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DESCRIPTION: UNIPRIM Powder contains 67 mg trimethoprim and 333 mg sulfadiazine per gram.

UNIPRIM Powder is a combination of trimethoprim and sulfadiazine in the ratio of 1 part to 5 parts by weight, which provides effective antibacterial activity against a wide range of bacterial infections in animals.

Trimethoprim is 2,4-diamino-5-(3,4,5-trimethoxybenzyl) pyrimidine.

ACTIONS: Microbiology: Trimethoprim blocks bacterial production of tetrahydrofolic acid from dihydrofolic acid by binding to and reversibly inhibiting the enzyme dihydrofolate reductase.

Sulfadiazine, in common with other sulfonamides, inhibits bacterial synthesis of dihydrofolic acid by competing with para-aminobenzoic acid.

Trimethoprim/sulfadiazine thus imposes a sequential double blockade on bacterial metabolism. This deprives bacteria of nucleic acids and proteins essential for survival and multiplication, and produces a high level of antibacterial activity which is usually bactericidal.

Although both sulfadiazine and trimethoprim are antifolate, neither affects the folate metabolism of animals. The reasons are: animals do not synthesize folic acid and cannot, therefore, be directly affected by sulfadiazine; and although animals must reduce their dietary folic acid to tetrahydrofolic acid, trimethoprim does not affect this reduction because its affinity for dihydrofolate reductase of mammals is significantly less than for the corresponding bacterial enzyme.

Trimethoprim/sulfadiazine is active against a wide spectrum of bacterial pathogens, both gram-negative and gram-positive. The following in vitro data are available, but their clinical significance is unknown. In general, species of the following genera are sensitive to trimethoprim/sulfadiazine:

Very Sensitive

Escherichia
Streptococcus
Proteus
Salmonella
Pasteurella
Shigella
Haemophilus

Sensitive

Staphylococcus
Neisseria
Klebsiella
Fusiformis
Corynebacterium
Clostridium
Bordetella

Moderately Sensitive

Moraxella
Nocardia
Bruceella

Not Sensitive

Mycobacterium
Leptospira
Pseudomonas
Erysipelothrix

INDICATIONS AND USAGE: Trimethoprim/sulfadiazine is indicated in horses where potent systemic antibacterial action against sensitive organisms is required. Trimethoprim/sulfadiazine is indicated where control of bacterial infections is required during treatment of:

Acute Strangles
Respiratory Tract Infections

Acute Urogenital Infections
Wound Infections and Abscesses

Trimethoprim/sulfadiazine is well tolerated by foals.

CONTRAINDICATIONS: Trimethoprim/sulfadiazine should not be used in horses showing marked liver parenchymal damage, blood dyscrasias, or in those with history of sulfonamide sensitivity.

ADVERSE REACTIONS: During clinical trials, one case of anorexia and one case of loose feces following treatment with the drug were reported.

Individual animal hypersensitivity may result in local or generalized reactions, sometimes fatal. Anaphylactoid reactions, although rare, may also occur. **Antidote:** Epinephrine.

Post Approval Experience: Horses have developed diarrhea during trimethoprim/sulfadiazine treatment, which could be fatal. If fecal consistency changes during trimethoprim/sulfadiazine therapy, discontinue treatment immediately and contact your veterinarian.

PRECAUTION: Water should be readily available to horses receiving sulfonamide therapy.

ANIMAL SAFETY: Toxicity is low. The acute toxicity (LD50) of trimethoprim/sulfadiazine is more than 5 g/kg orally in rats and mice. No significant changes were recorded in rats given doses of 600 mg/kg per day for 90 days.

Horses treated intravenously with trimethoprim/sulfadiazine 48% injection have tolerated up to five times the recommended daily dose for 7 days or on the recommended daily dose for 21 consecutive days without clinical effects or histopathological changes.

Lengthening of clotting time was seen in some of the horses on high or prolonged dosing in one of two trials. The effect, which may have been related to a resolving infection, was not seen in a second similar trial.

Slight to moderate reductions in hematopoietic activity following high, prolonged dosage in several species have been recorded. This is usually reversible by folic acid (leucovorin) administration or by stopping the drug. During long-term treatment of horses, periodic platelet counts and white and red blood cell counts are advisable.

TERATOLOGY: The effect of trimethoprim/sulfadiazine on pregnancy has not been determined. Studies to date show there is no detrimental effect on stallion spermatogenesis with or following the recommended dose of trimethoprim/sulfadiazine.

DOSAGE AND ADMINISTRATION: The recommended dose is 3.75 g UNIPRIM Powder per 110 lbs (50 kg) body weight per day. Administer UNIPRIM Powder orally once a day in a small amount of palatable feed.

Dose Instructions: One 37.5 g packet is sufficient to treat 1100 lbs (500 kg) of body weight. For the 1125 g packets and 12 kg boxes, a level, loose-filled, 67 cc scoop contains 37.5 g, sufficient to treat 1100 lbs (500 kg) of body weight. For the 200 g, 400 g, and 1200g jars, and 2000 g pail, two level, loose-filled, 32 cc scoops contain 37.5 g, sufficient to treat 1100 lbs (500 kg) of body weight. Since product may settle, gentle agitation during scooping is recommended.

The usual course of treatment is a single, daily dose for 5 to 7 days.

Continue acute infection therapy for 2 or 3 days after clinical signs have subsided.

STORAGE: Store at or below 25°C (77°F)

HOW SUPPLIED: UNIPRIM Powder is available in **37.5 g** packets, **1125 g** packets, **200 g** jars, **400 g** jars, **1200 g** jars, **2000 g** pails and **12 kg** boxes. Apple Flavored UNIPRIM Powder is available in **37.5 g** packets, **1125 g** packets, **200 g** jars, **400 g** jars, **1200 g** jars and **2000 g** pails.

CAUTION: Federal (USA) law restricts this drug to use by or on the order of a licensed veterinarian.

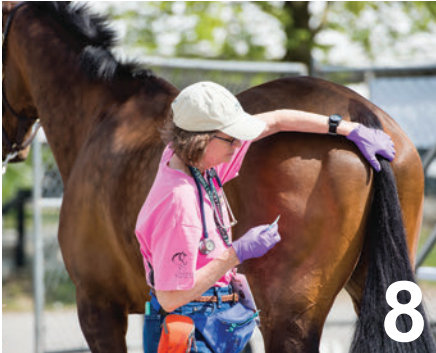
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NOMINATING A VETERINARY TECHNICIAN IS A WIN-WIN.

Two veterinary technicians/assistants will win an all-expense-paid trip to the 2018 AAEPV Annual Conference during the AAEP convention in San Francisco, California, be featured in the winter issue of *EquiManagement*, and their nominators will win \$1,000 for their clinic.

Simply fill out the form online by **July 13, 2018** to nominate a veterinary technician/assistant who exemplifies:

- Passion for equine health
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This award is brought to you by Boehringer Ingelheim Vetmedica, Inc. (BIVI) in partnership with *EquiManagement* magazine and the American Association of Equine Veterinary Technicians and Assistants (AAEVT).

**To nominate a deserving candidate, please visit
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NO PURCHASE NECESSARY. A PURCHASE DOES NOT IMPROVE YOUR CHANCES OF WINNING. Contest open to those ages 18 and older as of 4/16/18 and residents of 50 United States and District of Columbia. One entry per nominee. Veterinarians may nominate more than one person. All entries must be received by 7/13/18. Odds of winning depend on the total number of entries received. There are 2 grand prize winners, approximate total ARV of all prizes: \$10,200. All taxes, fees and surcharges on prizes are the sole responsibility of winners. All federal, state and local laws and regulations apply. Prize Provider: Boehringer Ingelheim Vetmedica, Inc. Sponsor: Active Interest Media, LLC. Void where prohibited by law. All entrants are bound by the Full Rules. Go to <http://equimanagement.com/championsofthecause> to enter and see Official Rules.

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What's Most Important?

What is the most important thing in your life? When asked that, most people will list family, friends or faith. Some people will say it is their profession; that's what drives them and what they are most passionate about. Others—especially if they have had a health scare—will say it is their physical and/or mental well-being. Still others—most notably those who are nearing retirement age—will include their financial well-being.



But no matter what you have on your list, you need to be around to enjoy them. That means you have to take care of yourself mentally and physically.

Many equine veterinarians are “road warriors.” They spend countless hours and miles behind a windshield. We’ve all heard that “sitting is the new smoking,” but when your job entails traveling from client to client, then you spend a lot of your day sitting.

Because you are driving to various farms and facilities, you probably are not eating well, either. Fast food and unhealthy snacks often are the mainstay of an ambulatory vet’s daily diet. Then, when you unload at your destination, you have to be in top mental (and often physical) form to handle the patients that outweigh you tenfold or more.

Continuing on the topic of health, our friends at Merck Animal Health are bringing a series of wellness articles to you, starting on page 6 of this issue. “Road Warrior Wellness” offers quick

tips for ambulatory veterinarians to help them achieve a healthier lifestyle.

This issue of *EquiManagement* brings you the findings of a unique 2018 survey about getting hurt on the job (see p. 22). This survey follows up on the information gleaned from the 2014 BEVA study and the 2016 AVMA AAEP study on veterinary wellness.

The BEVA study results indicated that an equine vet could expect to sustain between seven and eight work-related injuries that impede him or her from

practicing for some period of time during a 30-year working life.

The recent survey conducted by Amy L. Grice, VMD, MBA, defined “injury” as “anything of sufficient significance that you applied a bandage, ice or other treatment or took a pharmaceutical compound (e.g., ibuprofen) at least once.” Not surprisingly, with this definition, 96.6% of respondents reported being injured.

Leading Up to WEG

KindredBio is stepping up to bring you news and information leading up to and including behind-the-scenes health coverage at the FEI World Equestrian Games (WEG) Tryon 2018. If you have clients with horses competing under FEI rules, then the information on page 8 is a must-read for you. Mike Tomlinson, DVM, MBA, talks about some of the FEI rule changes that are important to veterinarians and therapy providers.

As always, I welcome your comments to KBrown@AIMmedia.com. **EM**



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Road Warrior Wellness

Here are tips for living healthier if you're an ambulatory veterinarian.

By Amy L. Grice, VMD, MBA

Ambulatory equine practitioners spend many hours of the day on the road, and many drive upwards of 35,000 miles each year. All this windshield time can pose a health risk due to the hours spent sitting, the difficulty in finding healthy food on the road, and the distraction while talking on the phone behind the wheel.

Despite these challenges, veterinarians can choose to have a healthier mobile lifestyle. Here are some tips.

Body and Brain Stiffness

As the years in practice accumulate, so do the various injuries and the consequent aches and pains. Because sitting in one position for 30-45 minutes can cause joints to stiffen up, when getting out of the truck, you might find yourself Grade IV/V lame! Consider doing some gentle stretches when you arrive at your destination.

If there are horses turned out in pastures that need simple procedures or examinations, consider walking out to where they are grazing to get a few limbering steps in.

Obviously, if they are horses that are difficult for their owners to catch or patients that resist veterinary attention, this is inadvisable. But the mental break of slowing down the rush and enjoying your surroundings outside on a beautiful spring day might bring you more relief than just an easing of your hip and knee pain. Having an opportunity to enjoy the small moments of your day can be uplifting.

Feeding the Body

Lunch for road warriors is often limited



to gas station hot dogs, drive-through burgers and fries, or slices of pizza because most ambulatory doctors don't have time for a sit-down lunch unless it's behind the wheel. Consider packing a cooler or thermos with healthier food from home.

Grazing all day on yogurt, fruit, crackers with peanut butter or cheese, and leftover vegetables and steak from last night's dinner is better than fast food for maintaining a stable blood sugar and energy level. Better eating can also help you keep a healthy weight.

In the winter, a thermos full of chili or soup and a hunk of whole grain bread is a welcome midday meal. Just tuck in a blue surgery towel for a bib and spread one in your lap for the inevitable spills.

Always keep healthy snacks like nuts, dried fruit and popcorn in your truck for those unexpected late days when you're hungry enough to eat a stethoscope. If you pass a roadside stand selling tomatoes, strawberries or other munchable produce, treat yourself! It helps to keep a salt and pepper shaker in

your center console and a roll of paper towels in the cab.

Feeding the Joy

When you have many miles between calls, taking a break from your work is pleasant. Instead of making callbacks about lab work or rechecks, consider calling a friend for a visit or listening to a podcast about a topic that interests you. Catch up on global topics on National Public Radio or listen to your favorite music or a new audio book.

These mini-vacations can decrease your stress and increase your daily quotient of joy.

Safety First

Intense phone calls are a regular part of an equine veterinarian's life. When they occur, you should strongly consider pulling over to the side of the road, especially if you are in traffic. Distracted driving is very dangerous, and your life could change forever in a split second.

Never text while driving. Reading texts and e-mails while operating a large vehicle at 60 mph is foolhardy. Your loved ones are depending on you to arrive alive at the end of your day. Make it a new habit to check your phone every time you arrive at a destination, but not with every "ping." Set up a different ringtone for your emergency service so you know to answer. Safety on the road is essential for wellness.

Although ambulatory veterinarians have many challenges in living a healthy lifestyle, small changes can make a big difference in overall wellness. **EM**



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EquiManagement and Kindred Bio will bring you behind-the-scenes health and veterinary news from WEG 2018.

FEI, WEG and New Rules That Affect Veterinarians

This year has brought—or will bring—many changes to the FEI rules governing international equine sports that affect veterinarians and their clients.

By Kimberly S. Brown

Top competitors in every discipline are focused on advancing to the FEI World Equestrian Games (WEG) Tryon 2018 at the Tryon International Equestrian Center in Mill Spring, North Carolina. The event will take place September 11-23. Veterinarians who care for horses at this level need to be aware of changes in regulations that occurred January 1, 2018, or that

will take effect July 1, 2018.

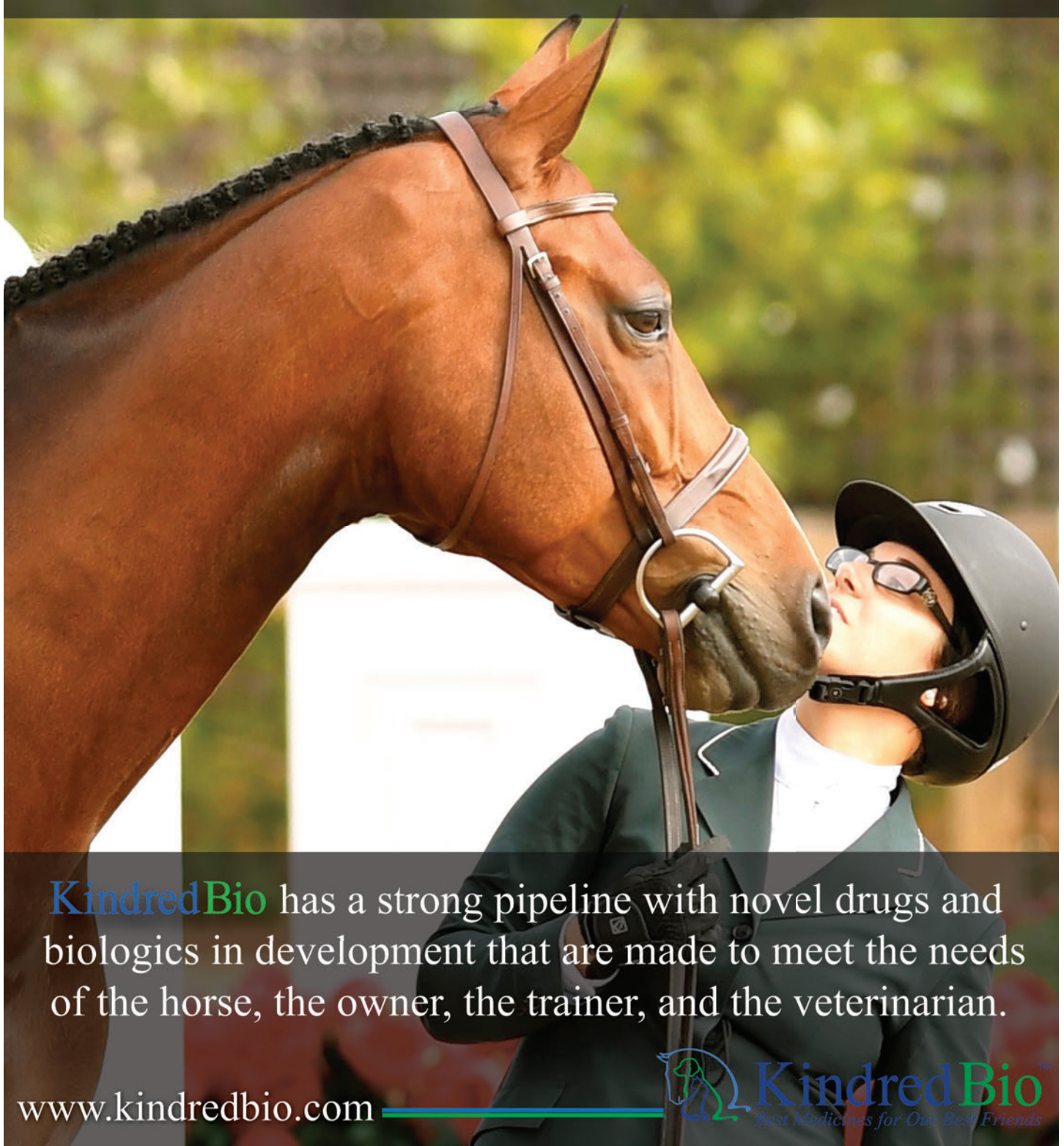
Mike Tomlinson, DVM, MBA, is president of the Veterinary Commission I for the 2018 World Equestrian Games. He also is a Course Director for the Fédération Équestre Internationale (FEI). He teaches the veterinary courses. Every veterinarian who serves as an official for the FEI must take this course every four years.

This is also true for endurance veterinarians as of early 2018. “Endurance vets used to have to take the test every two years,” he explained. “As of the last couple of months, they only have to take it every four years. The FEI hasn’t been able to get that word out very well yet.”

Veterinary Official Cards

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ians need to sit up and take notice. Current veterinary official cards are only good for four years. “Originally, five years ago, the cards were good for five years,” said Tomlinson. “Then they changed the rules, so now the vet cards for officials are only good for four years.” The FEI runs almost everything on a four-year cycle, based on the Olympic calendar.

Tomlinson encouraged all FEI veterinary officials to go to the FEI website and *look up the expiration dates of their cards*. “It is good for four 12-month periods ... 48 calendar months,” explained Tomlinson of the new rule. “If you got it on February 15, 2016, then it will expire February 14, 2020. But I encourage veterinarians to not just look at your physical card, since a lot were misprinted. Go on the FEI website and look up the expiration date.”

Changes in Treatment Paperwork and Rules

“Veterinarians need to know that the rules regarding medication forms that we have had for the last 10 years have changed,” said Tomlinson of the treatment regulations and paperwork. “Now the old Form 1 is Form A, and the old Form 3 is Form B. Forms 2 and 4 were eliminated ... done away with. What you used to have to ask permission for on Form 4, there is no such thing anymore; so you don’t have to ask permission.”

Tomlinson explained the rule change with this example: “If I want to give Adequan to my client horse in the FEI barn and I am a private treating vet and have my FEI card, before the rule change I would not have been allowed to take a needle and syringe into the FEI stabling barn until I filled out Form 4 and turned it into an FEI vet. Now you don’t have to ask permission. A Permitted Treating Veterinarian (PTV) can go in the FEI stabling and can have needles and syringes and drugs. A year

ago, they were not allowed to without written permission.

“If a non-vet or a vet who does not have a treating vet card is found with needles, syringes or medication in FEI stabling, that horse may be eliminated from that competition,” he said.

“The new rules really relaxed things in the right way,” Tomlinson said. He added that the FEI feels like if it gives veterinarians this ability, then it is also saying, “Don’t mess with us. Do it right.”

Tomlinson noted that this is a dramatic paperwork reduction and that it entirely changes how things are done at FEI events. “Previously you could not take medications or anything into a security area. Now vets are allowed to keep it with them,” he said. “The FEI is

acknowledging that vets are professionals.”

According to Tomlinson, the new regulations show the FEI’s support—that the organization wants horses to be treated appropriately in the stables. “By appropriately, we mean things that will help the horse perform to the best of its ability, not to perform over and above that,” he added. “We want to provide a level playing field while supporting the equestrian athletes.”

Another example Tomlinson gave dealt with the administration of Regu-Mate, which previously required a request for treatment using Form 2. But now there is no Form 2. “Now you don’t have to declare Regu-Mate,” said Tomlinson. “With Form 2, we

Find the Form Changes

To find the new forms with the changes on the FEI website, go to <http://inside.fei.org/fei/cleansport/ad-h/medforms>.

The information on the page reads as follows:

The following Veterinary Forms are used during events for the management and the authorization of emergency treatments and the use of other medications that are not considered to be Prohibited Substances.

All treatment *must* be given within “Designated Treatment Boxes” at events.

Changes to the use of Veterinary Forms from 1 January 2018

From 1 January 2018, Veterinary Forms 1-4 will be invalid and replaced by Veterinary Forms A and B as follows. It will be no longer necessary to declare the use of substances that were previously recorded on Veterinary Forms 2 and 4.

Veterinary Form A (Previously Veterinary Form 1)

Authorization for emergency treatment (limited to Controlled Medication only). This form may be completed by an FEI Permitted Treating Veterinarian at an event or by the horse’s usual veterinarian if the horse received emergency treatment prior to an event. It must be presented to the event’s FEI Veterinary Delegate immediately on arrival at the event.

Veterinary Form B (Previously Veterinary Form 3)

Authorization for the use of medication and supportive therapies that are not included on the Equine Prohibited Substances List (for example: rehydration fluids and antibiotics) but which need to be monitored. This form must be completed by one of the event’s FEI Permitted Treating Veterinarians.

Information concerning the use of Veterinary Forms A and B can be found in the 2018 version of the Veterinary Regulations (<http://inside.fei.org/fei/regulations/veterinary>) under Chapter V on Veterinary Medication.

— Kimberly S. Brown

were confirming it was a mare; you no longer need to do so with paperwork at every event.”

The reduction in forms will mean massive time savings for treating veterinarians and FEI veterinary officials. “It’s *huge* not to have Forms 2 or 4,” explained Tomlinson. “80% of previous forms submitted were Form 4, and in some shows, the percentage was higher than that! This is a dramatic paperwork reduction and a change in how things are done.”

He added, “One of big things that enabled the FEI to do this relaxation of the security area is that the competitor’s veterinarian now is considered an additional person responsible. That means if a horse comes up positive [for a restricted drug], then it will be the rider, owner, trainer *and vet* who are potentially on the hook.

“That is exactly the way it should be,” summarized Tomlinson.

FEI Now Requires Cards for Therapists

If you are a treating veterinarian who also does therapy, you are covered by the FEI under your PVT licensing for conducting therapy at FEI-sanctioned events with approved devices and equipment, noted Tomlinson.

However, if you are not a licensed veterinarian and you do therapy on horses, “You now have to be registered with the FEI. There is an application on the FEI website (http://inside.fei.org/fei/your-role/veterinarians/pet_sign-up) and further information online (<http://inside.fei.org/fei/your-role/veterinarians/permitted-equine-therapists>),” he said.

Tomlinson said that Permitted Equine Therapists need to have all the paperwork filled out and submitted ASAP in order to be carded and to perform therapy work at FEI events.

Veterinarians who work with therapists—or those with therapists in their practices who work on FEI-level horses—need to make sure that those people

get registered with the FEI.

An FEI-recognized therapist is going to receive credentials that will allow him or her to use any legal modality in FEI stabling because that person is a carded professional, explained Tomlinson. He said that the FEI is trying to elevate the status of the therapist to that of a recognized profession.

However, in the United States, there is no such thing as a “licensed equine therapist.” Tomlinson explained that the FEI is facing the challenge of how to consistently decide who is a professional therapist and who isn’t. This is in contrast to veterinarians who are licensed in the areas where they practice.

Tomlinson said that the change to requiring an FEI card for therapists really “dovetails” into trying to reduce restrictions on carded professionals.

“The intent is to say, ‘You are a professional; you know what you are doing; go do it!’ ” explained Tomlinson. On the other hand, if you don’t meet the criteria, then you are not a recognized professional and are not allowed in FEI stabling.

Anyone applying for an FEI Permitted Equine Therapist card should read the Codex for those persons (<http://inside.fei.org/system/files/PET%20Codex.pdf>).

Permitted Equine Therapists’ Codex

1. Permitted Equine Therapists must ensure that at all times the horse’s welfare and health are prioritized according to the FEI Code of Conduct for the Welfare of the Horse, the FEI Veterinary Regulations, the FEI General Regulations, the FEI Equine Anti-Doping and Controlled Medication Regulations and any other applicable rules or regulations.

2. Permitted Equine Therapists must continually be aware of both human and equine safety.

3. Permitted Equine Therapists must act in compliance with all applicable local and national laws.

4. Permitted Equine Therapists must not work in any official capacity during the Event regardless of any FEI Official

function they may hold.

5. Permitted Equine Therapists must not compete in the Event or any other competition taking place on the Event site while working as a Permitted Equine Therapist.

Read the Rules!

Part of getting an FEI veterinary or therapist card is that you have read and understood the FEI rules, noted Tomlinson. Both carding processes require that the individual take a test to show that he or she knows what is legal and what is not legal.

It is easy to obtain PDF downloads of all the FEI rules, including general rules, rules for each discipline and rules for veterinarians.

Visit <http://inside.fei.org> (no “www”) and click on the “Rules” tab on the top. A drop-down menu that includes all disciplines, as well as veterinary and general rules, will appear. If you are a veterinarian, you should read at a minimum the general, veterinary and discipline-specific rules.

“The vet rules have been rewritten for this year [2018], so it is easier to find things,” said Tomlinson. “They hadn’t been completely rewritten for 10 years. It is much easier to understand the rules now.”

The FEI rules as of January 1 are much more specific about which modalities are legal, he explained. The FEI is trying to be more specific when it comes to modalities, but “it is difficult, because if the FEI outlaws something by name, then the modality companies just change the name,” Tomlinson added. “So they are trying to do it by treatment modality method rather than by brand name.

“The FEI is trying to allow as many modalities as we can, as well as to list those which are outlawed,” he stated. “We want to make it so that licensed vets and therapists can easily understand how they may help the horses.” **EM**

Predictors of Survival for Equine Colitis

A Russian-German collaborative study sought to determine predictors of survival for horses with acute diarrhea upon admittance to an equine hospital. The concern is that the “high mortality and expense of treatment associated with colitis” make it practical to identify horse patients with a poor prognosis for survival [Kovač, M.; Huskamp, B.; Scheidemann, W.; Toth, J.; and Tambur, Z. Survival and evaluation of clinical and laboratory variables as prognostic indicators in horses hospitalized with acute diarrhea: 342 cases (1995-2015). *Acta Veterinaria-Beograd* 2017, 67 (3), 356-365].

Parameters evaluated at admittance to an equine hospital included:

- rectal temperature
- heart and respiratory rates
- hematocrit
- total plasma protein
- leucocyte count
- blood gas analysis—blood pH, base excess and bicarbonate concentration.

This information was correlated with each horse’s signalment and the duration of time between the start of diarrhea symptoms and beginning of medical treatment.

The study reported a mortality rate of nearly 42%: “Of 342 horses with colitis, 199 survived and 143 did not survive.”

Etiology of the colitis was ascribed to Salmonella, Clostridium and/or Colitis X, and post-antimicrobial therapy. However, in 23% of cases, no specific etiology was identified.

Poor prognosis for survival correlated with colic signs, gastric reflux, watery-bloody diarrhea and inappetence. If treatment was begun 24 hours after initial colitis symptoms, then the survival rate decreased.

The authors commented that the time interval from initial symptoms to administration of intensive care is important to thwart the development of irreversible endotoxic shock; even just a few hours of delay can make a differ-



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ence in survival rate.

The most striking parameter that differed between survived and deceased horses was the heart rate. Those that did not survive entered the equine hospitals with heart rates averaging 80 bpm, while those that survived had heart rates averaging 63 bpm.

One relevant sign of endotoxic shock is serious dehydration accompanied by an elevated hematocrit. Of all laboratory parameters examined, the most prognostic indicator was the hematocrit—horses that died averaged 58%, whereas horses that survived averaged 45%.

The study further noted that if plasma total protein values continuously dropped and the hematocrit persisted at a high level despite intensive care, the horse has a poor prognosis.

Metabolic acidosis also occurred with endotoxic shock, and the researchers corroborated a direct correlation between blood acidosis and survival. Further, a lack of improvement and/or worsening of symptoms over the first two to three days of treatment represent a poor prognosis.

Treatment of EHM with Valacyclovir

Evaluation of the prophylactic use of valacyclovir in horses to ameliorate the effects of neurologic equine herpesvirus type 1 (equine herpesvirus myeloencephalopathy or EHM) was undertaken in a study featuring a number of equine clinicians around the country [Maxwell, L.K.; Bentz, B.; Gilliam, L.L.; Ritchey, J.W.; Pusterla, N.; Eberle, R.; Holbrook, T.C.; McFarlane, D.; Reza-bek, G.B.; Whitfield, C.; Goad, C.L.; and Allen, G.P. Efficacy of the early administration of valacyclovir hydrochloride for the treatment of neuropathogenic equine herpesvirus type 1 infection in horses. *American Journal of Veterinary*

Research, Oct 2017, Vol 78, no. 10].

Three different groups (six each) of horses were assigned to the study:

- a control group receiving a placebo;
- a treatment group given valacyclovir at the detection of fever; and
- a prophylactic treatment group given valacyclovir to begin one day prior to inoculation with the neuropathogenic strain of herpesvirus.

The horses, all mares more than 20 years of age, underwent two separate experiments separated by a six-week interval. The first group of nine (three in each group) received oral valacyclovir or placebo for one week after viral inoculation; a second round of the other nine horses then received treatment or placebo for two weeks. Those receiving valacyclovir were given an oral loading dose of 27 mg/kg every eight hours for two days, followed by a maintenance dose of 18 mg/kg orally every 12 hours.

The study reported that horses receiving acyclovir ended up with less viral shedding and viremia as compared to the control group. Similarly, horses receiving prophylactic valacyclovir for a two-week period had lower rectal temperatures, improved clinical scores (respiratory rate, heart rate and nasal discharge), and more decreased viremia than control horses.

The authors further stated that while the risk of ataxia wasn't affected by treatment, the severity of ataxia was decreased in valacyclovir-treated horses compared to control horses.

Conclusions of the study are encouraging for managing herpesvirus, particularly in a barn where horses have been exposed, but are not yet sick. The study results stated: "Valacyclovir treatment significantly decreased viral replication and signs of disease in EHV-1-infected horses; effects were greatest when treatment was initiated before viral inoculation, but

treatment was also effective when initiated as late as two days after inoculation.”

Acyclovir for Equine Sarcoids?

Reports that acyclovir could have some favorable effect on equine sarcoids have been tested by a recent study at the Ghent University’s College of Veterinary Medicine. While the exact pathogenesis of equine sarcoids is not known, in some cases, bovine papilloma virus (BPV) might be involved [Haspeslagh, M.; Garcia, M.J.; Vlamincx, L.E.M.; and Martens, M. Topical use of 5% acyclovir cream for the treatment of occult and verrucous equine sarcoids: a double-blinded placebo-controlled study. *BMC Veterinary Research* (2017) 13:296].

Other studies have suggested that use of an anti-viral cream can achieve resolution. In this placebo-controlled and double-blinded study of 28 horses and three ponies, a 5% topical acyclovir cream was applied for up to six months to sarcoid tumors. Each lesion was assessed via measurements and photographs, and swabs were taken to obtain DNA to confirm or rule out the presence of BPV. Roughly 16% of the acyclovir-treated lesions lacked BPV DNA, as did 23% of the placebo-treated lesions.

In both treated and placebo groups, the mean surface area of the lesions increased while also becoming less verrucous. It was noted that some of these changes could be attributable to hydration effects of the cream such that it prevents formation of the verrucous layer, much in the same way as an anti-keratotic cream would. However, these changes were statistically insignificant.

There is some question as to how an anti-viral medication could work on BPV-containing sarcoids, since BPV “lacks the presence of thymidine kinase that is necessary to activate acyclovir.”

While earlier studies reported 68% success (Stadler, S., et al., 2011) and 53% success (Baker, C.C., et al., 2016) with acyclovir cream, the conclusion here was that: “None of the results presented in this study indicated that topical treatment of occult or partly verrucous equine sarcoids with acyclovir yields any better results compared to treatment with placebo cream.”

The Effect of Moxidectin on the Equine Gut Microbiota

We take it for granted when administering drugs to horses that their intestinal tracts can handle the medications just fine. At the 12th International Equine Colic Symposium (2017), a paper was presented about the effects of moxidectin on the equine hindgut microbiome [Daniels, S.P.; Ellis, R.; Swann, J.R.; Moore-Colyer, M.J.S.; and Proudman, C.J. The Effect of Moxidectin Treatment on the Equine Hindgut Microbiome, Metabonome and Feed Fermentation Kinetics in Horses with Very Low Parasite Burdens. *Equine Veterinary Education*, 29: 6].

The researchers looked at three questions:

- Does moxidectin alter bacterial composition?
- Does moxidectin get metabolized by bacteria?
- Does moxidectin alter hindgut fermentation?

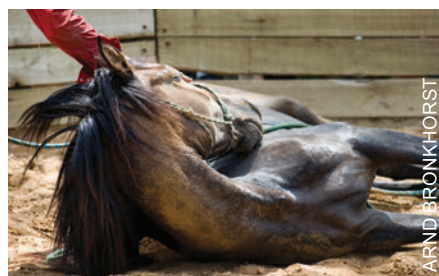
The study included 17 pastured horses fed only hay and no concentrates. The horses had negative fecal egg counts prior to medication administration. Nine horses were given the oral anthelmintic; eight horses served as controls.

Results of the study reported that the presence of moxidectin in the hindgut altered fermentation kinetics for hay by 16 hours following treatment. Gas

production of oats was evaluated *in vitro*, not in the live horses, with similar findings. In conclusion, there was no significant change in bacterial diversity or in bacterial metabolic output by moxidectin for dietary hay or oats.

Identification of Strangulating Small Intestinal Lesions

Colic with small intestinal involvement tends to be acutely painful. Acquisition of peritoneal fluid is helpful for diagnosis and prognostication purposes. At the 12th International Equine Colic Symposium (2017), a paper was presented from work done at Michigan State University’s College of Veterinary Medicine that identified parameters of peritoneal fluid



Colic with small intestine involvement tend to be acutely painful.

that could aid clinicians in next steps for care [Shearer, T.R.; Norby, B.; and Carr, E.A. The Diagnostic Utility Of Peritoneal Fluid Lactate And Color In Diagnosing Horses With Small Intestinal Disease. *Equine Vet Educ*, 29: 21].

The results of the study suggested that there is value in measuring the ratio of peritoneal fluid lactate to systemic lactate in order to differentiate between strangulating (SSI) and non-strangulating (NSSI) small intestinal lesions. “A ratio of >2.0 and a ratio ≤ 2.0 combined with serosanguinous peritoneal fluid color accurately predicted 96.7% of small intestinal lesions that need surgical intervention.” **EM**



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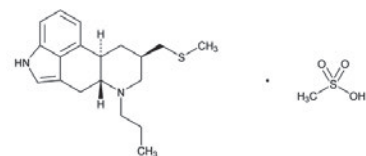
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Prascend® (pergolide tablets) 1 mg

Dopamine receptor agonist for oral use in horses only

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

Description: Prascend Tablets are rectangular light red colored, half-scored tablets containing 1 mg pergolide, as pergolide mesylate. Pergolide mesylate is a synthetic ergot derivative and is a potent dopamine receptor agonist. The chemical name of pergolide mesylate is 8B-[(Methylthio) methyl]-6-propylergoline



monomethanesulfonate. The chemical structure is:

Indication: For the control of clinical signs associated with Pituitary Pars Intermedia Dysfunction (Equine Cushing's Disease) in horses.

Dosage and Administration: Administer orally at a starting dose of 2 mcg/kg once daily. Dosage may be adjusted to effect, not to exceed 4 mcg/kg daily. It has been reported that pergolide tablets may cause eye irritation, an irritating smell, or headache when Prascend Tablets are split or crushed. Prascend Tablets should not be crushed due to the potential for increased human exposure and care should be taken to minimize exposure when splitting tablets.

The tablets are scored and the calculated dosage should be provided to the nearest one-half tablet increment (see Table 1).

Table 1 Dosing Table		
Body weight	Dosage	
	2 mcg/kg	4 mcg/kg
136 - 340 kg (300 - 749 lb)	0.5 tablet	1 tablet
341 - 567 kg (750 - 1,249 lb)	1 tablet	2 tablets
568 - 795 kg (1,250 - 1,749 lb)	1.5 tablets	3 tablets
796 - 1,022 kg (1,750 - 2,249 lb)	2 tablets	4 tablets

Dosing should be titrated according to individual response to therapy to achieve the lowest effective dose. Dose titration is based on improvement in clinical signs associated with Pituitary Pars Intermedia Dysfunction (PPID) and/or improvement or normalization of endocrine tests (for example, dexamethasone suppression test or endogenous ACTH test). If signs of dose intolerance develop, the dose should be decreased by half for 3 to 5 days and then titrated back up in 2 mcg/kg increments every 2 weeks until the desired effect is achieved.

Contraindications: Prascend is contraindicated in horses with hypersensitivity to pergolide mesylate or other ergot derivatives.

Warnings: Do not use in horses intended for human consumption.

Human Warnings: Not for use in humans. Keep this and all medications out of the reach of children. Prascend should not be administered by persons who have had adverse reactions to ergotamine or other ergot derivatives. **Pregnant or lactating women should wear gloves when administering this product.** It has been reported that pergolide tablets may cause eye irritation, an irritating smell, or headache when Prascend Tablets are split or crushed. Prascend Tablets should not be crushed due to the potential for increased human exposure and care should be taken to minimize exposure when splitting tablets. Consult a physician in case of accidental ingestion by humans.

Precautions: Treatment with Prascend may cause inappetence.

The use of Prascend in breeding, pregnant, or lactating horses has not been evaluated. The effects of pergolide mesylate on breeding, pregnant, or lactating horses are not known; however, the pharmacologic action of pergolide mesylate suggests that it may interfere with reproductive functions such as lactation.

Prascend is approximately 90% associated with plasma proteins. Use caution if administering Prascend with other drugs that affect protein binding. Dopamine antagonists, such as neuroleptics (phenothiazines, domperidone) or metoclopramide, ordinarily should not be administered concurrently with Prascend (a dopamine agonist) since these agents may diminish the effectiveness of Prascend.

Adverse Reactions: A total of 122 horses treated with Prascend Tablets for six months were included in a field study safety analysis.

Table 2 Summary of the most common adverse reactions (N=122)		
Clinical sign	# Cases	Cases (%)
Decreased appetite	40	32.8
Lameness	22	18.0
Diarrhea/Loose stool	12	9.8
Colic	12	9.8
Lethargy	12	9.8
Abnormal Weight Loss	11	9.0
Laminitis*	10	8.2
Heart murmur	10	8.2
Death	8	6.6
Tooth disorder	8	6.6
Skin abscess	7	5.7
Musculoskeletal pain	6	4.9
Behavior change	6	4.9

*Three new cases and 7 pre-existing, recurring cases

Inappetence or decreased appetite occurred at one or more meals in 40 of 122 horses treated with Prascend. At the baseline evaluation 1.6% of owners reported a history of inappetence or decreased appetite as compared to the 32.8% of horses that experienced inappetence or decreased appetite during the study. Most cases of inappetence were transient and occurred during the first month of treatment; however, some horses experienced sporadic inappetence throughout the study. Two horses required a temporary reduction in dose due to inappetence during the first month of the study. Both horses returned to their original dose within 30 days.

Weight loss occurred in more than half of the horses in this study; however, weight loss that was considered abnormal was only reported in 11 horses.

Lethargy was reported in 9.8% of horses during the study, and was not reported in any horses at the baseline evaluation.

Behavioral changes were noted in 6 horses including aggression, kicking, agitation, nervous behavior and increased activity. One horse required a temporary reduction in dose due to energetic behavior during the first month of the study.

Eight horses died or were euthanized during the study due to worsening of pre-existing conditions (laminitis, dental disease, septic tenosynovitis) or colic (strangulating lipomas, large colon volvulus).

One mare was inadvertently enrolled in the study while pregnant and experienced dystocia resulting in the death of the foal.

To report suspected adverse reactions, to obtain a Material Safety Data Sheet (MSDS), or for technical assistance, call 1-866-638-2226.

Clinical Pharmacology: Pergolide mesylate is a synthetic ergot derivative and is a potent dopamine receptor agonist. As with other dopamine agonists, pergolide inhibits the release of prolactin which suggests that it may interfere with lactation. In horses with PPID, pergolide is believed to exert its therapeutic effect by stimulating dopamine receptors, and has been shown to decrease the plasma levels of adrenocorticotropic hormone (ACTH), melanocyte stimulating hormone (MSH), and other pro-opiomelanocortin peptides.¹

Pharmacokinetic information in the horse is based on a study using single oral doses of 10 mcg/kg in six healthy mares between 3 and 17 years of age.² Pergolide was rapidly absorbed; the mean maximum concentration (C_{max}) was 4.05±2.02 ng/mL with the median time to maximum concentration (T_{max}) being 0.415 hours.

The area under the curve (AUC) was 14.08±7.46 hr·ng/mL. The mean half life (T_{1/2}) was 5.86±3.42 hours; the mean apparent oral clearance (CL/F) was 1204 mL/kg/hr; and the mean apparent volume of distribution (V/F) was 3082±1354 mL/kg.

Effectiveness: An open-label, historical control, field study evaluated the effectiveness of Prascend for the control of clinical signs of PPID. A total of 122 horses with PPID were enrolled in the study, 113 of which were included in effectiveness evaluations. The success of each horse was based on results of endocrinology testing (dexamethasone suppression test or endogenous ACTH test) and/or improvement in clinical signs related to PPID (hirsutism, hyperhidrosis, polyuria/polydypsia, abnormal fat distribution, and/or muscle-wasting) on the Day 180 evaluation. Based on endocrine testing and investigators' clinical assessment scores, 86 (76.1%) of the 113 evaluable cases were treatment successes.

Table 3 Proportion of Treatment Successes on Day 180	
Percent success	Lower bound: one-sided 95% confidence interval
76.1% (86/113)	68.6%

Enrolled horses were diagnosed with PPID based on the presence of hirsutism and an abnormal pre-study endocrine test result. All horses were treated with 2 mcg/kg Prascend (to the nearest one-half tablet) orally once daily for the first three months. If the endocrine test result on Day 90 was normal or adequately improved, the horse continued on the same dose through Day 180. If the endocrine test result on Day 90 was abnormal, the dose increased to 4 mcg/kg given once daily through Day 180. Forty-seven (41.6%) of the 113 horses included in the effectiveness database required a dose increase at Day 90. Improvement was noted in scores for all clinical sign categories and in mean results for endocrine tests.

Table 4 Percent of Animals with Improvement in Clinical Signs Relative to Baseline Scores		
Clinical sign	Day 90±7 (%)	Day 180±7 (%)
Hirsutism	32.7%	89.2%
Hyperhidrosis	27.4%	42.3%
Polyuria / polydypsia	31.0%	34.2%
Abnormal fat distribution	21.2%	33.3%
Muscle wasting	36.3%	46.0%

Table 5 Endocrine test results (mean values)				
Test	# Animals	Baseline	Day 90	Day 180
ACTH (pg/mL)	20	73.53	51.12	45.08
DST** (mcg/dL)	93	3.12	1.39	1.47

** Dexamethasone suppression test: Post dexamethasone cortisol concentration

Animal Safety: In a six month target animal safety study healthy adult horses received Prascend administered orally, once daily, at doses of either 0 mcg/kg, 4 mcg/kg, 6 mcg/kg, or 8 mcg/kg (0X, 1X, 1.5X, or 2X the maximum recommended dose). There were eight healthy horses (four males and four females) in each treatment group. Doses were prepared by dissolving tablets in approximately 10 mL of a 50% sugar water solution.

Prascend treated groups had lower mean heart rates and higher mean temperatures than the control group. Horses in all treatment groups had minimum heart rates within the normal range and maximum temperatures below 101.5°F. One 1.5X horse experienced a mild episode of spasmodic colic on Day 3 that resolved after treatment with flunixin meglumine.

Mean red blood cell counts and hemoglobin values were lower in Prascend treated groups as compared to the control group. Other hematology parameters including hematocrit, white blood cells, absolute neutrophils, and absolute lymphocytes exhibited mild, transient decreases as compared to the control group. The hematology parameters generally decreased over the first 30 to 60 days after treatment initiation and then returned to values similar to pre-treatment levels. No treatment related alterations were identified on histopathology evaluation of bone marrow.

Storage: Store at or below 25°C (77°F).

How Supplied: Prascend Tablets are available in 1 mg strength - packaged 10 tablets per blister and 60 or 160 tablets per carton. NDC 0010-4489-01 - 60 tablets. NDC 0010-4489-02 - 160 tablets

References:

- Orth, D.N., Holscher, M.A., Wilson, M.G., et al. (1982) Equine Cushing's Disease: Plasma Immunoreactive Proopiomelanocortin Peptide and Cortisol Levels Basally and in Response to Diagnostic Tests. Endocrinology. 110(4):1430-41
- Wright A, Gehring R, Coetzee H (2008.) Pharmacokinetics of pergolide in normal mares. American College of Veterinary Internal Medicine Forum, Abstract #36, San Antonio, TX.

Manufactured for:

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

Made in Japan and packaged in Germany.

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Revised 07/2016

UPDATED GUIDELINES FOR PPID

NEW PPID DIAGNOSTIC RECOMMENDATIONS ARE NOW AVAILABLE FROM THE EQUINE ENDOCRINOLOGY GROUP.¹

Pituitary pars intermedia dysfunction, or PPID, also called “equine Cushing’s disease,” can sometimes be difficult to diagnose. To help veterinarians identify and test for this disease, the Equine Endocrinology Group (EEG) updated its recommendations to include updated reference ranges for ACTH while also adding additional early and advanced signs of the disease.

There are two types of procedures available for PPID testing. TRH stimulation procedure (measuring ACTH at T0 and T10) is used for horses with early signs of PPID or suspected horses with a normal resting ACTH. Resting ACTH is recommended for the suspected PPID horse with moderate or advanced clinical signs. If resting ACTH is normal or equivocal in horses with advanced signs, the follow-up procedure is the TRH stimulation.

Seasonal variations in ACTH have been previously documented in the horse. Testing in the fall months has been shown to increase the sensitivity of resting ACTH in horses with signs of early PPID. TRH stimulation testing in the fall is not recommended as sufficient data to establish accurate cutoff values is being further evaluated. It’s important for veterinarians to use seasonally adjusted resting ACTH reference ranges specific for the time of year they’re testing for PPID.

“If a horse is borderline for PPID after a resting ACTH test, veterinarians can then utilize the TRH stimulation procedure, giving a more precise diagnosis,” says Steve Grubbs, DVM, PhD, DACVIM, equine technical manager for Boehringer Ingelheim. “Information from the history, clinical signs and testing results should all be utilized when making the diagnosis of PPID. Each aspect is extremely important for the proper diagnosis.”

The new EEG guidelines also updated the clinical presentation of the early and advanced signs of PPID. Additions to early signs include abnormal sweating (increased or decreased), infertility, desmitis and tendonitis. Additions to the advanced signs include dull attitude/altered mentation, exercise intolerance, excessive mammary gland secretions and suspensory ligament laxity.

For horses showing signs of PPID, Boehringer Ingelheim offers complimentary testing for up to three horses per veterinarian. This testing is part of a study to identify epidemiological information for horses with PPID at initial diagnosis. This offer continues through June 13, 2018. **For more information about complimentary testing and the complete 2017 EEG diagnostic guidelines for PPID, please visit www.test4PPID.com.**

¹Recommendations for the Diagnosis and Treatment of Pituitary Pars Intermedia Dysfunction, Equine Endocrinology Group.
Available at <https://sites.tufts.edu/equineendogroup/files/2017/11/2017-EEG-Recommendations-PPID.pdf>. Accessed February 14, 2018.

Do I Need An Attorney?

As a business owner, chances are you have an accountant, an insurance agent and maybe even a business consultant to advise you. But what about an attorney? Most veterinary practice owners only hire an attorney when confronted with a serious legal problem (e.g., a lawsuit filed by a client or employee). The perception that attorneys charge high rates prevents many veterinarians from seeking valuable advice that could *prevent* legal trouble.

It is important to accept that legal help is simply a cost of doing business that often saves you money and helps your practice prosper in the long run.

Like most professionals, attorneys typically charge at least \$200 per hour, and because (like veterinarians) they are selling their time and expertise, they invoice based on the number of minutes or hours spent on your work. When an attorney's staff members are involved, it is common to be charged a lower rate per hour for their time. Typically, you will also be responsible for materials, photocopying and the shipping costs of documents.

Some tasks related to starting or managing a veterinary practice are fairly straightforward and/or not unduly difficult to learn, and might not require the services of an attorney. But if you can earn more income utilizing your time to provide veterinary services than you would spend using a professional, the arithmetic clearly points to enlisting an experienced legal professional.

Tasks that you could consider taking on yourself when opening a new practice

include researching and choosing a name; reserving a domain name for your website; applying for an employer identification number (EIN); and applying for licenses and permits required in your state. It is best to utilize an attorney's and/or an accountant's advice in choosing a legal structure for a new business, and an attorney for creating a legal partnership agreement, a limited liability company (LLC) operating agreement or a shareholder's agreement.

Safeguard your business's future by adding an attorney to your support team.

In existing practices, an attorney is recommended for writing the initial employment agreements with associates, after which you might feel comfortable utilizing your first as a template for all that follow. Regular review of any partnership, LLC or shareholder's agreement under which you are currently operating, and creating a buy-sell agreement with partners, are both important functions of a practice attorney.

Already having a trusted relationship with a legal professional will be very helpful if a former, current or prospective employee files suit on the grounds of discrimination in hiring, unlawful termination or a hostile work environment. Likewise, it is important to have legal representation that knows you and your business if you receive notice that a local, state or federal government entity is investigating your or your

business for violation of any laws.

If you are negotiating the sale of part or all of your practice or investigating the acquisition of another veterinary firm or its assets, you will want to involve an experienced attorney.

Prevention of legal trouble should be your emphasis. Consulting with an attorney about your policies and procedures through a review of your employee handbook is recommended, because by the time your practice is sued, the only question that remains is how much you'll be paying in attorney's fees, court fees and damages.

By educating yourself in business management, human resources and regulatory compliance, you can minimize your risk. An attorney can help you stay in compliance with the law and spot developing legal issues before they might become problems.

The attorney that you choose for your practice should be well-versed in business and employment law. In small, rural areas, you might find that available attorneys have a fairly general practice, primarily writing wills and performing real estate transactions. In that case, finding a legal professional with more specific expertise might be to your advantage. Most importantly, you should have a high level of trust in your attorney, be able to communicate easily and be afforded a prompt comprehensive reply to any concerns you raise.

Adding an attorney to the group of professionals who are on your practice's support team is an important way to safeguard your business's future. **EM**



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(omeprazole) by Merial



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EQU-0445-EGUS0218

IMPORTANT SAFETY INFORMATION:

CAUTION: *Safety of GASTROGARD in pregnant or lactating mares has not been determined.*



THE RIDE TO WIN

GASTROGARD® (omeprazole) Oral Paste for Equine Horses

Caution

Federal (USA) law restricts this drug to use by or on the order of a licensed veterinarian.

Storage Conditions

Store at 68°F–77°F (20–25°C). Excursions between 59°F–86°F (15–30°C) are permitted.

Indications

For treatment and prevention of recurrence of gastric ulcers in horses and foals 4 weeks of age and older.

Dosage Regimen

For treatment of gastric ulcers, *GastroGuard* Paste should be administered orally once-a-day for 4 weeks at the recommended dosage of 1.8 mg omeprazole/lb body weight (4 mg/kg). For the prevention of recurrence of gastric ulcers, continue treatment for at least an additional 4 weeks by administering *GastroGuard* Paste at the recommended daily maintenance dose of 0.9 mg/kg (2 mg/kg).

Directions For Use

- *GastroGuard* Paste for horses is recommended for use in horses and foals 4 weeks of age and older. The contents of one syringe will dose a 1250 lb (568 kg) horse at the rate of 1.8 mg omeprazole/lb body weight (4 mg/kg). For treatment of gastric ulcers, each weight marking on the syringe plunger will deliver sufficient omeprazole to treat 250 lb (114 kg) body weight. For prevention of recurrence of gastric ulcers, each weight marking will deliver sufficient omeprazole to dose 500 lb (227 kg) body weight.
- To deliver *GastroGuard* Paste at the treatment dose rate of 1.8 mg omeprazole/lb body weight (4 mg/kg), set the syringe plunger to the appropriate weight marking according to the horse's weight in pounds.
- To deliver *GastroGuard* Paste at the dose rate of 0.9 mg/kg (2 mg/kg) to prevent recurrence of ulcers, set the syringe plunger to the weight marking corresponding to half of the horse's weight in pounds.
- To set the syringe plunger, unlock the knurled ring by rotating it 1/4 turn. Slide the knurled ring along the plunger shaft so that the side nearest the barrel is at the appropriate notch. Rotate the plunger ring 1/4 turn to lock it in place and ensure it is locked. Make sure the horse's mouth contains no feed. Remove the cover from the tip of the syringe, and insert the syringe into the horse's mouth at the interdental space. Depress the plunger until stopped by the knurled ring. The dose should be deposited on the back of the tongue or deep into the cheek pouch. Care should be taken to ensure that the horse consumes the complete dose. Treated animals should be observed briefly after administration to ensure that part of the dose is not lost or rejected. If any of the dose is lost, redosing is recommended.
- If, after dosing, the syringe is not completely empty, it may be reused on following days until emptied. Replace the cap after each use.

Warning

Do not use in horses intended for human consumption. Keep this and all drugs out of the reach of children. In case of ingestion, contact a physician. Physicians may contact a poison control center for advice concerning accidental ingestion.

Adverse Reactions

In efficacy trials, when the drug was administered at 1.8 mg omeprazole/lb (4 mg/kg) body weight daily for 28 days and 0.9 mg omeprazole/lb (2 mg/kg) body weight daily for 30 additional days, no adverse reactions were observed.

Precautions

The safety of *GastroGuard* Paste has not been determined in pregnant or lactating mares.

Efficacy

- **Dose Confirmation:** *GastroGuard*® (omeprazole) Paste, administered to provide omeprazole at 1.8 mg/lb (4 mg/kg) daily for 28 days, effectively healed or reduced the severity of gastric ulcers in 92% of omeprazole-treated horses. In comparison, 32% of controls exhibited healed or less severe ulcers. Horses enrolled in this study were healthy animals confirmed to have gastric ulcers by gastroscopy. Subsequent daily administration of *GastroGuard* Paste to provide omeprazole at 0.9 mg/lb (2 mg/kg) for 30 days prevented recurrence of gastric ulcers in 84% of treated horses, whereas ulcers recurred or became more severe in horses removed from omeprazole treatment.
- **Clinical Field Trials:** *GastroGuard* Paste administered at 1.8 mg/lb (4 mg/kg) daily for 28 days healed or reduced the severity of gastric ulcers in 93% of omeprazole-treated horses. In comparison, 32.4% of control horses had healed ulcers or ulcers which were reduced in severity. These trials included horses of various breeds and under different management conditions, and included horses in race or show training, pleasure horses, and foals as young as one month. Horses enrolled in the efficacy trials were healthy animals confirmed to have gastric ulcers by gastroscopy. In these field trials, horses readily accepted *GastroGuard* Paste. There were no drug related adverse reactions. In the clinical trials, *GastroGuard* Paste was used concomitantly with other therapies, which included: anthelmintics, antibiotics, non-steroidal and steroidal anti-inflammatory agents, diuretics, tranquilizers and vaccines.
- **Diagnostic and Management Considerations:** The following clinical signs may be associated with gastric ulceration in adult horses: inappetence or decreased appetite, recurrent colic, intermittent loose stools or chronic diarrhea, poor hair coat, poor body condition, or poor performance. Clinical signs in foals may include: bruxism (grinding of teeth), excessive salivation, colic, cranial abdominal tenderness, anorexia, diarrhea, sternal recumbency or weakness. A more accurate diagnosis of gastric ulceration in horses and foals may be made if ulcers are visualized directly by endoscopic examination of the gastric mucosa. Gastric ulcers may recur in horses if therapy to prevent recurrence is not administered after the initial treatment is completed. Use *GastroGuard* Paste at 0.9 mg omeprazole/lb body weight (2 mg/kg) for control of gastric ulcers following treatment. The safety of administration of *GastroGuard* Paste for longer than 91 days has not been determined. Maximal acid suppression occurs after three to five days of treatment with omeprazole.

Safety

GastroGuard Paste was well tolerated in the following controlled efficacy and safety studies.

- In field trials involving 139 horses, including foals as young as one month of age, no adverse reactions attributable to omeprazole treatment were noted.
- In a placebo controlled adult horse safety study, horses received 20 mg/kg/day omeprazole (5x the recommended dose) for 90 days. No treatment related adverse effects were observed.
- In a placebo controlled tolerance study, adult horses were treated with *GastroGuard* Paste at a dosage of 40 mg/kg/day (10x the recommended dose) for 21 days. No treatment related adverse effects were observed.
- A placebo controlled foal safety study evaluated the safety of omeprazole at doses of 4, 12 or 20 mg/kg (1, 3 or 5x) once daily for 91 days. Foals ranged in age from 66 to 110 days at study initiation. Gamma glutamyltransferase (GGT) levels were significantly elevated in horses treated at exaggerated doses of 20 mg/kg (5x the recommended dose). Mean stomach to body weight ratio was higher for foals in the 3x and 5x groups than for controls; however, no abnormalities of the stomach were evident on histological examination.

Reproductive Safety

In a male reproductive safety study, 10 stallions received *GastroGuard* Paste at 12 mg/kg/day (3x the recommended dose) for 70 days. No treatment related adverse effects on semen quality or breeding behavior were observed. A safety study in breeding mares has not been conducted.

For More Information

Please call 1-888-637-4251

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NEW VET COLUMN

By Zach Loppnow, DVM

Professionalism

One of the most difficult things to navigate as a new graduate is the process of job interviews.

While the economy of equine veterinary medicine has rebounded and more positions are open, there is still stiff competition for each of the openings.

In this competitive market, how we present ourselves can make the difference between getting that dream job or having to search on.

This presentation of ourselves centers around our ability to project professionalism, both in writing and personal communication. Unfortunately, for our generation of veterinarians, technology has diluted the use of these skills. There are two simple changes that we can make to take those skills back.

One of the first habits we must break is the loss of grammar in our written communications. Too long we have communicated through texting and instant messaging. These forms of communication, while convenient, do very little in the way of promoting proper grammar. We have a problem when we allow those grammatical habits to slip into our professional emails.

With email being readily accessible on our smartphones, it is very easy to write and send emails to professionals with the same structure and tone as we use in a text message to friends. This can be a fatal mistake in a job search. Most veterinarians in positions of hiring are from older generations. They have an estab-



COURTESY ZACH LOPPNOW

lished understanding of professional communication, and a casual tone to an email can cause them to develop an opinion of you as unprofessional before they even get past your introductory email.


The second habit to break comes in face-

to-face communication, but it ties back to a source of the first bad habit. Smartphones have become a part of our generation's DNA. They are always with us, and they are always pulling at our attention. While not inherently bad, they become a problem when they pull our attention away from what we are doing.

One of the biggest professional *faux pas* in an interview or professional visit is checking or using a smartphone. It is often second nature, like checking a watch, but to a prospective employer, it projects distraction and disinterest. This habit can be what writes us off that person's list in the search for a new associate.


Breaking these habits can be challenging, but it must be done in order to develop our professional skills. Without the effort, we might very well find that the job search becomes more difficult.

Don't miss the opportunity at the position you want due to small habits that might be holding you back.

Zach Loppnow, DVM, is completing his internship year at Anoka Equine Veterinary Services in Minnesota. His passions continue to focus around high-quality medicine and business skills. He is a graduate of the VBMA Business Certificate Program. 

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A BEVA study showed that equine veterinarians should expect seven to eight work-related injuries that impede practice during a 30-year career.

Getting Hurt on the Job

Even though equine veterinary practice is fraught with danger, you can minimize the risk of injury. Learn more from our survey results.

By Amy L. Grice, VMD, MBA

Equine veterinary practice is known to be a “physical” job, not unlike jobs in construction, auto mechanics and agricultural work. Injuries are common in all physical professions, as working conditions include hazards on a daily basis. Recent

studies have attempted to investigate the danger of equine veterinary practice, and results have been mixed.

The British Equine Veterinary Association (BEVA) reported, following its study in 2014, that being a horse vet in the United Kingdom appeared to carry the highest risk of injury of any civil-

ian occupation in the U.K. The study, commissioned by BEVA and conducted by leading medical professionals at the Institute of Health and Wellbeing and the School of Veterinary Medicine at the University of Glasgow, prompted BEVA to raise awareness of these risks within the equine industry and to look at ways of

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making equine veterinary practice safer.

Their results indicated that an equine vet could expect to sustain between seven and eight work-related injuries that impeded him or her from practicing during a 30-year working life.

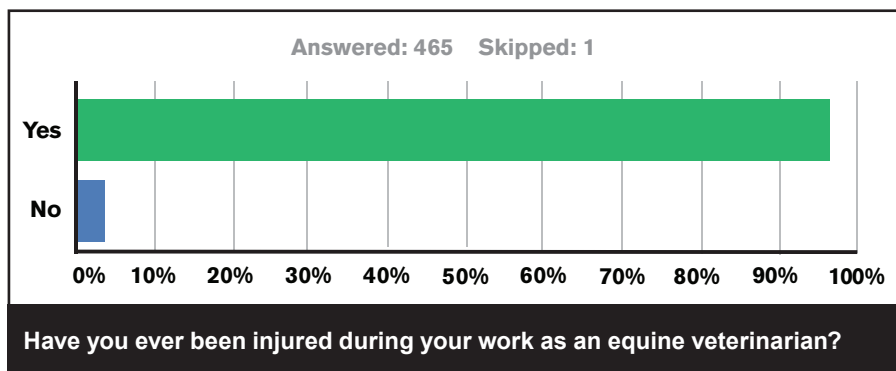
Participants were asked to describe their worst-ever injuries. Most were described as bruising, fracture and laceration, with the most common site of injury being the leg (29%), followed by the head (23%).

The main cause of injury was a kick with a hind limb (49%), followed by strike with a forelimb (11%) and crush injury (5%). Nearly a quarter of these reported injuries required hospital admission, and notably, 7% resulted in loss of consciousness. 38% of the “worst” injuries occurred when the vet was working with a “pleasure” horse, and most frequently (48% of all responses), the horse handler at the time of injury was the owner or the client.

In 2016, the physical wellness of equine veterinarians was queried during the AVMA AAEP Equine Economic Study. Questions about injuries received during practice revealed that of 764 respondents, 46% had never been injured, 20% had received one injury, 26% two to four injuries, and 5% more than five injuries. Almost half of respondents reported missing no work days, and 37% missed fewer than seven days of work. 159 respondents (21%) required hospitalization, and 194 (25%) required surgery.

In order to explore this aspect of equine practice more thoroughly, a survey was conducted over five days in February 2018. The survey link was posted on the Facebook pages of Women in Equine Practice, Equine Vet2Vet, AAEP New Practitioners, Moms with a DVM, as well as circulated to three Decade One networking groups and the AAEP General Listserv.

A total of 466 respondents completed the 19-question survey. The majority of the respondents added comments



to their submissions, and a number volunteered to be interviewed in-depth for this article, as they felt strongly that the topic was very important.

Define ‘Injury’

In order to carefully define “injury,” which was not done in the AVMA AAEP study, the most recent survey began with the statement: “Injury in equine practice is fairly common, as horses are unpredictable. In the following questions, injury is defined as suffering a trauma, puncture, contusion, laceration, strain, fracture, hematoma, etc., that was of sufficient significance that you applied a bandage, ice or other treatment, or took a pharmaceutical compound (e.g., ibuprofen) at least once.”

Not surprisingly, with this definition, 96.6% reported being injured during their work as an equine veterinarian.

Interesting comments posted on the Equine Vet2Vet Facebook page included the observation: “Well, then, if we call every nick and bruise an injury, then we get injured nearly every day. No different than a carpenter, mechanic or any other soul in a physical profession. But we are a tough lot.”

Another posted: “I believe it’s a numbers game. I have escaped bad situations made by bad decisions (i.e., no restraint) with only bruises, but my tibial plateau fracture and knee obliteration happened with a haltered, sedated recipient mare handled by a

very capable, million-dollar rider.

“We were both by her head when the feed tractor entered the barn ... the mare pawed and knocked the handler one way, pinning me *and* her foal against the wall, breaking my leg, my hand and her foal’s ribs while the handler was trying to pull her off.”

Missed Work

We asked, “What is the longest amount of time that you missed work due to an injury received during your work as an equine veterinarian?” 51.9% reported that they missed one day or less of work, and 22.4% reported that they missed two to seven days. Twenty-six respondents (5.6%) missed more than 90 days of work for their most serious injuries.

Among the comments offered for this question were: “I went back to work instead of appropriate rest,” “Should have taken a few days on both occasions described in Q1, but too stupid!” and “I should have been off longer, but as the owner and main practitioner at the time, I had no choice but to go back to work with a cast on my leg.”

Others said: “I probably should have taken more, but was not allowed,” “I don’t actually remember how much I missed—it was a head injury, but I was a solo practitioner so I know I went back earlier than I should have” and “I worked injured many, many times.”

Veterinarians posting on Equine Vet2Vet said, “On the bright side, we horse

vets are well prepared to deal with injuries. I broke my wrist last week (not work-related), but was promptly splinted with sticks and a shorts drawstring by two fine horse vets. And I attribute my adept one-handed skills now to years of training while having one arm up a rear end.”

And: “In my experience, we equine vets don’t define ‘needing a doctor’s attention’ in the same way most people do. How many have continued working on non-displaced fractures? I know I have done so, cheerfully! I also know I am not the only one.”

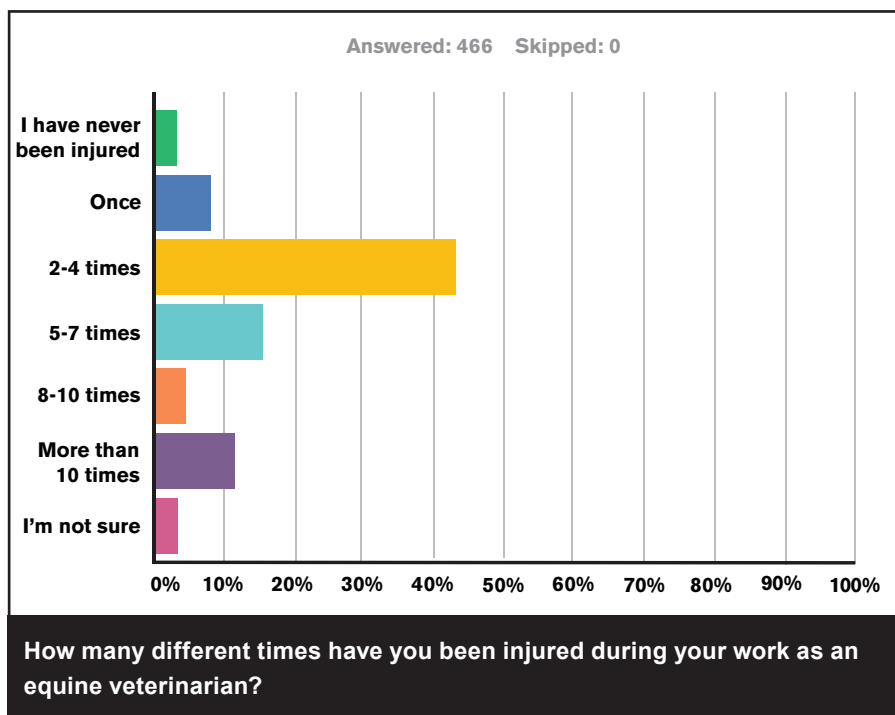
Still others posted about equine veterinarians’ propensity to self-diagnose and avoid seeking medical advice. One suggested on the Women in Equine Practice page: “Another question to potentially consider: ‘Have you ever been injured but didn’t seek professional treatment when you should have?’ or some such variation on the theme of getting hurt, but powering through when maybe we should just take care of ourselves instead. Many of us are too stubborn for our own good!” And: “How many times have you diagnosed your own injury via X-ray or ultrasound?”

How Often Injured?

The third survey question asked: “How many different times have you been injured during your work as an equine veterinarian?” Almost half (48.5%) of the respondents reported being injured two to four times, and the next most popular answer was five to seven times (17.2%). 12.9% reported being hurt more than 10 times.

Twenty-one of the veterinarians left comments, some of which expressed that they didn’t count small injuries that were considered routine: “Tend to work through the minor injuries and only remember the major ones” and “More than that for fairly minor things (painful, but able to carry on straight away).”

Or they described the injuries they



were counting: “Finger bitten, kicked in leg, broken finger, broken wrist.” And: “These constitute minor injuries, contusions, lacerations caused by trauma by horse or associated with horses, some of which should have been brought to the ER but were managed conservatively with good results.”

Hospitalization

The survey respondents were next asked whether they had ever been hospitalized or been to the emergency room due to an injury received during their work as equine veterinarians. About a fifth (18.4%) had been hospitalized, and 48% had visited the emergency room.

Of the 39 commenting, one said, “The ER doctor was quite amazed that I brought my own X-rays of the fracture with me.” Another wrote, “Once for laceration at eyelid, two times for the quad hematoma.” Another revealed, “Probably should have, but I have a bad habit of self-treatment.”

Overall, equine veterinarians revealed themselves to be tough and resourceful, often diagnosing and treating them-

selves and returning to work promptly.

A total of 32.3% of respondents revealed that they had broken a bone from an injury received during their work as an equine veterinarian. Of the 39 comments reporting which bones were fractured, the most commonly reported were ribs, followed by toes and fingers, tibial plateau and facial bones. A shocking 52.2% of respondents reported receiving an injury to their faces or heads during their work as an equine veterinarian. Among the 28 comments, the most common reported injury was a laceration, followed by black eyes and concussions.

Cause of Injury

Getting kicked by a hind limb was reported by 89.3% of respondents and getting struck by a forelimb was reported by 75.5%. Those commenting on being struck (25) revealed that they had been struck multiple times, mostly resulting in bruising, hematoma formation and lacerations. Those that commented on being kicked (11) also reported multiple incidents, and one poor doctor reported that he was kicked “several times,

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As with all drugs, side effects may occur. In field studies, the most common side effects reported were signs of discomfort or nervousness, colic, and/or pawing. OSPPOS should not be used in pregnant or lactating mares, or mares intended for breeding. Use of OSPPOS in patients with conditions affecting renal function or mineral or electrolyte homeostasis is not recommended. Refer to the prescribing information for complete details or visit www.dechra-us.com or call 866.933.2472.

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

* Freedom of Information Summary, Original New Animal Drug Application, NADA 141-427, for OSPPOS. April 28, 2014.

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Brief Summary (For Full Prescribing Information, see package insert)

CAUTION: Federal (USA) law restricts this drug to use by or on the order of a licensed veterinarian.

DESCRIPTION: Clodronate disodium is a non-amino, chloro-containing bisphosphonate. Chemically, clodronate disodium is (dichloromethylene) diphosphonic acid disodium salt and is manufactured from the tetrahydrate form.

INDICATION: For the control of clinical signs associated with navicular syndrome in horses.

CONTRAINDICATIONS: Horses with hypersensitivity to clodronate disodium should not receive OSPPOS.

WARNINGS: Do not use in horses intended for human consumption.

HUMAN WARNINGS: Not for human use. Keep this and all drugs out of the reach of children. Consult a physician in case of accidental human exposure.

PRECAUTIONS: As a class, bisphosphonates may be associated with gastrointestinal and renal toxicity. Sensitivity to drug associated adverse reactions varies with the individual patient. Renal and gastrointestinal adverse reactions may be associated with plasma concentrations of the drug. Bisphosphonates are excreted by the kidney; therefore, conditions causing renal impairment may increase plasma bisphosphonate concentrations resulting in an increased risk for adverse reactions. Concurrent administration of other potentially nephrotoxic drugs should be approached with caution and renal function should be monitored. Use of bisphosphonates in patients with conditions or diseases affecting renal function is not recommended. Administration of bisphosphonates has been associated with abdominal pain (colic), discomfort, and agitation in horses. Clinical signs usually occur shortly after drug administration and may be associated with alterations in intestinal motility. In horses treated with OSPPOS these clinical signs usually began within 2 hours of treatment. Horses should be monitored for at least 2 hours following administration of OSPPOS.

Bisphosphonates affect plasma concentrations of some minerals and electrolytes such as calcium, magnesium and potassium, immediately post-treatment, with effects lasting up to several hours. Caution should be used when administering bisphosphonates to horses with conditions affecting mineral or electrolyte homeostasis (e.g. hyperkalemic periodic paralysis, hypocalcemia, etc.).

The safe use of OSPPOS has not been evaluated in horses less than 4 years of age. The effect of bisphosphonates on the skeleton of growing horses has not been studied; however, bisphosphonates inhibit osteoclast activity which impacts bone turnover and may affect bone growth.

Bisphosphonates should not be used in pregnant or lactating mares, or mares intended for breeding. The safe use of OSPPOS has not been evaluated in breeding horses or pregnant or lactating mares. Bisphosphonates are incorporated into the bone matrix, from where they are gradually released over periods of months to years. The extent of bisphosphonate incorporation into adult bone, and hence, the amount available for release back into the systemic circulation, is directly related to the total dose and duration of bisphosphonate use. Bisphosphonates have been shown to cause fetal developmental abnormalities in laboratory animals. The uptake of bisphosphonates into fetal bone may be greater than into maternal bone creating a possible risk for skeletal or other abnormalities in the fetus. Many drugs, including bisphosphonates, may be excreted in milk and may be absorbed by nursing animals.

Increased bone fragility has been observed in animals treated with bisphosphonates at high doses or for long periods of time. Bisphosphonates inhibit bone resorption and decrease bone turnover which may lead to an inability to repair micro damage within the bone. In humans, atypical femur fractures have been reported in patients on long term bisphosphonate therapy; however, a causal relationship has not been established.

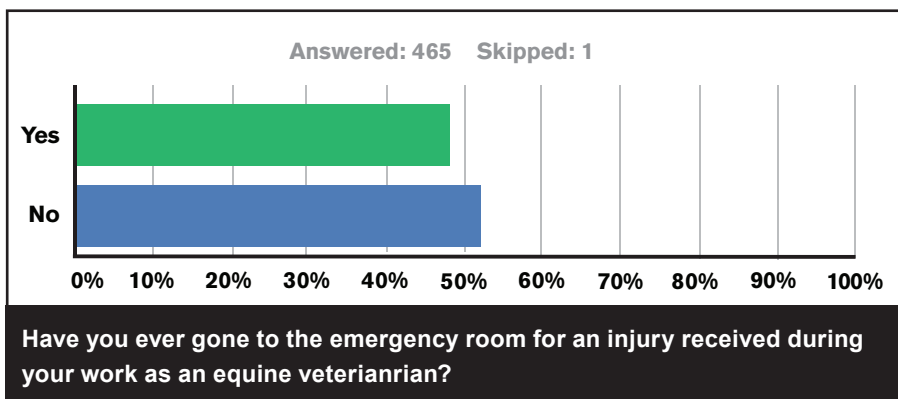
ADVERSE REACTIONS: The most common adverse reactions reported in the field study were clinical signs of discomfort or nervousness, colic and/or pawing. Other signs reported were lip licking, yawning, head shaking, injection site swelling, and hives/pruritus.



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including once cow-kicked directly in the testicles by a mule while standing at least 18 inches forward of his shoulder.”

73% reported being bitten while on the job, but none of those commenting (19) indicated that the bites caused anything more than bruising and minor skin disruption. Being slammed or crushed against a wall was reported by 77.7% of respondents, with only two of 17 comments indicating serious injury—one reported fractured ribs and the other noted that the injury “resulted in chronic SI joint subluxation and vertebral facet injuries.”

Permanent Limitations

Almost a third (30.2%) of respondents reported permanent physical limitations or chronic pain from an injury received during work as an equine veterinarian.

Fifty-two practitioners responded with comments ranging from “After 29 years, there are definitely aches and pains, bone spurs, DJD, etc., but nothing debilitating” to “Chronic back pain from lumbar spinal arthritis and disc disease, arthritis in the knee where I had the tibial plateau fracture.”

Only 10 of the 466 (2.2%) respondents reported being permanently disabled and unable to continue their former level of work as an equine veterinarian from injuries received during their work as an equine veterinarians.

Tasks When Injured

Survey respondents were next asked: “At the time of your most severe injury received during your work as an equine veterinarian, what were you doing?”

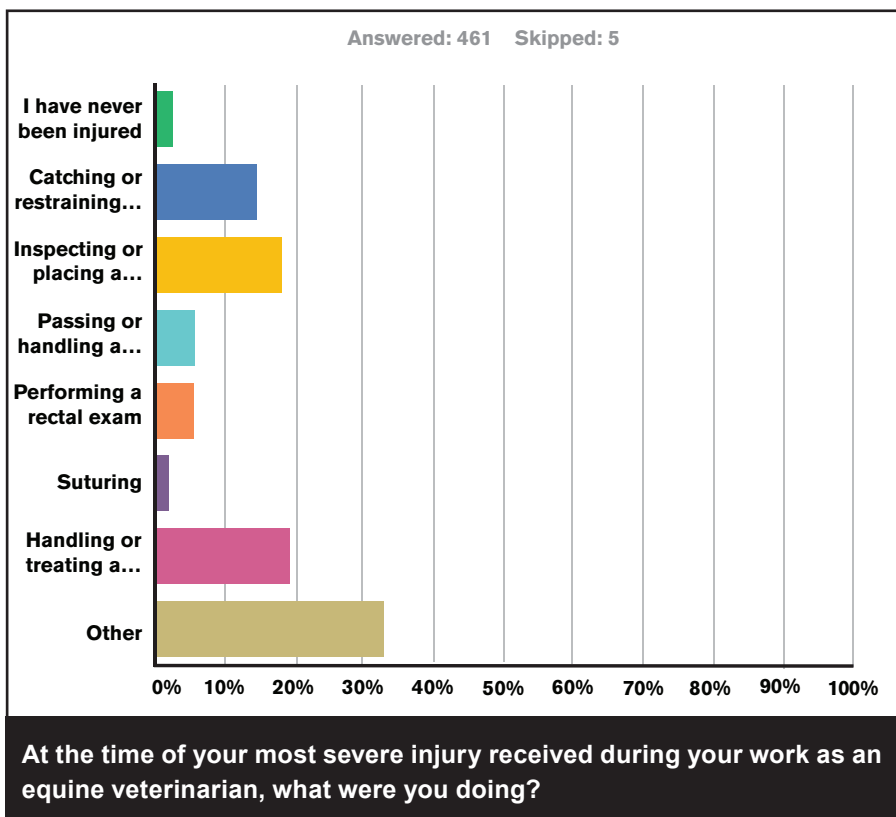
About a fifth (19.1%) were handling or treating a limb other than suturing or placing a needle; 17.8% were injecting or placing a needle; 14.5% were catching or restraining a horse, mule or donkey; 5.9% were performing a rectal exam; and 5.7% were passing or

handling a nasogastric tube.

The most common response (32.3%) was “Other,” and the 149 comments revealed a broad variety of activities being performed at the time of the injury. The most frequently mentioned included recovery from anesthesia, followed by cleaning a sheath, euthanasia, activities in the horse’s mouth, radiographing neurologic horses and applying a twitch.

About half (45.3%) of respondents reported that at the time of their most severe injury received during work as an equine veterinarian, the patient had received sedation. Multiple respondents also stated in the comment section that the injury occurred while they were attempting to administer sedation.

About a third (33.0%) of respondents revealed that at the time of their worst injury, the patient was restrained by the owner or their agent, and 27.4% reported that the patient was restrained by a veterinary technician or assistant. A farm or barn employee was restraining



the patient in 15.3% of cases, and 10.4% of patients were not restrained. 11.5% of respondents chose “Other,” and most of the 53 comments indicated that the respondents themselves were restraining the patient when the injury occurred.

Injury and Experience

The respondents were equitably represented among years from graduation in five-year blocks. However, 52.2% of the worst injuries received during work as an equine veterinarian occurred during the first five years of practice, and 22.6% during years six-10.

One respondent commented, “Although I have not been hurt as badly as many of my fellow equine vets, I fully recognize this is unusual and that ‘my time will come,’ which is scary. I believe that my residency certainly

reduced the number of injuries, as I was working with very skilled technicians restraining the animals. We weren’t going to accept any poor behavior from the horses, as we had to protect the students (whereas we likely would have continued working in a bad situation if the students weren’t there).

“Now, after residency, I have been kicked or nearly kicked much more often. Relying on owners to restrain their animals is risky. I am lucky that my clinic is good about allowing us vets to refuse to treat dangerous animals. I have refused clients once or twice, and while I felt guilty doing so, I also know that my career depends on their animals’ behavior.”

Cases in Point

Mary Swartz, DVM, a solo equine practitioner from Oklahoma, has been

practicing for nine years. However, she will be transitioning to companion animal practice soon because “I will be crippled at 50 if I keep doing equine work that long—it’s just not sustainable.” Swartz recently tore her meniscus when she twisted away from a horse that stepped on her foot. But her worst injury was a separated shoulder that occurred when a horse she was palpating per rectum squatted in the stocks.

As an ambulatory doctor, she drives about 30,000 miles a year, making the odds much higher of being in an accident. And last year that happened; she was in a serious car wreck but was not badly injured.

Although she is leaving the equine veterinary field, she offered this advice to new equine veterinarians: “If a horse is dangerous, you should walk away.

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Needle-shy horses are the worst. Remember, it's not worth getting injured, because if you're hurt, you can't help your practice grow."

The worst injury that Elizabeth Schilling, DVM, suffered during her 26 years (and counting) in equine practice was a head injury. It was sustained when she was attempting to catch the patient, a mare with behavioral problems due to an ovarian tumor, in the stall before the owner arrived. Schilling has no memory of that day, but she was found unconscious by the owner in the stall.

Because she was in solo practice at the time, when she was discharged from the hospital after being unconscious for three days, she returned almost immediately to work. During that time, she had someone else drive and limited her practice somewhat.

She sustained a second serious injury several years later while suturing a wound on a horse's limb while the horse was held by an amateur. Although the horse was sedated heavily with detomidine and butorphanol, Schilling reported, something caught the horse's attention and she was kicked in the face and sustained a fractured jaw.

Her advice to prevent injuries is: "Be smart about it. Don't take chances. Remember that we increase the horse's threat level—they don't see us as benign. Always have a good handler and know your limitations."

Cathy Lombardi, DVM, of Virginia, has been practicing equine medicine for 15 years. She was preparing to inject a sarcoid on the girth line and had already placed her needles. She squatted down by the forelimb to get another look and was "nailed in the face with a roundhouse kick from the hind foot, splitting her forehead open just above the eyebrow." The patient had been sedated with 10 mg of detomidine and was being held by the owner.

Lombardi went to the emergency room to be sutured and developed two

black eyes, but she had no lasting effects except an extra-cautious approach to her work.

Her advice is: "Never fully trust sedation. Have an experienced assistant with you. Realize that nothing is worth getting killed for, and remember: We're responsible for the patient, the client and our own safety, and we would feel awful if someone got hurt."

Other Human Injuries

Sometimes it isn't just the veterinarian who is at risk. Two years ago, sports medicine practitioner Jen Baltrus, DVM, from Arizona, was performing a lameness exam on a large warmblood dressage horse. She was 29 weeks pregnant at that time.

After localizing the lameness, she prepared to block the medial compartment of the stifle. Her technician was holding the horse and a lip chain was applied, as the owner said the horse reacted badly to twitches. From the left side, Baltrus reached across to place the needle. The big horse lunge forward, knocked her technician over, then backed into and kicked the veterinarian twice.

The vet was slammed into a wall, lacerating her elbows and head, and she immediately went into labor. With placental separation, her baby was delivered by emergency C-section at the hospital and was hospitalized in the NICU for 2½ months. Thankfully, the little boy (now 18 months old) survived and is doing well.

Because she is self-employed, Baltrus returned to work just three weeks after her accident. She said, "Returning to work was therapeutic and less stressful than staying at the NICU." While "there was absolutely no warning" from this patient, Baltrus hasn't backed off from practice. She said, "There is no other job for me. This is my passion!"

Oklahoma veterinary surgeon Trent Bliss, DVM, has been practicing for 12 years. During his surgery residency, he suffered a subluxated shoulder and

torn labrum while recovering a horse from anesthesia. Repair of this injury required two surgeries. Three years ago, while collecting a stallion, he suffered a knee injury that tore his medial collateral ligament off the bone, damaged his ACL and caused a depression fracture of his lateral femoral condyle. Bliss noted, "I don't know how I'm going to make it to the finish line!"

He lamented that attracting veterinarians to equine practice was difficult because "the physicality of the job of an equine practitioner, in conjunction with the stress and hours, are not commensurate with the wages—especially when compared to companion animal practice."

After 28 years of clinical practice, Barbara Crabbe, DVM, has experienced a lot of minor injuries, but she was not prepared for the speed with which her most serious work injury occurred. She was finishing up flushing an abscess on a 20+-year-old Quarter Horse mare. The horse was well-sedated and twitched at the time, but it suddenly struck out without warning, hitting Crabbe forcefully in the shin.

Despite the fact that her Levis were not torn, a deep laceration extended from just below her knee to the ankle, with the tibia completely exposed. The result was an ambulance ride, three days of hospitalization and two surgeries to repair the laceration. She reported, "I was extremely lucky—if she had gotten my knee or ankle joint, or broken my tibia, it would have been much worse. And if she had gotten my abdomen/chest/head, I would probably be dead. It was a good wake-up call. As it was, I was back at work a little over a week after coming home from the hospital, with light duty for a bit."

New Bolton Center Field Service veterinarian Liz Arbittier, VMD, was seriously injured in her 16th year in practice. "It was a wake-up call," she said. Arbittier was attending to a needle-shy

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mare with a large shoulder laceration.

The owner was holding the mare, which was restrained with a lip chain as well as a twitch and was sedated with 10 mg of detomidine and 10 mg of butorphanol. The veterinarian was standing at the point of her shoulder and had just begun to clip the area of the wound. The mare stomped her front foot and nearly fell over. Arbittier waited a moment—then, without touching the mare, turned the clippers back on. Like a flash, the mare cow-kicked and ruptured the doctor's quadriceps. The injury was very painful and caused a non-weight bearing lameness for months. Fortunately, although she has adhesions, no permanent disability occurred.

Arbittier's advice is: "You can get hurt doing something routine, when you have taken all the steps to stay safe. Remember not to take chances; nothing should trump your safety and well-being!"

Reporting Injuries

When you are injured at work, it is important to report your injury promptly to your employer if you are an associate. Workers' compensation insurance might pay for your medical care, rehabilitation, salary replacement for lost work time and permanent disability benefits if you don't recover fully. To get these benefits, you must file a claim and follow your state's procedures carefully. Generally, your employer will provide forms for you to fill out, and the employer will submit those forms to the insurance company.

If you are seriously injured, always get immediate emergency medical care. However, be aware that except for emergency treatment, some states require you to go to a treating doctor or medical provider network that your employer has designated. State laws vary on the details of workers' compensation claims, so be sure to explore this carefully. You can find specifics for your state at www.nolo.com/legal-encyclope-



You can get hurt doing something routine, even when you have taken all the proper steps to stay safe.

dia/free-books/employee-rights-book/chapter12-5.html.

Young Veterinarian Injury

Because the majority (52.2%) of serious injuries reported in this study occurred during the first five years of practice, it is important to consider why that could be the case. Perhaps new graduates feel obligated to prove that they are able to "get the job done." If they have been around horses all their lives, they might have a degree of overconfidence and forget that veterinarians often perform uncomfortable or outright painful procedures that elicit fear and aggression in patients.

Some of the injured reported that they were the one restraining the patient when the injury occurred. While this is understandable if the available help is inadequate, no doubt it is a contributing factor. Those with equine experience might feel they are invincible.

Equine veterinarians with less horse experience might simply lack the ability to "read" horses and miss subtle signs of an impending "blow-up." Some young veterinarians might feel pressure from their employers to never refuse to work on a horse. They also might feel guilty if they are afraid, and they could get into

dangerous situations as a result.

Some advice from respondents on how to stay safe included: "It's not our job to train badly behaved horses." And: "If the horse is dangerous, walk away!"

Another explained, "There's a lot of pressure on new veterinarians to put themselves in unsafe positions to get the job done, but later, with more experience, you realize it's not worth getting killed for."

Many respondents indicated that associates need to advocate for themselves and make their own safety a priority.

Solo Practitioner Concerns

Because about 40% of equine practitioners are in solo practice, unless they return to work swiftly after injury, they risk losing clients and essential income. Comments made by respondents to this survey made it clear that returning to work against medical advice was the norm.

While it is important for all veterinarians, disability insurance is essential for the self-employed. If you are able to save enough money for at least 90 days of living expenses in an emergency fund, purchasing a policy with a 90-day waiting period is sensible. However, most ambulatory veterinarians working alone should pay the premiums for a much shorter waiting period.

Take-Home Message

Equine veterinary practice is a physical job that involves large, unpredictable, powerful animals. Some injuries are inevitable, but careful use of sedation, knowledgeable assistants, appropriate restraint methods and caution can minimize accidents.

Refrain from taking responsibility for training a badly behaved horse. Be willing to walk away from danger, and pay close attention to controlling the environment where you are working in order to keep you, your patient and those around you safe. **EM**

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The wide aisle in the medical barn at Tryon Equine Hospital helps prevent horses from coming too close for comfort.

Fear-Free Design for Equine Veterinary Practices

Here are design and management tips to help your facility become less traumatic for your equine patients.

By Heather E. Lewis, AIA

Fear Free is a movement started by small animal practitioner Dr. Marty Becker (<https://fearfreepets.com>) to reduce the fear and anxiety animals can feel when they visit veterinarians. Eliminating negative experiences is not only better for the

animals, it is good for business.

Fear Free has become a major movement in small animal veterinary practices. While Fear Free standards have not yet been developed for equine veterinary practices, equine veterinarians are already benefitting from a more engaging conversation about

the benefits of a Fear Free approach for equine patients.

As architects who design spaces for animals, we care about how the spaces themselves will support successful veterinary experiences. In general, horses are prey animals, so they are very motivated to look for danger in their surrounding

COURTESY ANIMAL ARTS

environments. Therefore, it is important to design from a horse's perspective.

When considering Fear Free spaces for horses, start with traffic flow concepts.

Traffic Flow

Create a quiet area for unloading. Horses arrive stressed and should be unloaded in a quiet area away from other activities and excessive traffic flow.

Separate equine exam and treatment spaces from human circulation spaces. In older hospitals, it is not uncommon to come across situations where staff members must walk through an equine treatment area to get from one area of the hospital to another. Horses experience heightened stress levels every time a door swings open or a new person strides through. It is optimal to develop separate circulation paths outside of rooms so the patient exam and treatment areas can remain quiet and undisturbed.

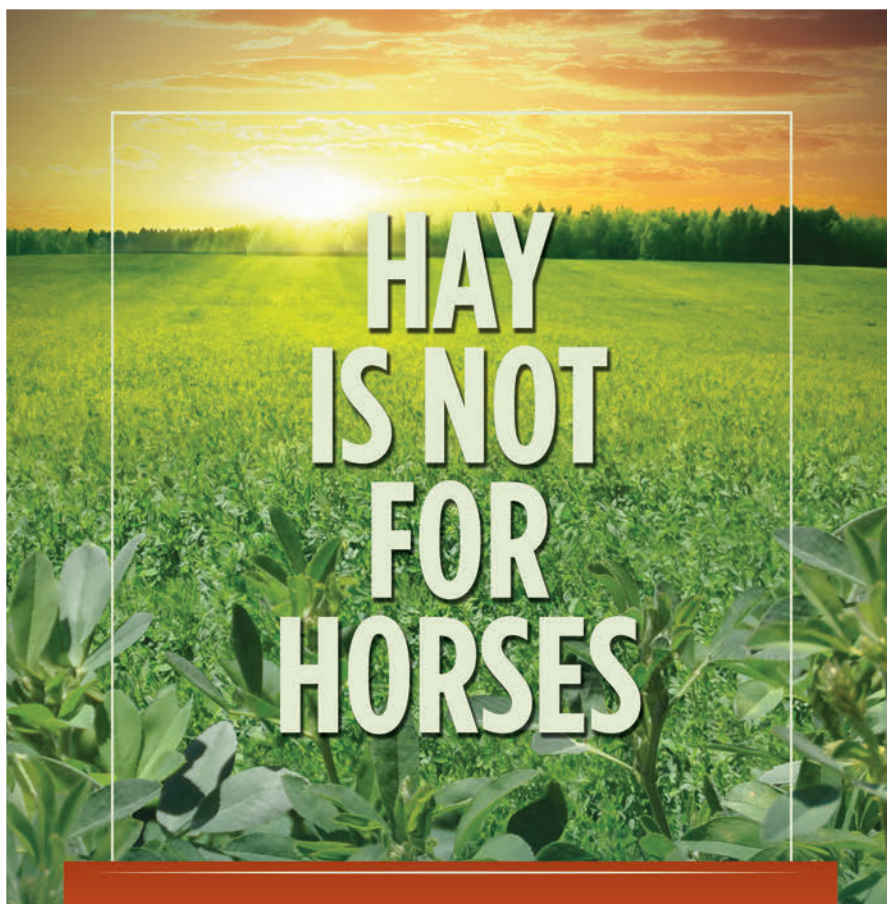
Separate horses from vehicles. Throughout your hospital site, separating vehicular traffic from patient traffic can cut down on stress and create a safer workplace. For example, if vehicles circle around the perimeter of your site, horses should circulate through the center.

Reduce Social Stressors

Horses like the reassuring presence of other horses, and they do not like braving scary things on their own. However, in hospital environments where every horse is surrounded by unfamiliar horses, interactions between horses can also be stressful. For example, if an arriving horse sees a horse running around a paddock in a panic, he also might feel like running and panicking.

The hospital design can set equine patients up for better success by eliminating fear-inducing social cues and reinforcing positive ones as much as possible. Below are some examples of strategies we use:

- Design horse housing so healthy horses can see each other for reassurance.



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- Create wide barn aisles (14 feet or greater) to reduce the “gauntlet of horses” feeling that develops when walking down a narrow aisle.
- In larger facilities, separate medical barns by sex. House stallions away from other horses.
- Keep serious work-up spaces (such as arenas and exam rooms) out of view of areas where horses might be out of control, such as the unloading yard. This will prevent horses from being scared by other, frightened horses.
- Keep a calm “ambassador” horse within sight of newly arriving horses for reassurance.
- Create flexible, partially open treatment and exam areas (when weather allows) to avoid the feeling of fear that develops in horses from physical isolation. This open area can look out to calm areas on your site, such as turn-out pastures.

Work with the Horse’s Sense of Sight

Horses don’t have strong binocular vision or depth perception like people do, but they can see almost all the way around their bodies. They also have a keen sense and understanding of movement, light and shadow, etc. Create solutions designed for the way your equine patients see.

Light work spaces evenly. In barns, deep shadows and bright rays of light can be beautiful and comfortable, like standing in the dappled shade under a tree. But in spaces where horses are working or are under stress, such as arenas or veterinary spaces, uneven lighting can create anxiety. Design equine work spaces with regularly placed, unobstructed lighting. If possible, use lighting that has a spectrum like natural sunlight. The best technology is LED lighting.

Allow horses to see what is coming. Anyone who has worked with horses knows they prefer not to be surprised.



LED lights, supplemented with lots of natural light, create even lighting that supports horses’ vision in this treatment area. The non-slip flooring helps to reduce fear, as well.

In arenas and work areas, it is better to locate visible doors at the ends of the space rather than the sides. This gives the horse a better chance of seeing an object or person arriving with both of its eyes. Horses can be especially terrified of unexpected sights at the ground level, such as moving garden hoses, plastic bags and the like.

Soften and filter natural light. Fabric-roofed arenas make for very comfortable indoor riding spaces because they filter natural light. The effect is a space that is bathed in soft, bright light. The idea of filtering natural light can also apply to traditionally constructed structures. High windows and skylights can be designed with translucent materials to evenly distribute the light in the space, thereby minimizing shadows and glare.

Safe Flooring Is Critical

Design a floor surface that looks solid and even. Horses are spooked by drains, grates, changes of materials and other features in the floor surface that are difficult to see and visually comprehend. Therefore, walking surfaces should be designed to be even, unobstructed and

uniform. Drains can be placed to the sides or carefully obscured to reassure the horse that the floor is safe.

Slipping is dangerous as well as scary. Horses hate to slip, and they will be especially anxious if they feel unsafe on the flooring. Inside the hospital, create non-slip flooring solutions such as:

- rubber matting designed for horses
- poured, soft floor solutions specifically designed for horses
- some textures of concrete.

Refer to the previously published *EquiManagement* article on flooring (Winter 2014) for more information about appropriate flooring solutions.

Consider Odors and Ventilation

Horses will also use their superior sense of smell to test their surroundings for safety. In addition to good basic ventilation to create adequate indoor air quality in medical barns and equine treatment areas, consider other sources of odors in the indoor environment and use ventilation strategies to prevent odors from spreading.

Separate surgery and procedure room air flow from the exam and work-up

areas of the hospital. This strategy helps prevent the smell of blood and other potentially scary odors from becoming pervasive in the rest of the hospital.

Separate all dirty/utility spaces and do not recirculate air from them into exam/treatment spaces. For example, a necropsy room or a dirty laundry room likely smells terrifying to horses coming in for treatment.

Use gentle disinfectants such as accelerated hydrogen peroxide. Accelerated hydrogen peroxide leaves only a slight odor rather than the strong antiseptic, caustic smell left by older disinfection technologies.

Use natural ventilation in barns and treatment areas when possible to reduce odors and to capitalize on natural scents from the outdoors.

Place manure and trash away from the main buildings and downwind.

Create Comfort

Do anything you can to help your patients be comfortable, particularly when they're sick or injured. Keep barns above freezing in winter and free from drafts. In summer, temper the inside of barns by moving air, creating shade and utilizing occasional supplemental cooling depending on your location. But don't overdo it. It is hard on horses metabolically to go from extreme heat into a chilly, over-air conditioned space. The medical barn indoor temperature range should be between 50 and 85 degrees.

Use appropriate, deep bedding or forgiving, rubberized flooring in hospitalized areas so the horses can lie down or stand comfortably.

With the guidance of the veterinarian overseeing care, provide many frequent, small meals, or if appropriate, free access to hay throughout the day, rather than two large meals. Horses are intended to forage continuously, and eating can relieve anxiety.

Provide horses with access to fresh, clean water. If using automatic watering

devices, ensure they are fully disinfected, cleaned, dried and refilled between patients for the health of the next horse.

When medically appropriate, provide safe turnout for horses. Use easy-to-see fencing to keep horses from crashing into unfamiliar paddock or pasture fencing.

Take-Home Message

Good equine facility design already contains all the elements of low-stress, Fear Free spaces. The fundamental difference is the approach. Fear Free challenges us as designers and you as veterinary professionals to *prioritize* the perception of animals, and to eliminate fearful experiences from veterinary visits. As we do this within the realm of equine medicine, the spaces where horses are treated and cared for will change fundamentally for the better. **EM**



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Thinking Outside the Box

Using Ultrasound on the Whole Horse

Learn about the countless ways to put ultrasound equipment to use in your practice.

By Katie Navarra

Ultrasound isn't just for reproductive or hock-down musculoskeletal diagnostics in racehorses anymore.

As the technology has evolved and image resolution has increased, ultrasound has become an invaluable tool for everything from lameness exams

to tumor exploration to guided joint injections—and much more.

“Ambulatory practices that aren't using the technology are hindering their ability to provide a complete diagnosis,” said Richard D. Mitchell, DVM, MRCVS, DACVSMR, of Fairfield Equine Associates in Newtown, Connecticut. He is certified in Equine

Locomotor Pathology (through ISELP) and serves on the board of directors of the International Society of Equine Locomotor Pathology (ISELP).

At Mitchell's practice, each of the seven veterinarians is equipped with a portable ultrasound machine. The staff veterinarians are expected to use the machine daily. But that's not because

ARND BRONKHORST PHOTOGRAPHY

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Kimberly S. Brown, Associate Publisher/Editor



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the practice specializes in reproduction; the clinic focuses on the care and treatment of sporthorses.

“There are a wide range of services that can be provided with today’s ultrasound machines,” he said. “It has evolved far beyond the uses it had in reproductive practices.”

When ultrasound was introduced to the equine world in the late 1970s and early 1980s, it was strictly used in reproduction for pregnant mare checks to examine the ovaries and uterus. As the technology evolved, it was used on soft tissue injuries in the distal limbs in carpus/hock-down scenarios.

“Cardiologists started doing echocardiograms, and ultrasound was occasionally used on the horse’s chest to find evidence of fluid accumulation in pneumonia cases,” he said. “Then it evolved to use in the abdominal organs—the kidneys, bowel, spleen and so on—to determine the evidence of disease.”

Mitchell credits French veterinarian Jean Marie Denoix, DVM, PhD, Assoc. LA-ECVDI, DACVSMR, Certified in Equine Locomotor Pathology (ISELP), and the current president of ISELP, with transforming the role of ultrasound for sporthorse practitioner. Denoix is considered the world’s foremost equine musculoskeletal system anatomist, as well as a leading equine diagnostic ultrasonographer. His anatomical studies opened the door to investigating the distal limb, the stifle, the hip, back and neck with ultrasound equipment.

“Today, there are a wide diversity of issues that ultrasound is used for,” he said.

The average four-year veterinary program doesn’t provide in-depth training in ultrasound. However, a plethora of training is available after graduation. “If you understand the versatility of the ultrasound equipment, you will use it more often than an X-ray machine,” he said.

Whether you’re purchasing your first ultrasound machine or committed to increasing use of one you already own,

read on to discover how to make the most of ultrasound in your practice.

Lameness Exams

For Mitchell and the veterinarians at Fairfield Equine Associates, ultrasound is a go-to tool for swollen or abnormal limbs tied to soft tissue issues.

“You’re not going to look at every fat leg the first time,” he said. “It may be an infection or a blunt-force trauma causing the swelling. But maybe the second visit warrants an ultrasound.”

Clients sometimes balk at the perceived cost of an ultrasound at the initial stage of a lameness exam. However, a clear diagnosis at the outset can save the client expenses over the long term.

“You can save the client more money by using ultrasound on the first visit rather than having to go back two or three times,” Mitchell said.

Including clients in the exam process increases buy-in. Mitchell encourages clients to watch over his shoulder during an exam. He explains what he is observing on the injured leg and points out where the injury is. Then he ultrasounds the normal limb as a control so that the client can understand what is going on.

“They love that, and it helps them understand what it will take for their horses to heal,” he explained.

Ultrasound isn’t limited to lameness diagnosis. It can follow the progression of healing. “Ultrasound can’t measure tendon strength, but you can follow fiber pattern,” he said. “Based on that, you can tell if the horse needs a longer lay-up period or if it is ready to begin building strength through another step in rehab and training.”

He acknowledged that X-rays are still the gold standard in distal limbs for osseous structures and the foot, but said that portable ultrasound machines are quickly gaining in popularity.

“Once veterinarians understand how to use the ultrasound, they will use it more than their X-ray machine,” he said.

Ultrasound-Guided Injections

Stifle injections are routine procedures for veterinarians working in practices that treat sport and performance horses. Despite having performed thousands of injections throughout his career, Mitchell sometimes uses ultrasound to guide his injections of the stifle and always uses the technology when injecting the sacroiliac.

“Using ultrasound is far more accurate than doing a blind injection,” he said.

With the proper probes and attachments, ultrasound-guided injections facilitate more accurate treatment in the joints, neck, back, hip and stifle. Prior to the development of ultrasound and its subsequent use in equine medicine, veterinarians were taught to diagnose lameness based on feeling the location, testing the hoof, blocking the nerves, using X-ray, then surmising what the issue was based on location. Then, when injections were used, veterinarians relied on palpation to find the joint.

“There are still veterinarians that say they can feel soft tissue abnormalities without ultrasound, and I don’t buy it,” he said. “If it is at all suspicious, it warrants a second look.”

The Whole Horse

Once veterinarians are confident with using the equipment, they will find that there isn’t much it can’t be used for. For example, it can be used to examine masses and lumps throughout the body.

“From an ultrasound image, we can determine if a lump on the neck is from an injection or is a tumor that needs aspiration,” he said.

The equipment’s portability makes it an ideal tool for exploring areas not practical with X-ray. Mitchell has used ultrasound on the horse’s head—specifically the temporomandibular joint, the eye and the larynx.

“Examination of an enlarged eye can help determine if the globe itself is abnormal or if perhaps there is a mass

behind the eye,” he said. “The TMJ lends itself to examination for arthritis or meniscal damage, and techniques for laryngeal exams have been developed.

“We’ve been able to use ultrasound to determine if a horse has glaucoma, a tumor in the eye or a tumor behind the eye,” he said. “We’ve also used it on the larynx to determine muscle loss due to paralysis or other abnormalities.”

With special preparation, ultrasound is used to provide images through the underside of the hoof. “We pare away the bottom of a dry hoof, soak it in poultice overnight, then look through the hydrated portion of the frog to view the navicular bone and deep flexor tendon,” he said.

A key to using ultrasound successfully in non-traditional applications is investing in a variety of probes and attachments. “You have to have mul-

tiples probes to make the most of your investment,” he said.

Take-Home Message

There will always be a place for X-ray, MRI and computerized tomography (CT), but the versatility, portability and accuracy of today’s ultrasound machines is hard to beat. Ultrasound can be used to examine any unusual soft tissue thickening or musculoskeletal issue, especially in places such as the neck, front of shoulder, buttock, head and hip.

Purchasing a piece of ultrasound equipment is a sizeable investment that can range from \$20,000 to \$50,000. A good-quality machine with an assortment of extra probes can be purchased in the \$23,000 to \$35,000 range, Mitchell said.

“If the equipment is simple to use and portable, it will get utilized regularly,

therefore providing a rapid return on investment,” he said.

He prefers standalone ultrasound machines, but he acknowledged that ultrasound attachments are available for laptops. Despite the laptop attachments that are available, Mitchell encouraged veterinarians to invest in standalone machines rather than computer add-ons.

Learning to use an ultrasound machine and understanding what the images are depicting can sometimes be intimidating. However, Mitchell pointed to the wealth of training that is available through ISLEP and other continuing education training providers.

Mitchell’s last word of advice on getting the most from your ultrasound is to put it in your practice vehicle. “If the machine is in the car, it will get used,” Mitchell said. “If it’s back at the practice, it will collect dust.” **EM**

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Horse owners want to take the best possible care of their senior companions, and veterinarians have the ability to provide worthwhile services targeted toward these older horses.

Aging Horses as a Profit Center

The specialized knowledge necessary for keeping aging horses robust and healthy has a definite value.

By Nancy S. Loving, DVM

In today's equine industry, horse owners are blessed with the advances of medicine and surgery that help keep their horses alive and well into their 20s and 30s. As a veterinarian, it is possible to not only provide excellence in care for these senior patients, but also to maximize this as a business opportunity that benefits the bottom line of your practice.

While some senior horses are retired,

there are many that are maintained in regular work, and even are in competition. The older horse's unique set of health issues is fodder for client education. The relationship of an owner with his or her horse is often a long one, stretching several decades. Once a client understands the physiological differences that beset that horse as the animal ages, it is likely that he or she will want to do whatever is best for that

valued equine companion. This is where your role as an educator comes in.

Communication with the owner is key to implementing proper health practices for these aging patients, and the services you provide open the door to increasing your business income.

You have probably set your clinic up with state-of-the-art equipment and diagnostic tools that represent significant financial investments. In addition

to your knowledge and expertise, these tools are available to provide the best services to your clients' horses. They have an important role in servicing the geriatric horse population, as well.

So what kinds of evaluations, procedures and follow-up health checks will you want to discuss with your clients who have senior horses? The following information can act as your guide.

General Health

A comprehensive physical exam once or twice a year can pinpoint common problems, such as equine asthma, skin cancers, musculoskeletal problems, ophthalmic issues and dental problems commonly found in aging horses. Wellness exams and veterinary visits provide an opportunity for discussion with the owner about each horse's diet and supplements, medications, social interactions in the herd, exercise demands, performance output and behavior. Obtaining a thorough history enables a practitioner to make relevant medical decisions.

You can inform horse owners about the greater need to assist native immunity in aging horses by providing excellent vaccination, deworming and preventive health protocols. You might offer an official wellness package that gets you on the farm twice a year to check for changes in each of your patients. New health concerns lend themselves to more regular evaluations, diagnostic procedures and follow-up visits, which give you the benefit of earning additional income from clients who want your services.

Dentistry

A common generator of veterinary income, particularly for aging horses, is dentistry. You might have been taking care of horses' mouths for years, but now is the time to point out how things might have changed in a senior horse's mouth and how that impacts feed intake, body condition, energy and health.

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Sophisticated dental equipment and practices assist in fixing age-related problems in aged horses. Owners should understand that maintenance of useful grinding teeth helps prevent colon impaction, choke and weight loss.

Owners do not necessarily recognize dental problems in their older horses, and they depend on their veterinarians to bring problems to their attention. A British study identified that 95% of older horses had significant dental problems, but only 10% of owners thought this to be the case before the veterinary exam.

For the older horse, it might be practical to market dental exams as something that should be performed at least twice a year. This gets you on the farm more often and can lead to other income-producing measures that the older horse (or another horse in the herd) might need.

Metabolic Changes

Another commonly evaluated health concern of the older horse is a propensity to develop PPID (pars pituitary intermedia dysfunction, or Cushing's disease). It is best for the horse to not wait until clinical signs—hypertrichosis, irregular shedding, changing body shape, chronic infections or laminitis—are present before something is done about this condition. Clients generally appreciate a proactive approach when it comes to their horses' care.

Addressing pituitary changes early on gives the best results while the horse still retains robust health. This calls for a discussion about the pros and cons of testing and the options for treatment in the event the horse has PPID based on clinical and laboratory assessment. Horses as young as five can have PPID.

Stimulation testing with TRH to measure ACTH and insulin is a simple procedure that yields information (and profit). Follow-up testing once or twice a year ensures appropriate dosing of effective treatment medication (pergolide). Both laboratory testing and provision of prescription medication generate income. Keeping tabs on the disease process and treating it are ongoing for the life of the horse.

For horses already in the throes of PPID, your clients will be thrilled with how the horses bounce back to a more vigorous and energetic state when treated. Monitoring and managing PPID is not only a good practice builder, but it also keeps your clients' horses alive longer, which translates to more income production for the practice over time.

And, because of your role as a healer, you likely achieve personal gratification for the help you tender to the PPID horse. All in all, testing for PPID is a sound strategy for generating healthier horses, personal satisfaction for all involved, and financial gain for your business.

Overfeeding is an unfortunate consequence of horse owners loving their



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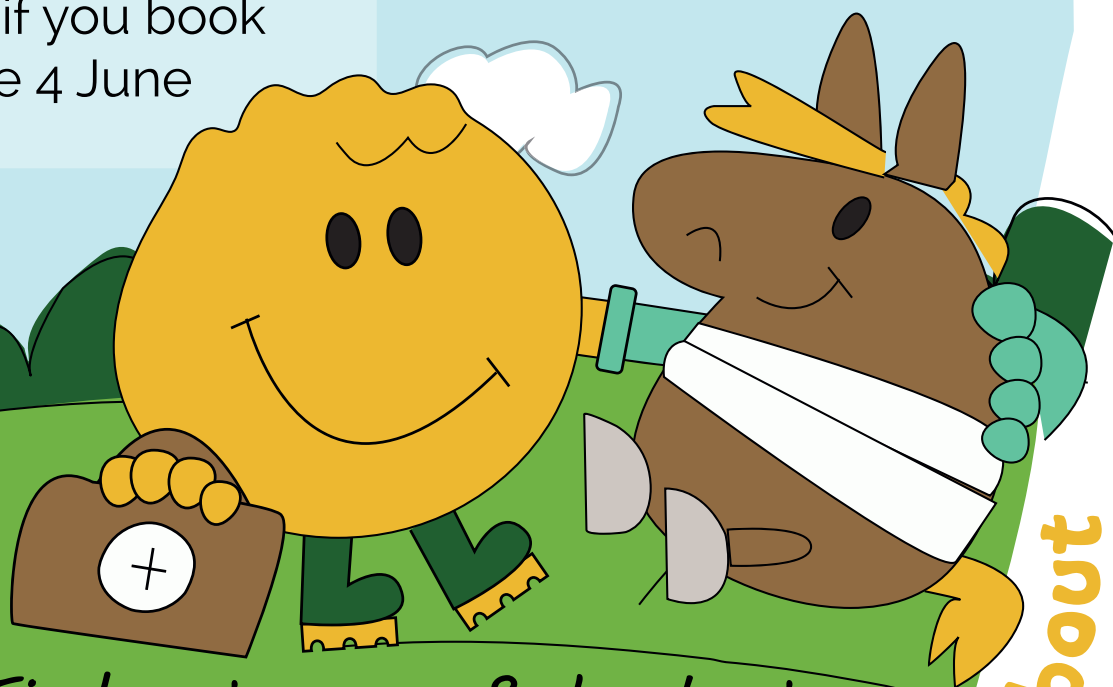
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horses too much. Equine metabolic syndrome and insulin resistance are not unique to older horses, but those problems tend to be more prevalent as aging horses exercise less—or with less intensity—yet continue to be overfed.

Client education is a first strategy to help combat the tendency to overfeed and to reduce the risk of laminitis in metabolic horses. Testing for insulin resistance and glucose absorption provide concrete information for appropriate client consultation. These conversations come with a price tag in the form of charges for your expertise and advice.

Parasite Control

Parasite control measures are followed for all ages of horses, and they are especially important for the older equid. A horse's immunity is often compromised by inflamm-aging, PPID, and by the natural course of aging. Again, conversations with your clients can alert them to the practical strategy of performing annual or twice-annual fecal egg counts (FECs), along with periodic fecal egg count reduction (FECR) testing that checks on the efficacy of deworming drugs used on the farm. These tests are simple to perform in-house and serve as good profit generators for the practice.

Nutritional Concerns

Veterinarians are commonly asked for advice about nutritional concerns for horses of all age groups, but senior horses tend to have more issues. Some horses have trouble holding body condition; others easily become too fat.

Besides inadequate provision of calories, weight loss can result from dentition problems or discomfort, temporomandibular joint disease, intestinal dysfunction that comes with age, chronic pain, neoplasia or other underlying disease. Obesity usually is a result of poor management and feeding practices;

this is an area where client education by veterinarians takes on an important role.

Travel to client farms allows you to observe the quality of hay and pasture, and to see exact measurements of feedstuffs and supplements fed. In this way, you are able to make appropriate suggestions tailored for individual horse needs. You can reasonably charge for your time and expertise when consulting with clients on each horse's diet. While discussing nutrition, you'll also be able to address dental needs and parasite control measures.

For the hard keeper, it might be relevant to pursue blood testing, a rectal exam, endoscopy for gastric ulcers or neoplasia, and other diagnostic measures that generate income. Some older horses have diarrhea due to intestinal dysfunction, parasite burdens or sand ingestion. Testing for sand, using FECs, ultrasound of the abdomen or running intestinal absorption tests are other diagnostic strategies that yield information as well as profit while also putting some of your expensive practice equipment to work.

Nutritional advice and relevant diagnostic workups not only save your client money on feed bills, but often improve patient health. Control of obesity is essential to maintaining musculoskeletal comfort and stability by minimizing stress on aging joints and preventing development of laminitis. The fat horse benefits from dietary changes and restrictions, slow hay feeders and grazing muzzles. These techniques might not be known to your clients, giving you the opportunity to educate them and have them turn to you as the primary resource for more information about current and future concerns. This helps maintain an active working relationship, which inevitably generates profit.

Musculoskeletal Comfort

All equine athletes are at risk of musculoskeletal injury. The aging horse

might have incurred an injury early in life, and you are now in the position of maintaining that horse's comfort with physical therapy and systemic and intra-articular joint therapy. Sometimes newly developed arthritic changes are occurring, and clients want to ensure their horses a good quality of life in their golden years.

Treating musculoskeletal problems is a mainstay of equine practice and a tremendous income generator. Diagnostic imaging helps to pinpoint a diagnosis, once again making use of expensive equipment investments of your practice. Administration of joint injections, intravenous and intramuscular joint therapy medications, and oral joint supplements are income-generating services that enable an aging horse to remain as comfortable as possible so he or she can continue in work or relax in retirement.

Consultation—for pay—with a client's farrier is another useful service to help keep an older horse sound and/or comfortable. Regular foot care is important, and veterinary expertise is essential to this care.

Take-Home Message

It is easy for clients to take for granted that your expertise can be handed out without charge. Yet, your expertise did not come without cost: the expense of a veterinary education, the investment in developing your practice and equipping it with specialized tools, and your time invested in the industry and in honing your skills.

All the knowledge and skills you have gleaned over the years are readily applied to maximize the quality of life for your equine patients. The very specialized knowledge necessary for keeping aging horses robust and healthy has a definite value.

Being compensated for your abilities keeps your practice afloat and contributes to career satisfaction. **EM**

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A DEA consultant can help if your practice discovers an issue with controlled substances.



Controlled Drugs and Compliance

Careful attention to compliance with the regulations concerning controlled substances is not only the law, but also an obligation to protect the public.

By Amy L. Grice, VMD, MBA

Controlled substances significantly increase a practice's compliance obligations, but it is nearly impossible to practice without them. Drugs—and certain chemicals used to make drugs—are classified into five distinct categories known as schedules (I–V), depending upon the drug's acceptable medical

use and the drug's abuse or dependency potential. Schedule I drugs have a high potential for abuse and the potential to create severe psychological and/or physical dependence. As the abuse potential decreases, the drug schedule number increases, with Schedule V drugs representing the least potential for abuse.

The mission of the Drug Enforcement Administration (DEA) is to enforce the

controlled substances laws and regulations of the United States. DEA law enforcement has three divisions:

- Enforcement: the most important division
- Intelligence
- Diversion: investigative power, but no law enforcement power without calling in the enforcement division.

Compliance with controlled sub-

stance regulations is essential. Vet practices are often targeted for theft of controlled substances, and these drugs can cause significant harm in society when they are used outside of the law. For example, ketamine has been used in cases of date rape.

A vet practice might come under the DEA spotlight through a complaint by a disaffected employee, the arrest of an individual with controlled drugs that were improperly dispensed, or a reported loss of large amounts of controlled substances.

Usually if a practice gets in trouble, it becomes a regulatory rather than a criminal prosecution. If a practice is visited by one DEA group (Diversion) in the morning and another (Enforcement) in the afternoon, this means that the regulatory division has called the enforcement division, and the situation is serious. If any false information is given to the Diversion division by practice representatives, or the Diversion division personnel have reason to believe that full cooperation is not being given by the veterinarian, the Enforcement division will be called.

If your practice discovers an issue with controlled substance compliance or theft, utilizing a DEA consultant is recommended. Most are former DEA employees who can provide valuable advice. It is best that any request for services of a DEA consultant originate from the practice's attorney, so that there will be attorney/client privilege about the findings of the consultation and deficiencies found.

Each practice is responsible for understanding and complying with the regulations described in Title 21 Code of Federal Regulations, PART 1300-END, which can be found at www.deadiversion.usdoj.gov/21cfr/cfr/index.html.

The following are some highlights from these regulations:

1. DEA Registration—Because each DEA registration requires separate control substance (CS) recordkeeping sites, separate storage of controlled sub-

stances and absolutely no co-mingling of controlled substances or controlled substance records, one option for practices is to have a "clinic" registration. All veterinarians are then listed and referenced under the clinic registration as -1, -2, etc. A simpler option is to have one registrant who acts as the primary registrant with subordinate agents. The primary registrant then has responsibility to supervise his agents, as he or she is responsible for their conduct. Remember: He/she is personally and fully responsible.

2. Background Checks—By law, practices are obligated to do background checks on all persons with access to controlled substances. Each person to be investigated needs to sign a written waiver before the background check is conducted. You can ask the local DEA diversion officer or your local sheriff or police department to do a NADDIS and NDIC check, and you should have a written policy in place regarding this.

3. Leadership—A Controlled Substance Officer (CSO) needs to be appointed for every practice. This person is responsible for training new employees about controlled substance policies and protocols, keeping biennial inventories and maintaining accurate records of controlled substances and Forms 222, etc.

4. Technicians—Federal law does not permit technicians to administer controlled substances. Some states have laws stating that technicians are "practitioners," but the federal law supersedes state laws.

5. Biennial Inventory—This is a physical count documented in an exact way that is required every two years. Federal law requires keeping records for two years, and state laws vary. It is important to be aware of your state laws.

6. Form 222—Form 222 is used to order CII controlled substances such as sodium pentobarbital. The Form 222 must be signed personally by the registrant unless that person has a written

Power Of Attorney on file. Upon receipt of the CII substances, the acknowledgment of receipt with the date must be made on the Form 222. The Form 222 must be stored separately and as secure as the controlled substances.

7. Destruction—When you have defective or expired controlled substances, one option is to directly destroy the substance, provided the registrant has at his or her registered site a method of destruction that is legal under local, tribal, state and federal law. The method must render the substance "non-retrievable," which is defined as "permanently altering the substance's physical or chemical condition or state through irreversible means so as to make it unavailable and unusable for all practical purposes" or "when it cannot be transformed to a physical or chemical condition or state as a controlled substance or controlled-substance analog."

If a registrant opts to destroy the substance on-site, the job may not be done solo. The regulations state: "Two employees of the registrant must handle or observe the handling of any controlled substance until the substance is rendered non-retrievable." Mixing controlled substances with kitty litter or coffee grounds and disposing of the amalgam in the garbage does not meet the "non-retrievable" standard.

8. Reverse Distributions—These are used for defective or expired controlled substances. By using a reverse distributor company, registrants may dispose of unwanted product for a fee. In the case of returns or recalls, they can send the controlled substance to the individual, manufacturer or representative of the manufacturer from whom it was obtained. There are often different state and federal regulations. You can read more at news.vin.com/vinnews.aspx?articleId=33945.

9. Separate Invoices—Distributors that ship controlled substances should send packing information on a separate

invoice, because controlled substance invoices must be kept in a separate file. Make sure to note the date on which the shipment is received and the quantity that is included in the order.

10. Dispensing—In order to dispense controlled substances, one must write a controlled substance prescription. In some states, controlled substance prescriptions must be reported online within 24 hours. Dispensing without a prescription or pretending the drug was administered is grounds for criminal enforcement.

11. Loss or Theft—You must file Form 106 for all thefts and for “significant” losses within 24 hours. Form 106 is found online and must be completed and submitted electronically.

12. Employment Screening—It is the position of DEA that the obtaining of information from prospective employees about conviction of crimes and unauthorized use of controlled substances is vital to fairly assess the likelihood of an employee committing a drug security breach. It is, therefore, assumed by the DEA that the following questions will become a part of an employer’s comprehensive employee screening program. Failure to do so can cause the DEA to judge that your practice is not serious about compliance with the regulations.

a. Within the past five years, have you

been convicted of a felony, or within the past two years, of any misdemeanor, or are you presently charged (formally) with committing a criminal offense? Do not include any traffic violations, juvenile offences or military convictions, except by general court-martial. If the answer is “yes,” furnish details of conviction, offense location, date and sentence.

b. In the past three years, have you ever knowingly used any narcotics, amphetamines or barbiturates, other than those prescribed to you by a physician?

13. Responsibilities to Report Drug

Diversions—Employees who have knowledge of drug theft or diversion from their employers have an obligation to report such information to their employers. Employers have a responsibility to treat such information as confidential and to take all reasonable steps to protect the confidentiality of the information and the identity of employees furnishing information.

Failure to report drug theft or diversion information should be a critical factor in determining an employee’s continued employment. Employees who possess, sell, use or divert controlled substances not only subject themselves to state or Federal prosecution for any illicit activity, but should also become the subject of independent action re-

garding their continued employment.

Training files should include evidence of all background checks done on each employee with actual or potential access to controlled substances. They should also contain an acknowledgment from the employee that he or she has been trained in and understands the Standard Operating Procedures (SOP) relative to all aspects of controlled substances.

Regulations require that an employer advise each employee in writing of his or her obligation to report any instance of actual or suspected diversion of a controlled substance. This written notification should be part of each employee’s training file.

Take-Home Message

Careful attention to compliance with the regulations concerning controlled substances is not only the law, but also an obligation to protect the public. Taking this responsibility seriously is an essential part of ethical practice. **EM**

Resources

- Title 21 Code of Federal Regulations, PART 1300-ENDdeaddiversion.usdoj.gov/21cfr/cfr/index.html
- Practitioners Guide: deaddiversion.usdoj.gov/pubs/manuals/pract/index.html
- Security Guide: deaddiversion.usdoj.gov/pubs/manuals/sec/index.html

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