During a Cornell Equine Seminar presented by **Elisha Frye,** DVM, DACVPM, of the Animal Health Diagnostic Center (AHDC) at the Cornell University College of Veterinary Medicine, recent evidence was reviewed that showed a reduced egg reappearance window for commercially available deworming products used in the United States. Dr. Frye explained that the aims of resistance control are to first prevent the development of resistance and then to delay the accumulation of resistance genes.

"Resistance has a very specific kind of framework so we have to apply it to the same animal, the same type of parasite and the same dose of the same drug," she said. "The goal of deworming is not zero parasites. It is to lighten the parasitic load of heavy shedders."

Modus Operandi of Different Parasites

Small strongyles

Small strongyles are sometimes referred to as small red worms. They are a type of roundworm and extremely common in horses. Small strongyles produce eggs in the horse's colon, which are passed into the pasture where they larvate and are consumed by the horses when grazing. The maturation of an egg to L3-stage larvae can be as quick as 3 to 4 days if the temperature is between 77° F and 91° F, but when temperatures reach extremes (hotter than 104° F or colder than 32° F), eggs do not develop. Geographic areas that experience freeze-thaw cycles are less hospitable to egg survival.

Once the L3-stage larvae enter the gastrointestinal tract, they can encyst in the mucosa of the intestine. After a period of 4 months to 2 years, the L4-stage small strongyles will be passed into the pasture in the spring in

Images courtesy of Elisha Frye, DVM, DACVPM

By Joy Curzio

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1. Zycosan® Freedom of Information Summary NADA 141-559
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large numbers, which may result in diarrhea and severe illness. Any L4-stage larvae that do not encyst in the intestine travel to the colon where they lay eggs, which are passed in feces, and the life cycle completes.

Large strongyles

Large strongyles are deadly to horses. They have a similar life cycle to small strongyles in that the horse ingests larvae while grazing, but large strongyles have a longer prepatent period of 6 to 7 months for the full life cycle, which is helpful in avoiding dewormer resistance.

Large strongyles travel up the mesenteric artery against the blood flow, which forms a thrombus. The parasite then swims back down the artery into a blood vessel of the gut, where it can cause necrosis. If the necrosis, or infarction, isn't surgically removed, the entire intestine will die, requiring the horse to be euthanized.

"The goal of deworming is not zero parasites. It is to lighten the parasitic load of heavy shedders."

Dr. Elisha Frye

Ascarids

Ascarids also are commonly called roundworms. There are several types of ascarids, but *Parascaris equorum* affects only foals until approximately 1 year of age, at which time they develop natural immunity. Again, the horse eats the parasite's eggs, but the larvae leave the small intestine and go to the liver, where they travel via blood vessels into the lungs and then the trachea. Foals cough up the *Parascaris* and then swallow them again, where they go back into the intestine.

"It's a unique but not so pleasant life cycle that *Parascaris* takes inside the foal. We worry about impaction colics in foals because these roundworms can fill up the inside of the intestine," Dr. Frye said.

Tapeworms

Tapeworm eggs are passed in horse manure, but it is the oribatid mite that eats the eggs. The eggs develop into larvae in the mite, surviving for approximately 2 to 4 months in the mite. Again, the infestation occurs when the horse grazes. The larvae attach to the cecum and

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CAUTION: Federal law restricts this drug to use by or on the order of a licensed veterinarian.
DESCRIPTION: Zycosan contains pentosan polysulfate sodium, a semi-synthetic polysulfated xylan.
It is a pale yellow to brownish yellow, clear, sterile solution.
INDICATION: For the control of clinical signs associated with osteoarthritis in horses.
CONTRAINDICATIONS: Horses with hypersensitivity to pentosan polysulfate sodium or any of the inactive ingredients in Zycosan should not receive Zycosan. Do not use Zycosan concurrently with other anticoagulant drugs. Do not use in horses with clotting disorders or within 24 hours of surgical procedures (see Warnings and Precautions).
WARNINGS AND PRECAUTIONS:
User Safety Warnings: Not for use in humans. Keep out of reach of children. Pentosan polysulfate sodium is a weak anticoagulant. Caution should be used when administering Zycosan if you are taking an anticoagulant. **In case of accidental self-injection, seek immediate medical attention. If product comes into contact with skin, rinse skin thoroughly with water and seek medical attention if needed.** To obtain a Safety Data Sheet (SDS), contact Dechra at (866) 933-2472.
Animal Safety Warnings and Precautions:
Zycosan has been shown to prolong coagulation parameters up to 24 hours after injection, therefore caution should be used when administering this drug before or after strenuous activities (see Target Animal Safety). Due to the anticoagulant effects, this drug may exacerbate Exercise Induced Pulmonary Hemorrhage (EIPH).
The concurrent use of NSAIDs with Zycosan has not been evaluated. Due to the anticoagulant effects of Zycosan and known anticoagulant effects of some NSAIDs, caution should be used if NSAIDs are concurrently administered. Horses concurrently treated with Zycosan and NSAIDs should be monitored for hemorrhage or other clinical signs of abnormal bleeding (e.g., petechiae, ecchymosis, or epistaxis). The safety of long-term repeat use of Zycosan has not been evaluated. Pigmentary changes in the retina (pigmentary maculopathy) have been reported in human patients following long-term oral use of pentosan polysulfate sodium. It is not known if a similar finding occurs in horses. The safe use of Zycosan has not been evaluated in breeding, pregnant, or lactating horses.
Other Warnings:
Do not use in horses intended for human consumption.
ADVERSE REACTIONS:
Injection site reactions were the most frequently reported adverse reactions in the field study. Injection site reactions were associated with clinicopathology changes in some cases. Other adverse reactions reported in more than one horse were prolongation of coagulation parameters (activated partial thromboplastin time (aPTT) and prothrombin time (PT)), lethargy, behavior changes, and colic.
To report suspected adverse events, for technical assistance or to obtain a copy of the Safety Data Sheet (SDS), contact Dechra at (866) 933-2472 . For additional information about adverse drug experience reporting for animal drugs, contact FDA at 1-888-FDA-VETS or online at http://www.fda.gov/reportanimalae.
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Regardless of the technique used for the fecal float, the method should be applied consistently when testing the same herd. Otherwise, it will be difficult to interpret the results.

cause colic when found in high numbers. Tapeworms have a prepatent period of 6 to 10 weeks, but they can be shed intermittently in "packets" so the actual egg/parasite count is irrelevant. In addition, these parasites are not recognizable by a fecal float, which is a common test for parasites. As adult tapeworms can grow up to 3 inches wide, potentially congesting the colon and blocking absorption of nutrients, Dr. Frye emphasized that if tapeworms are present, they need to be treated.

Types and Timing of Testing

A fecal float is a technique that floats the parasitic eggs, allowing a count to be taken. One feces ball (10 g) is filtered with a sugar solution to detect strongyles and a zinc sulfate solution for other parasites. The mix is then spun twice in a centrifuge. This is known as the Modified Wisconsin Double Centrifugation Technique and is highly sensitive, detecting down to 1 egg per gram of manure. Another technique, the Modified McMaster, does not use a centrifuge; rather it uses grids in which the eggs are manually counted and a mathematical formula is applied. This technique is less sensitive, detecting down to 25 eggs per gram of manure.

Regardless of the technique used for the fecal float, it should be applied consistently across testing for the same herd, according to Dr. Frye. "Don't bounce around with the type of technique because then it is going to be hard to interpret the numbers," she said.

After a fecal float is done, each horse in the herd can be identified as a low, moderate or heavy shedder, according to the AAEP's classification definitions (**https://aaep.org/resource/internal-parasite-control-guidelines/**). Heavy shedders eliminate more than 500 eggs per gram of manure, with moderate shedders eliminating between 200 and 500 eggs per gram. Low and moderate shedders do not always have to be dewormed when taking a more targeted approach.

"All of the horses in a herd do need to be dewormed once or twice a year, regardless of shedding, however. If targeted deworming alone is used as a sole practice, large strongyles could thrive," Dr. Frye noted. "Deworming foals is different because fecal egg reduction tests are not performed on foals. AAEP guidelines recommend deworming foals 4 times in their first year of life."

According to Dr. Frye, in an ideal world, a fecal float would be done 4 times per year for 1 year, including the spring and fall when large parasite burdens would be expected (depending on climate). Each horse would be categorized as a low, medium or heavy shedder, and then a dewormer would be administered. A fecal egg reduction test would be performed on just the heavy shedders. This test, available at AHDC, which is also the New York State Veterinary Diagnostic Lab, comprises a fecal float, administering a dewormer and recording the product name, and then approximately 14 days later, another fecal float is performed. Results show the reduction in eggs per gram (EPG), or lack thereof in the case of dewormer resistance, after the dewormer was administered using this mathematical formula:

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$$\frac{\text{EPG (pre-treatment)} - \text{EPG (14 day post-treatment)}}{\text{EPG (pre-treatment)}} \times 100 = \text{FECRT}$$

EPG, eggs per gram; FECRT, fecal egg count reduction test

Any targeted deworming would only be done during the heavy shedding time. Fecal egg reduction tests would be performed annually on heavy shedders and, if resistance is seen, then a veterinary parasitologist should be consulted, who may recommend that the egg reappearance window be shortened by giving a dewormer that works more frequently.

Fenbendazole should be given when the foal is 2 to 3 months old to kill *Parascaris*.

Treatments and Efficacy

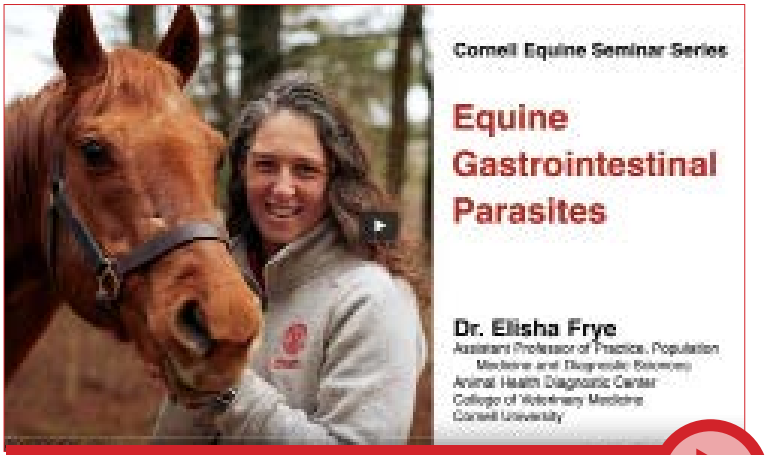
There are 4 classes of anthelmintic agents approved for use in the United States. Fenbendazole which is a benzimidazole-class agent, and pyrantel, which is a tetrahydropyrimidine, are both used for strongyles and *Parascaris*. Ivermectin and moxidectin both fall into the macrocyclic lactone class, and are both used for strongyles and *Parascaris*, although moxidectin is also effective for encysted strongyles. Praziquantel is an isoquinoline and is used with other agents solely for the elimination of tapeworms.

No resistance to fenbendazole has been found in ascarids; however there is resistance to ivermectin and moxidectin. Interestingly, small strongyles are resistant to fenbendazole but not to ivermectin and moxidectin. It is also important to note that fenbendazole kills the worms without paralyzing them, reducing the risk for impaction colic.

Based on the AAEP Internal Parasite Control Guidelines for foals, fenbendazole should be given when the foal is 2 to 3 months of age to kill *Parascaris*. A fecal egg count can be performed at 6 months of age to determine if strongyles or *Parascaris* are present, and this fecal egg count will dictate choice of dewormer. At 9 months of age, foals should be dewormed and praziquantel should be added to eradicate any tapeworms; deworming should be repeated at 12 months of age.

Macdonald et al. have shown that the egg reappearance periods (ERPs), which is the time between deworming and egg shedding, have shortened for all these available agents. The 2 most used dewormers, fenbendazole and pyrantel, had ERPs of approximately 6 weeks when first introduced to market; their current ERPs are 4 to 5 weeks. The ERP for ivermectin has been reduced from 9 to 13 weeks to 6 to 8 weeks, and the ERP for moxidectin has been more significantly reduced—from 16 to 22 weeks to 10 to 12 weeks.

"People want to think that more is better—if we give more fenbendazole, it will kill the parasites. That's not true though necessarily. If there's dewormer resistance with fenbendazole, it doesn't matter how much you give—it's still not going to work," Dr. Frye noted. Fecal flotation to determine the heavy shedders, coupled with fecal egg reduction tests to monitor dewormer resistance, will keep available dewormers working longer. Horse owners and their veterinarians should move toward a targeted approach to reduce dewormer resistance. **MeV**



For more information:

Macdonald SL, Abbas G, Ghafar A, et al. Egg reappearance period of anthelmintics against equine cyathostomins: The state of play revisited. *Int J Parasitol Drugs Drug Resist*. 2023;21:28-39

Kaplan RM, Nielsen MK. An evidence-based approach to equine parasite control: It ain't the 60s anymore. *BEVA*. 2010;22(6):306-316.

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Community, Empowerment and Tenacity—Executive Board Involvement Can Grow it All!

By Eli Olind, LVT

As I was graduating high school, I had no idea where I wanted to go with my future. I loved rodeo, but I knew I wasn't talented enough to make a living at it.

After touring Eastern Wyoming College (EWC), reviewing the different degree programs and speaking with teachers, the only program that sparked my interest was the Veterinary Technology Program. **Patti Sue Peterson** and Dr. **Susan Walker,** who were teachers in the program at the time, were very straight to the point and told it like it was, which made me feel like that was a program I would like. A few weeks before graduating high school I decided to attend EWC, get an Associate of Applied Science Degree in Veterinary Technology and compete on EWC's rodeo team.

Graduating from EWC in December 2010, I was set to take the Veterinary Technician National Exam and join the workforce as a credentialed veterinary technician. In 2011 I joined the Big Sky Veterinary Technician Association (BSVTA) and became a certified veterinary technician in Montana. When I joined the BSVTA, I knew I would attend continuing education (CE) meetings, but I had no way of knowing just how much that association would impact my career as a veterinary technician and lead me to becoming a part of the American Association of Equine Veterinary Technicians and Assistants (AAEVT). I had zero aspirations about being in a leadership position of an association, but all of that changed in 2013 while attending a CE event hosted by the BSVTA.

The BSVTA was on the verge of fully dissolving, which would mean there would be no credentialing of veterinary technicians in Montana. Some of us put our hands in the air and volunteered to create a new executive board and rebuild the association. By sticking my hand in the air and saying yes to a challenge with the association, my career in veterinary technology has taken many pathways and opened networking opportunities I had never dreamed would be available to me. Saying yes to these challenges has helped build my resume in additional ways as well as my technician skill sets, be part of a larger community in the veterinary world, feel a higher level of empowerment in my career, and find a level of tenacity that I never knew was in me for facing difficult conversations regarding veterinary technology's future.

Since 2013, I have played a large role in rebuilding the BSVTA into a strong association that works closely with the Montana Veterinary Medical Association. We have been able to pass legislation for the licensure of veterinary technicians under the Montana State Veterinary Board, build a "scope of practice" for LVTs to be used to

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[1] Equine Mega Study, Brakke Consulting, 2023.

[2] Hunyadi L, Papich MG, Pusterla N. Pharmacokinetics of a low-dose and DA-labeled dose of diclazuril administered orally as a pelleted top dressing in adult horses. *J of Vet Pharmacology and Therapeutics* (accepted) 2014, doi: 10.111/jvp.12176. The correlation between pharmacokinetic data and clinical effectiveness is unknown.

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NADA #141-268 Approved by FDA

DESCRIPTION
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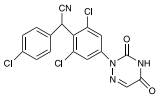

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Dosage: PROTAZIL® (1.56% diclazuril) is administered as a top dress in the horse's daily grain ration at a rate of 1 mg diclazuril per kg (0.45 mg diclazuril/lb) of body weight for 28 days. The quantity of PROTAZIL® necessary to deliver this dose is 64 mg pellets per kg (29 mg pellets/lb) of body weight.

Administration: To achieve this dose, weigh the horse (or use a weigh tape)). Scoop up PROTAZIL® to the level (cup mark) corresponding to the dose for the horse's body weight using the following chart:

Weight Range of Horse (lb)	mLs of Pellets	Weight Range of Horse (lb)	mLs of Pellets
275 - 524	20	1275 - 1524	60
525 - 774	30	1525 - 1774	70
775 - 1024	40	1775 - 2074	80
1025 - 1274	50	-	-

One 2.4-lb bucket of PROTAZIL® will treat one 1274-lb horse for 28 days. One 10-lb bucket of PROTAZIL® will treat five 1100-lb horses for 28 days.

CONTRAINDICATIONS
Use of PROTAZIL® (1.56% diclazuril) Antiprotozoal Pellets is contraindicated in horses with known hypersensitivity to diclazuril.

WARNINGS
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PRECAUTIONS
The safe use of PROTAZIL® (1.56% diclazuril) Antiprotozoal Pellets in horses used for breeding purposes, during pregnancy, or in lactating mares has not been evaluated. The safety of PROTAZIL® (1.56% diclazuril) Antiprotozoal Pellets with concomitant therapies in horses has not been evaluated.

ADVERSE REACTIONS
There were no adverse effects noted in the field study which could be ascribed to diclazuril. To report suspected adverse reactions, to obtain a MSDS, or for technical assistance call
1-800-224-5318.

CLINICAL PHARMACOLOGY
The effectiveness of diclazuril in inhibiting merozoite production of Sarcocystis neurona and S. falcatula in bovine turbinate cell cultures was studied by Lindsay and Dubey (2000).[1] Diclazuril inhibited merozoite production by more than 80% in cultures of S. neurona or S. falcatula treated with 0.1 ng/mL diclazuril and greater than 95% inhibition of merozoite production (IC95) was observed when infected cultures were treated with 1.0 ng/mL diclazuril. The clinical relevance of the in vitro cell culture data has not been determined.

PHARMACOKINETICS IN THE HORSE
The oral bioavailability of diclazuril from the PROTAZIL® (1.56% diclazuril) Antiprotozoal Pellets at a 5 mg/kg dose rate is approximately 5%. Related diclazuril concentrations in the cerebrospinal fluid (CSF) range between 1% and 5% of the concentrations observed in the plasma. Nevertheless, based upon equine pilot study data, CSF concentrations are expected to substantially exceed the in vitro IC95 estimates for merozoite production (Dirikolu et al., 1999)[2]. Due to its long terminal elimination half-life in horses (approximately 43-65 hours), diclazuril accumulation occurs with once-daily dosing. Corresponding steady state blood levels are achieved by approximately Day 10 of administration.

EFFECTIVENESS
Two hundred and fourteen mares, stallions, and geldings of various breeds, ranging in age from 9.6 months to 30 years, were enrolled in a multi-center field study. All horses were confirmed EPM-positive based on the results of clinical examinations and laboratory testing, including CSF Western Blot analyses. Horses were administered PROTAZIL® (1.56% diclazuril) Antiprotozoal Pellets at doses of 1, 5, or 10 mg diclazuril/kg body weight as a top-dress on their daily grain ration for 28 days. The horses were then evaluated for clinical changes via a modified Mayhew neurological scale on Day 48 as follows:

0. Normal, neurological deficits not detected.
1. Neurological deficits may be detectable at normal gaits; signs exacerbated with manipulative procedures (e.g., backing, turning in tight circles, walking with head elevation, truncal swaying, etc.).
2. Neurological deficit obvious at normal gaits or posture; signs exacerbated with manipulative procedures.
3. Neurological deficit very prominent at normal gaits: horses give the impression they may fall (but do not) and buckle or fall with manipulative procedures.
4. Neurological deficit is profound at normal gait: horse frequently stumbles or trips and may fall at normal gaits or when manipulative procedures were utilized.
5. Horse is recumbent, unable to rise.

Each horse's response to treatment was compared to its pre-treatment values. Successful response to treatment was defined as clinical improvement of at least one grade by Day 48 ± conversion of CSF to Western Blot-negative status for S. neurona or achievement of Western Blot-negative CSF status without improvement of 1 ataxia grade.

Forty-two horses were initially evaluated for effectiveness and 214 horses were evaluated for safety. Clinical condition was evaluated by the clinical investigator's subjective scoring and then corroborated by evaluation of the neurological examination videotapes by a masked panel of three equine veterinarians. Although 42 horses were evaluated for clinical effectiveness, corroboration of clinical effectiveness via videotape evaluation was not possible for one horse due to missing neurologic examination videotapes. Therefore, this horse was not included in the success rate calculation.
Based on the numbers of horses that seroconverted to negative Western Blot status, and the numbers of horses classified as successes by the clinical investigators, 28 of 42 horses (67%) at 1 mg/kg were considered successes. With regard to independent expert masked videotape assessments, 10 of 24 horses (42%) at 1 mg/kg were considered successes. There was no clinical difference in effectiveness among the 1, 5, and 10 mg/kg treatment group results.
Adverse events were reported for two of the 214 horses evaluated for safety. In the first case, a horse was enrolled showing severe neurologic signs. Within 24 hours of dosing, the horse was recumbent, biting, and exhibiting signs of dementia. The horse died, and no cause of death was determined. In the second case, the horse began walking stiffly approximately 13 days after the start of dosing. The referring veterinarian reported that the horse had been fed grass clippings and possibly had laminitis.

ANIMAL SAFETY
PROTAZIL® (1.56% diclazuril) Antiprotozoal Pellets were administered to 30 horses (15 males and 15 females, ranging from 5 to 9 months of age) in a target animal safety study. Five groups of 6 horses each (3 males and 3 females) received 0, 5 (5X), 15 (15X), 25 (25X) or 50 (50X) mg diclazuril/kg (2.27mg/lb) body weight/day for 42 consecutive days as a top-dress on the grain ration of the horse. The variables measured during the study included: clinical and physical observations, body weights, food and water consumption, hematology, serum chemistry, urinalysis, fecal analysis, necropsy, organ weights, gross and histopathologic examinations.
The safety of diclazuril top-dress administered to horses at 1 mg/kg once daily cannot be determined based solely on this study because of the lack of an adequate control group (control horses tested positive for the test drug in plasma and CSF). However, possible findings associated with the drug were limited to elevations in BUN, creatinine, and SDH and less than anticipated weight gain. Definitive test article-related effects were decreased grain/top-dress consumption in horses in the 50 mg/kg group. In a second target animal safety study, PROTAZIL® (1.56% diclazuril) Antiprotozoal Pellets were administered to 24 horses (12 males and 12 females, ranging from 2 to 8 years of age). Three groups of 4 horses/sex/group received 0, 1, or 5 mg diclazuril/kg body weight/day for 42 days as a top-dress on the grain ration of the horse. The variables measured during the study included physical examinations, body weights, food and water consumption, hematology, and serum chemistry. There were no test article-related findings seen during the study.

STORAGE INFORMATION
Store between 15°C to 30°C (59°F to 86°F).

HOW SUPPLIED
PROTAZIL® (1.56 % diclazuril) Antiprotozoal Pellets are supplied in 2.4-lb (1.1 kg) and 10-lb (4.5 kg) buckets.

REFERENCES
[1]Lindsay, D. S., and Dubey, J. P. 2000. Determination of the activity of diclazuril against Sarcocystis neurona and Sarcocystis falcatula in cell cultures. J. Parasitology, 86(1):164–166.

[2]Dirikolu, L., Lehner, F., Nattrass, C., Bentz, B. G., Woods, W. E., Carter, W. E., Karpiesiuk, W. G., Jacobs, J., Boyles, J., Harkins, J. D., Granstrom, D. E. and Tobin, T. 1999. Diclazuril in the horse: Its identification and detection and preliminary pharmacokinetics. J. Vet. Pharmacol. Therap. 22:374–379.

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a higher level in Montana, and add an additional seat to Montana's veterinary board to be held by an LVT.

In January 2020, the BSVTA invited **Deb Reeder**, RVT, VTS-EVN, the executive director for the AAEVT from 2002-2022, to speak at 1 of our CE events about building your career as a veterinary technician. Deb also lined up to speak at the MVMA CE meeting that was happening at the same time on technician utilization. It was at that BSVTA CE event that I was introduced to the AAEVT and became a member. A whole new world of networking with another group of amazing technicians, assistants and support staff took off.

Since 2020 I have been attending AAEVT events and getting to meet people who have become great friends. That is one of my most favorite things about the AAEVT. I became instant friends with just about every person I met in this oganization because we share the same passion for doing the best for our equine patients.

In the fall of 2022, I was approached by the regional director to see if I would be interested in becoming a regional contact for the AAEVT. After spending the last 10 years in leadership of the BSVTA and reaching some amazing goals, I was ready for a new challenge so I said yes. As a regional contact, I oversaw communications with the members in Wisconsin, Minnesota, Iowa, Indiana and Illinois. This was fantastic networking and brought some firsts to my career, like being on an episode of "Kendra the Vet Tech" podcast. It is so wonderful to get to meet the members in your region in person when you attend an AAEVT event. In the fall of 2023 I was contacted by **Wiss Costanza**, the executive director of the AAEVT, as I had been voted on by the executive board to become the 2024 president-elect.

Even though I had been in leadership of an association for several years I was still quite nervous about saying yes to accepting a leadership position with a national organization. I had fallen into a comfort zone of dealing with veterinary technician advancement at the state level. Falling into a comfort zone is what can make your career stagnant though so I needed to tap into the community, the empowerment and the tenacity that I had developed over my years of leading the BSVTA and bring that to the AAEVT.

In my president-elect year for the AAEVT I will be assisting the AAEVT's executive board accomplish goals to advance the equine veterinary team, work with equine veterinary industry partners, set up case studies and wet labs for the AAEVT's national conference to be held in conjunction with the AAEP's conference in Orlando, Fla., in December, and assist wherever the executive board needs me.

Saying yes to becoming an executive board member of the AAEVT has introduced me to a larger community within the veterinary world, allowed me to grow my network, and feel more empowered in my leadership abilities to help improve an industry that is so close to our hearts. Joining your local and national technician organizations has many advantages personally and professionally, and I urge everyone to get involved in the betterment of their profession. **MeV**

ABOUT THE AUTHOR

Eli Olind, LVT, who was born and raised in Montana, is the President-Elect of the AAEVT. He grew up in the ranching and mining community of Whitehall, and attended Eastern Wyoming College, where he received an AAS in Veterinary Technology and competed on the rodeo team. He has competed in rodeo since the age of 5, and has a background in showing horses and pigs, livestock judging, and has worked for professional rodeo stock contractors. He has 3 horses, 2 dogs and 3 cats, and still competes in rodeo as a tie-down roper.

Equine Veterinarians Face the Perfect Storm for Decision Fatigue

By Paul Basilio

If you do anything 35,000 times a day, chances are good you eventually will get tired of it after a while. According to multiple sources, however, that's how many conscious and unconscious decisions that the average person makes every day—and it's not exactly something we can stop doing.

Decision fatigue, a term coined by social psychologist **Roy Baumeister** to describe the feeling of emotional and physical fatigue that results from making an overwhelming number of decisions, often occurs alongside generalized burnout.

In a presentation at the 69th Annual AAEP Convention in San Diego, **Cara Wright**, DVM, MS, explained that common causes of decision fatigue can include general fatigue, sleep deprivation and low blood sugar.

"Veterinary medicine is the perfect storm for all of those things," said Dr. Wright, a veterinarian at Merck Animal Health. "We have unpredictable days, a substantial lack of downtime, and we're making demanding, stressful, and life-altering decisions."

If you find yourself staring blankly at a vending machine, completely frozen and unable to decide what type of chips you'd like, there are ways to decrease your fatigue and gain control of your brain once more.

Block Your Time

For the high-volume decision makers, Dr. Wright recommended setting aside time for making a block of decisions.

"Set aside time for communications with your staff," she said. "Instead of having them ping you all day, give them 20 to 30 minutes to ask all of their questions. This gives you the ability to focus on what you're doing without constant interruptions for the rest of the day."

She added that staff members with a good amount of autonomy will likely start solving some of those problems on their own, in the event that you are not there to immediately provide answers.

Administrative time is the same way. Set a block of time for paperwork, etc., and hold yourself to it.

"Statistically, you are more likely to get it done on time with fewer mistakes if you set aside a time instead of squeezing it in whenever you can," she said.

Delegate, Delegate, Delegate

Empowering your staff to make decisions based on their strengths is a good way to decrease decision fatigue and make your staff feel valued at the same time.

"This involves setting up crystal-clear systems and protocols," Dr. Wright said. "Once those are set, it should make your life a lot easier."

She gave the example of a veterinary clinic in Arizona that empowers staff to report issues over email. If there is an issue, problem or idea, the staff member will write up an email that states the problem, lists the steps that have been taken, and then provides their proposed solution.

"Then they send that to the practice owner," she explained. "Instead of her having to go through all of the steps of solving the issue, the staff has already done the legwork."

A social psychologist coined the term "decision fatigue" to describe the feeling of emotional and physical fatigue that results from making an overwhelming number of decisions.

Trust the System

Creating and deploying systems for specific recurring issues can save time and mental exertion.

"Nobody should be asking you how many doses of SMZ [sulfamethoxazole] that need to be ordered, or when they need to be ordered," Dr. Wright said. "Figure out how many you use in a month, put it in the computer, and be done with it. That is not a question you need to answer every day."

Along those lines, using templates for prescriptions,

GET TO THE BANK EARLY

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Decision fatigue is widespread across many industries.

A study that looked at bank loan officers found that loan approval rates dropped in the afternoon when compared with the morning hours. The study concluded that saying "No" to a loan is typically the safer option, since no one can default on a denied loan.

"The bank found that they lost almost $500,000 in 1 month due to lost fees and interest because of the easy choice of saying 'No' to a loan," Dr. Wright said. "That's a huge financial hit."

In 2019, a study of German car buyers found that as consumers made their way down the list of potential options and add-ons, they tended to pick the default option more often without giving attentions to the extra offerings.

And in human medicine, a Scottish study found that nurses made progressively more conservative, more expensive and less efficient decisions as the time and number of decisions they made increased from their last rest break.

A 2019 study involving ER physicians found that decision fatigue led to lower inpatient admission rates, fewer task orders and shorter patient length-of-stays.

"That sounds kind of good, until you keep reading the paper and realize that patient revisits and mortality also increased," Dr. Wright said.

record-keeping, and discharges can increase decision-making efficiency.

"You should only have to write up discharge instructions for a hoof abscess 1 time in your life," she said. "If your system does not have the ability to create templates, put it in a Word document and you can just copy and paste."

Think Harder, Earlier

Studies have shown that our brains tend to work less efficiently as the day goes on. Make the harder, more complex decisions earlier in the day, when possible. Callbacks, bloodwork discussions, and anything that gives you stress should be done as early in the day as possible.

"I switched to doing my pre-purchase write-ups first thing in the morning, and it was a game-changer for me," Dr. Wright said. "Before that, I used to sit and stare at X-rays for hours, asking myself, 'Is that mud or an osteophyte?' and 'Whose horse is this, anyway?' Do what works for you and change things around.

Because our brains are less efficient as the day goes on, make the harder, more complex decisions earlier in the day.

Don't Forget to Eat

"If everything in your day is the worst, if every problem you encounter is insurmountable, and if every single person you talk to is getting on your nerves, think about whether you have had something to eat," she said. "All of the data points to the fact that our executive functions and emotions are difficult to control if we're hungry. Don't be 'hangry.' Eat your snacks."

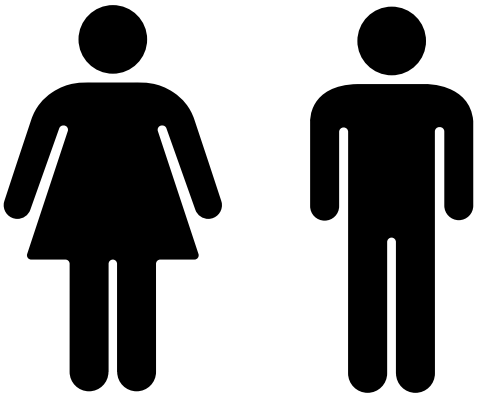
She added that most decisions in life are not permanent. They can be changed. The trick is to decide something and move on, and you can always re-adjust.

"That is a very easy thing for me to say out loud, but it is a very hard thing to do in life," she said. **MeV**

VET Stats

Veterinarians and Zoonoses

The National Association of State Public Health Veterinarians did a study about the knowledge level of licensed veterinarians in the United States. They received 466 responses from 36 states.



Female: 67%

Male: 32%

1% preferred not to answer

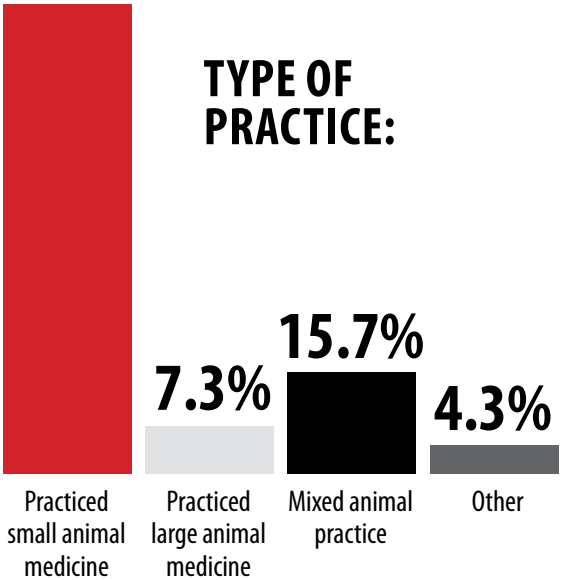
REGARDING WHICH ZOONOTIC DISEASES WERE REPORTABLE:

They were very knowledgeable about reporting requirements.

Rural veterinarians:	28.1%
Suburban veterinarians:	52.8%
Urban veterinarians:	18.9%

82% of respondents recognized the concept of One Health.

TYPE OF PRACTICE:



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[1]Only equine veterinary practices are eligible for this offer. Offer subject to change.

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