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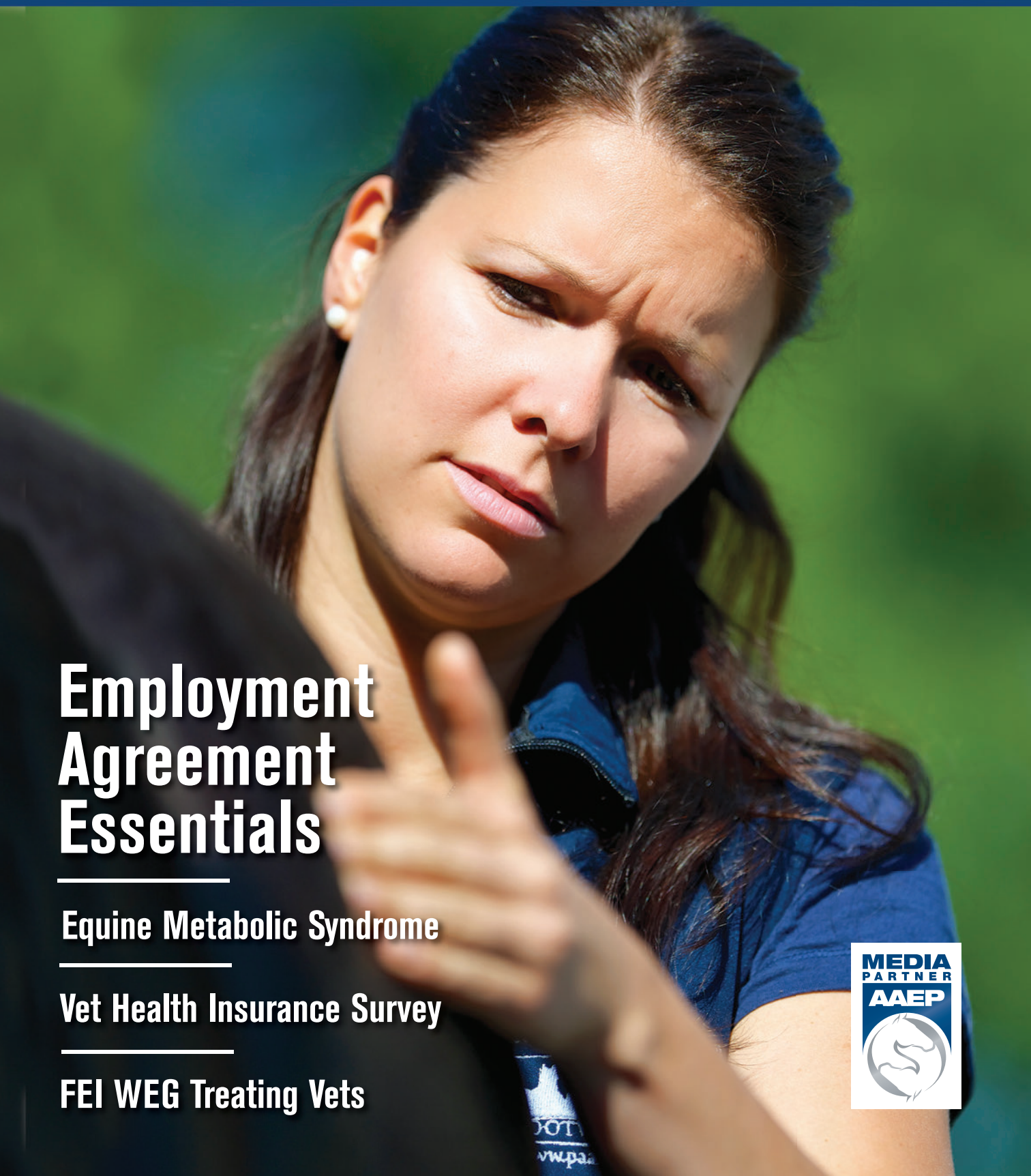
July/August 2018



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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	**Sensitive**	**Moderately Sensitive**	**Not Sensitive**
Escherichia	*Staphylococcus*	*Moraxella*	*Mycobacterium*
Streptococcus	*Neisseria*	*Nocardia*	*Leptospira*
Proteus	*Klebsiella*	*Brucella*	*Pseudomonas*
Salmonella	*Fusiformis*		*Erysipelothrix*
Pasteurella	*Corynebacterium*		
Shigella	*Clostridium*		
Haemophilus	*Bordetella*		

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	Acute Urogenital Infections
Respiratory Tract 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 folinic 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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Inside

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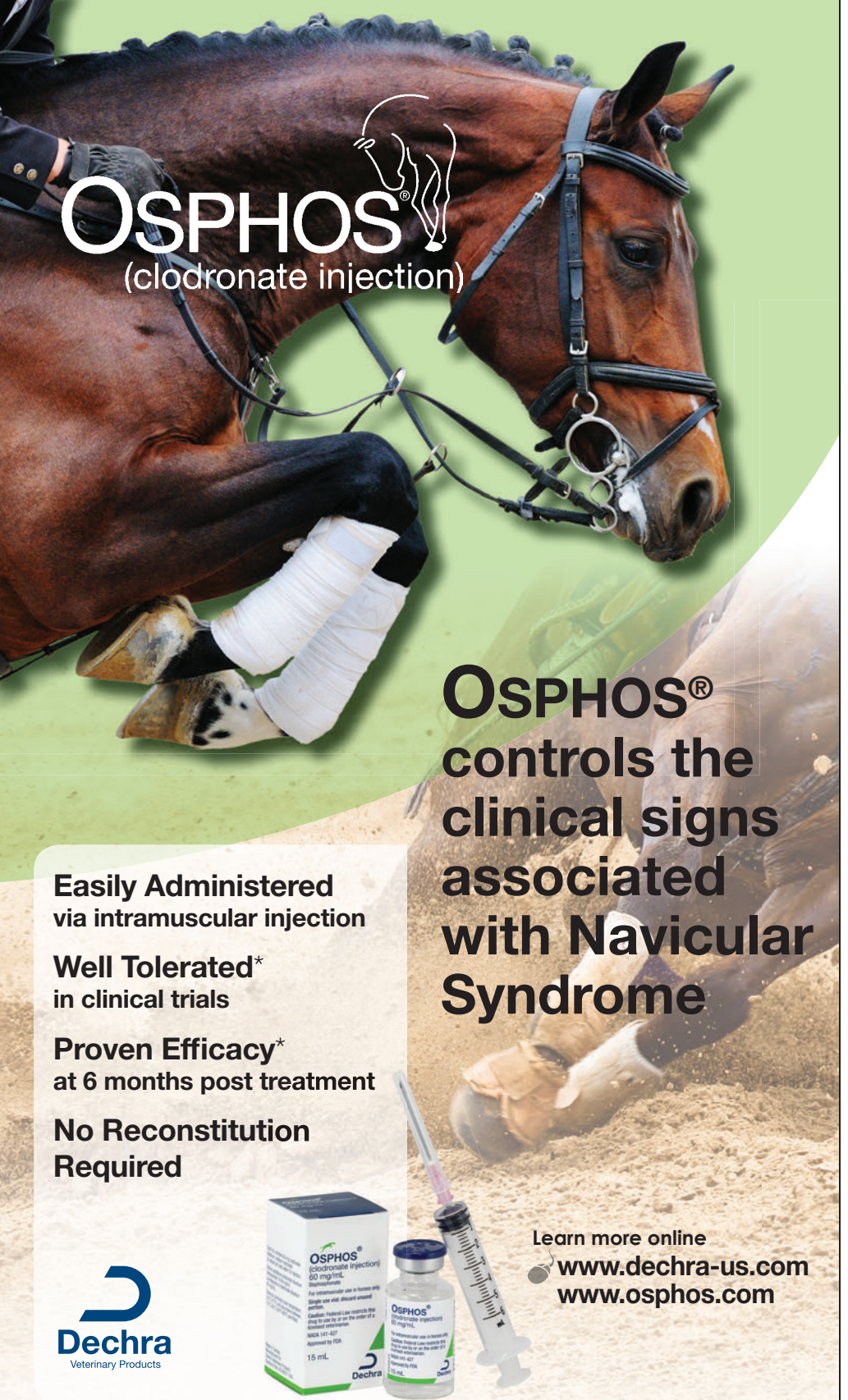

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As with all drugs, side effects may occur. In field studies, the most common side effects reported were signs of discomfort or nervousness, colic, and/or pawing. OSPHOS should not be used in pregnant or lactating mares, or mares intended for breeding. Use of OSPHOS 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.

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

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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 OSPHOS.

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 OSPHOS these clinical signs usually began within 2 hours of treatment. Horses should be monitored for at least 2 hours following administration of OSPHOS.

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 OSPHOS 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 OSPHOS 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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PUBLISHER'S POINTS

By Kimberly S. Brown

Learning

Albert Einstein said, "Education is what remains after one has forgotten what one has learned in school." As veterinarians, you are constantly learning beyond what was taught in vet school. That learning encompasses a wide variety of topics, such as business, personal and professional communications, negotiations and equine health discoveries.

But are you still setting goals for learning now that school is over (perhaps years ago)? Are you looking for opportunities to advance your practice or business skills? Do you take online or in-person courses? Would you want to advance your expertise in imaging with an ISELP certification? Do you participate in AAEP CE, or have you traveled to a BEVA Congress?

We at EquiManagement work with our partners to bring equine veterinarians, vet students, vet techs/assistants and those serving veterinary professionals a wide variety of learning opportunities through our magazine and website. And those opportunities are growing! Watch these pages for some exciting news as we get closer to the 2018 AAEP Convention!

EquiManagement magazine has original articles focused on not only business and equine care, but on the health and wellness of the professional. Merck Animal Health is sponsoring a series of articles that focus on veterinary wellness. This month's column on page 6 is titled "Wellness for Your Body." It is hard for you, as equine veterinarians, to remember that the mental and physical care of your own bodies is just as important as your care for your patients.

And because we learned from last issue's survey on veterinary injuries that getting hurt on the job is a normal part of doing business, in this issue we have a survey about veterinary health insurance. It is important that you understand the options available to you for various health, disability and long-term care coverages.

In addition, many veterinarians don't have insurance as part of their employment agreements. So before you offer or sign an agreement, or before you re-negotiate a current agreement, read our cover story on page 20 for tips on what to look for in that contract.

Leading Up to WEG

KindredBio is sponsoring the veterinary and horse health coverage before and during the Fédération Équestre Internationale (FEI) World Equestrian Games (WEG) Tryon 2018 through EquiManagement, EquiManagement.com and other AIM Equine Network brands.

In this issue and on EquiManagement.com, you can learn more about the treating veterinarians at WEG Tryon 2018. Check out the articles on pages 10 and 12; then look for more extensive articles on those topics on the website. Make sure to follow EquiManagement's website and social media outlets for articles, news, videos and interviews before and during the WEG event. EM

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Wellness for Your Body

The mental and physical care of your own body is just as important as your care of your patients.

By Amy L. Grice, VMD, MBA

Physical health results from a combination of behavior, genes and access to good medical care. While we cannot change our genetic makeup, and our access to medical care will be influenced by where we live, we can exercise control over our behavior. We can make healthy choices about nutrition and exercise, plus control risky behaviors such as smoking and drinking.

Equine vets, like other workers in very physical jobs, have a higher risk for acute and chronic injuries. High levels of stress can encourage unhealthy habits. Taking care of your physical body can allow you to live a longer, happier life.

Good nutrition is the foundation for good health, and most veterinarians understand what constitutes healthy eating. Putting it into practice is harder!

Adopting a heart-healthy diet low in saturated fat and sugar and high in fiber, vegetables and lean protein can be difficult in the time-starved lifestyle of an equine doctor. It is infinitely harder to eat a salad than a sandwich while walking between stalls in the hospital or while driving an ambulatory vehicle.

Many equine veterinarians never sit down to eat breakfast or lunch unless they are behind the wheel. Often, they simply continue working until they are famished and irritable. This leads to scarfing down the first food they can find—which all too often is the box of donuts in the lounge or the slice of greasy pizza from the gas station. Feeding your body with respect for the finely-tuned organism that it is requires intention.

Consider packing a lunch (and a breakfast) of healthy foods such as yogurt, nuts, fruit, and/or leftover vegetables and meat/fish. Try to carve out 15 minutes to eat when you can experience the food you consume.

All the time spent behind the wheel or in the clinic can lead to weight gain because of inactivity. Stress also causes increased deposition of fat. Losing weight can be very difficult, so preventing gain is the best strategy. Exercise is important in this effort and is a great stress-reducer, as well.

Most practitioners working long days struggle to find time to exercise and must fit it in early in the morning or late in the evening. When on emergency duty, exercise often is impossible. However, new studies show that the recommended 30 minutes of daily moderate activity does not have to be achieved at one time; it can be spread throughout the day.

By adopting new habits of parking farther away from the front door of your office (or wherever you're going) and taking the stairs whenever possible, you will add steps that will add incrementally to your fitness. Consider leaving your work truck at the office at night and biking to work each morning. If you can, carve out time for a short walk in a pretty spot each day. These mini-vacations will benefit your spirit as well as your body.

Unhealthy habits such as smoking and excessive drinking are often linked to stress. These addictions can be very hard to stop, but the benefits to your health are considerable if you can. Seek help from your health provider or a local support group. Strategies to decrease your stress and increase your exercise are often very helpful.

Some of the highest risks to your physical health in the equine veterinary profession are traumatic injuries suffered during work. Kicking, striking and crushing are all defensive behaviors that horses exhibit when reacting to or being apprehensive about painful or uncomfortable procedures.

Most equine veterinarians are tough and shake off injuries that others would give time to heal. Commonly, they fail to seek diagnostic or treatment services from a medical doctor trained for *Homo sapiens*. Prevention is the key to minimizing injury.

In your work, utilize experienced handlers, position your body in as safe a place as possible, use sedation when appropriate, use needed levels of restraint and protect your head.

The trauma you suffer during practice when you are younger will often cause chronic pain as you age. Your body needs to last for many decades, if not a century. Treat it with respect and loving care to have the best chance at a long and healthy life. EM

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Consult your veterinarian for assistance in the diagnosis, treatment and control of parasitism.

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[1] PANACUR® (*fenbendazole*) POWERPAC Equine Dewormer product label.

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NEW VET COLUMN

By Zach Loppnow, DVM

Short Memory

Learn from mistakes, but don't allow them to distract you from your next patient.

Every veterinarian wants every case to go according to plan. Our goal is to achieve 100% accuracy when diagnosing and treating our patients. When this happens, it is an incredible feeling. It helps the rest of the day go by more smoothly, and even makes difficult clients seem easier to deal with.

What happens when things don't go right? What do you do when the colic surgery that you were convinced a horse needed doesn't find a lesion? Or when you have treated a horse with everything that should have improved its condition, but it only gets worse?

As a young veterinarian, I have found that these situations are among the most challenging parts of developing my personal brand of medicine. Coping with the feelings of failure and learning to rebuild the fragile confidence that young veterinarians have in themselves can be a grueling process. We don't have the benefit of falling back on years of experience to assure ourselves that we made the right choices. At best, we hopefully have a mentor or two around who can help with this, but many of us are left to muddle through it on our own.

I have found it helpful to draw on a lesson from one of my high school athletic coaches. When our game plan didn't work the way we expected, or something went wrong, he encouraged us to have a "short memory." The underlying psychology is that you have to let go of what just happened, or you risk compromising your next action because your thoughts were distracted by what went wrong.

This lesson has value in the veterinary profession. The times that things have gone awry with a patient, it was not the only animal I was seeing that day. If I spent time dwelling on that fact, I put my next patients at risk because I wasn't giving them my full attention. Instead, I needed to focus on that next case and approach it with the same confidence I would have if the previous case had gone right.

This isn't to say that we shouldn't learn from our mistakes. There are always ways that we can improve our processes and treatments. It simply is a reminder that no one gets every case exactly right. Instead, we have to accept that each case comes with an element of unpredictability. We have to apply our full effort and skill to each case to find success. To divide ourselves with the confidence-killing burden of past problems and failures only ensures that we are more likely to miss something in our next case. EM

Zach Loppnow, DVM, is an equine veterinarian at Anoka Equine Veterinary Services in Elk River, Minnesota.

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Treating Vets at WEG Tryon 2018

Equine welfare and regulatory matters are top priorities among veterinary services providers at the Games.

By Kimberly S. Brown

Treating veterinarians at major events are the cornerstone of the health and welfare protection for the horses in competition. At the FEI World Equestrian Games™ (WEG) Tryon 2018, FEI treating veterinarians will be overseen by the husband-wife veterinary team of Bill Hay, DVM, DACVS, and Anne Baskett, DVM, DACVS.

Baskett is a graduate of the University of Montreal who received her surgical training at the University of Georgia. She is certified in veterinary acupuncture, has been an FEI veterinary delegate since the 1990s, and is the selector veterinarian for the Canadian three-day event team.

EquiManagement caught up with Baskett while she was serving as an official for the Land Rover Kentucky Three-Day Event. *(For more on Bill Hay, see p. 12.)*

Welfare of the Horse

Baskett said that working the Land Rover Kentucky Three-Day Event as the assistant veterinary delegate was good preparation for the job as veterinary services manager (VSM) for WEG Tryon 2018. Baskett said the FEI treating veterinary job is all about the welfare of the horse.

For the Land Rover Kentucky Three-Day event and the upcoming WEG Tryon 2018, Baskett said she relied a lot on the expertise and advice of Kent Allen, DVM, who was the team veterinarian for the U.S. eventing team for decades, including for the Kentucky WEG 2010.

Baskett said she was using as much as she could from the Kentucky WEG 2010 plan as a template for the North Carolina event.


COURTESY TRYON HOSPITAL

Anne Baskett, DVM, DACVS

"But times have changed, and the terrain has changed," she noted. "A majority of the time we [she and her husband, Bill] have spent so far on the Tryon event has been on regulatory matters."

Regulatory and Protection

There will be onsite quarantine at the venue, and international horses will also arrive into national U.S. import quarantine centers, then ship into the facility for WEG Tryon 2018. Baskett said that the USDA, the North Carolina Department of Agriculture and North Carolina State University have provided tremendous help in getting ready for WEG.

Baskett and Hay are responsible for the "flow" of horses from quarantine into the event grounds as well as returning to departure airports. They are expecting 10-12 flights of horses that will be quarantined at the WEG Tryon 2018 event grounds.

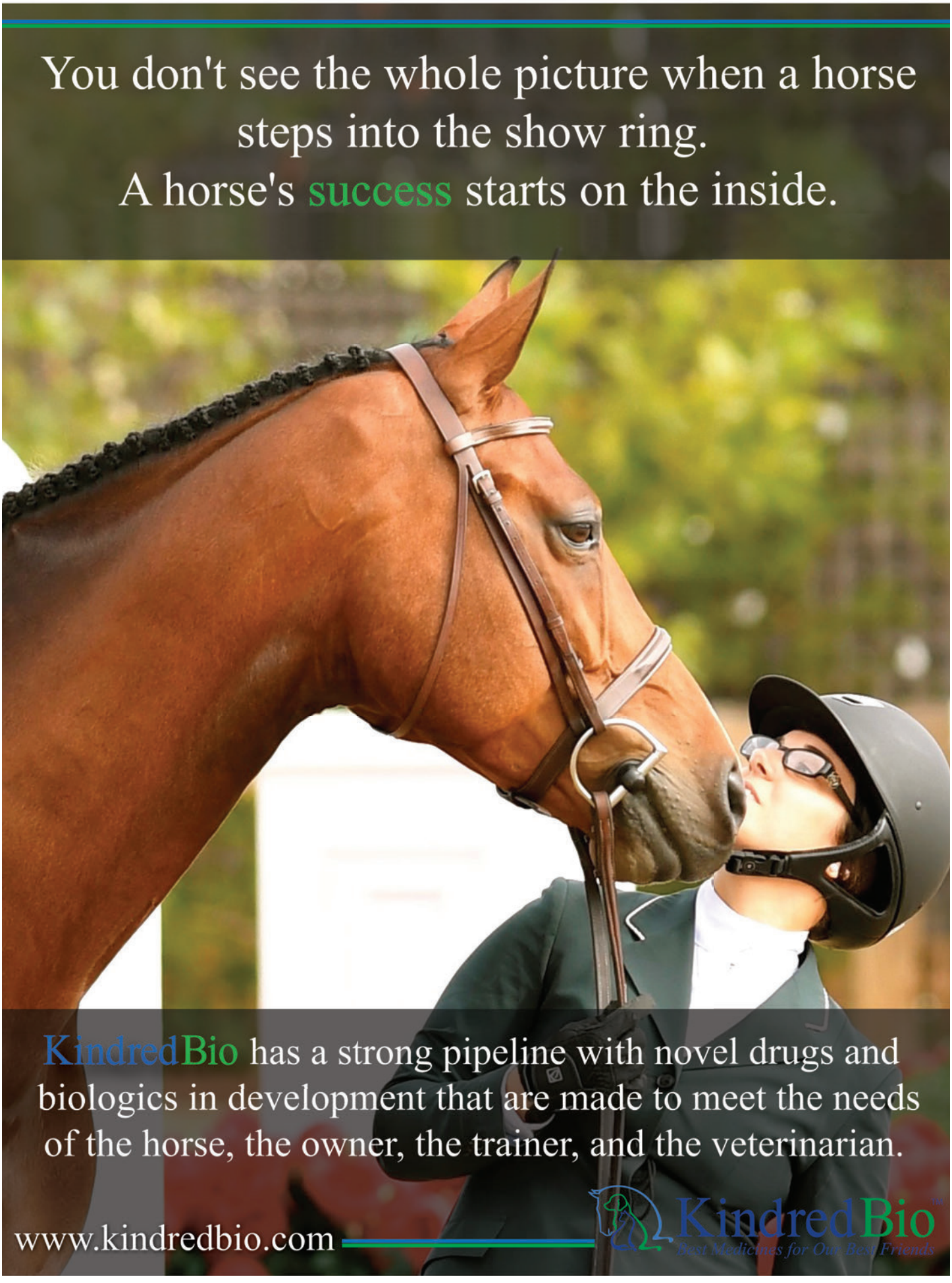
Baskett's and Hay's responsibilities are to ensure that the veterinarians are licensed in North Carolina. "The state has helped with that, offering 60-day temporary licenses," said Baskett.

For the "fields of play," Baskett said that she and the other treating veterinarians will ensure there are qualified professionals available. They will also have experienced practitioners who can serve as treating veterinarians for those competitors without a team veterinarian present. While there will be a temporary hospital on the event grounds, it will be for minor problems. Since Tryon Equine Hospital is so close, anything serious or complicated will be transported to that facility.

Baskett said that they have done test runs for equine ambulances with police escort from all areas of the show grounds, including throughout the cross-country course for eventing and driving.

Baskett wanted to single out Yves Rossier, DMV (University of Montreal), DACVIM, who is advising and volunteering to help in preparation and will be present during the WEG Tryon 2018 event. Rossier is a professor of equine sports medicine at the University of Montreal, as well as serving as an official FEI veterinary delegate. EM

Editor's note: The complete text of this article can be found by searching for "treating vets" on EquiManagement.com.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Q&A with Dr. Bill Hay

A volunteer WEG professional discusses the test events and general concerns about the Games.

Bill Hay, DVM, DACVS, and his wife, Anne Baskett, DVM, DACVS, will oversee the treating veterinarians at the Fédération Équestre Internationale (FEI) World Equestrian Games (WEG) Tryon 2018. The event will be held September 11-23 at the Tryon International Equestrian Center in Mill Spring, North Carolina.

Hay is a graduate of University of California-Davis. He received his surgical training at New Bolton Center. He was Chief of Staff at the University of Georgia Veterinary Hospital before joining Tryon Equine Hospital in 2000.

After all eight of the WEG Tryon 2018 Test Events had taken place, *EquiManagement* asked Hay how they went and about the Games in general. Following are those questions and answers.

Bill Hay, CVM, DACVS

Q. *How have the test events gone?*
A. The disciplines are extremely varied, and it has been a pleasure working with the competitors and organizers. The horses have all done well, and the level of competition has been excellent. Each discipline team has been complimentary of the facilities and organization to date and has provided helpful insight into the continued development and preparations for WEG in September.

Q. *What does it take to coordinate this many domestic and international horses?*
A. Plans for WEG include a well-orchestrated arrival and departure schedule with international arrivals by air and domestic arrivals by road. The large number of permanent stables at Tryon International Equestrian Center make it much easier to manage the number of horses coming for competition. Horses will be stabled by discipline, allowing arrival, training, competition and departure schedules to be organized by discipline, as well.

Q. *What about biosecurity concerns for the Games?*
A. Horses that are coming to compete in WEG are all FEI horses of high health status. They are closely managed and monitored throughout their competition careers. In addition, the USDA and the North Carolina Department of Agriculture are performing extensive testing and examination of all horses entering the site.

There are medical facilities on site, and most medical situations will be managed by the Veterinary Services team at the venue. An extensive biosecurity plan has been developed by veterinarians with experience in recent Olympic and World Equestrian Games that assures safe importation, participation in sport at the Tryon WEG and exportation of horses after the Games are finished.

Q. *If a horse is injured during an event or on course, what is the protocol to remove that horse to a hospital?*
A. In the event of a medical problem or injury of a horse at WEG, most conditions will be managed at the WEG Veterinary Hospital at the venue. Veterinarians will be present at all competitions and equine ambulances from PEER, MSPCA and 4HFES will be ready to transport any injured horses.

If a horse requires more care than can be provided on site, equine ambulances are available to transport WEG horses to Tryon Equine Hospital, North Carolina State University Veterinary Hospital or the University of Georgia Veterinary Hospital, as needed. Horses that need to leave the venue will be transported under USDA Seal to these approved locations.

Q. *Dr. Baskett said in an interview that specialist veterinarians will be present at the venue. Can you expand on that?*
A. Veterinarians with a wide range of expertise in each of the eight WEG disciplines will be providing care at WEG. In addition, there will be specialists in veterinary imaging, internal medicine, surgery and lameness staffing the WEG hospital. EM

Editor's note: For the longer version of this article, search for Bill Hay on EquiManagement.com. We will stay in touch with WEG veterinary officials and let you know more about the health and welfare of the horses attending the event. This coverage is brought to you by KindredBio.

A WINDOW INTO THE
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By Nancy S. Loving, DVM

Treatment of Chronic Skin Wounds

We're all familiar with the use of silver sulfadiazine cream for wound care—and in particular, for burns and chronic wounds—because of its soothing and antimicrobial properties. Other treatments have been used for human burn patients, such as pig or human skin application to help maintain moisture and provide collagen that promotes healing.

In Brazil, researchers have turned to using an abundant resource, tilapia, for chronic wounds and burns. This freshwater fish is readily present in Brazil's rivers and fish farms. Until recently, the fish skin has been discarded, but now it is serving an important use.

The researchers identified that tilapia provides all the healing ingredients skin needs to heal: moisture, Type 1 collagen and some resistance to bacterial colonization. Healing proceeds quickly with tilapia skin applied as an occlusive dressing. Human patients further state that they need less pain medication, and in some cases, none at all.

Tilapia skin is prepared with sterilization and irradiation that allows it to last for up to two years when packaged and refrigerated. The fish odor is also removed. The great advantage is that tilapia, applied as an occlusive dressing, is left in place for around 10 days under a bandage as opposed to what is usually experienced by patients—the painful process of changing gauze bandages every one to two days.

Research has demonstrated the following beneficial properties of tilapia occlusive dressings:

- adheres to the wound
- avoids retention of exudates and loss of fluids
- promotes a barrier to bacterial invasion
- provides pain relief
- peels away easily at bandage change

Veterinarians are constantly seeking better wound care treatments.

Recently, the tilapia was used successfully at the University of California's Veterinary Teaching Hospital in Davis on a mountain lion cub whose pads were burned in the California wildfires. Those veterinarians also were called in to use the technique on a horse in England that was severely burned when acid was thrown on it. In the future, this might be a readily available product for use in equine skin care.

Platelet-Rich Plasma for Wound Healing

The use of platelets for wound healing has been investigated in equine medicine for all manner of treatment to injuries in joints, tendons, ligaments and wounds. Platelets and platelet-rich plasma (PRP) are instrumental in wound healing because they release cytokines and growth factors that promote growth of endothelial and fibroblastic tissue.

A recent study evaluated the use of three different platelet formulations on wounds created on the dorsolateral aspect of the cannon bones of eight healthy adult horses [Carneiro da Fontoura Pereira, R., et al. Evaluation of Three Methods of Platelet-Rich Plasma for Treatment of Equine Distal Limb Skin Wounds. *Journal of Equine Veterinary Science*, Oct 2017]. The three formulations were:

- autologous PRP subcutaneous injection on the wound edges
- autologous PRP gel applied over the skin defect
- homologous PRP subcutaneous injection on the wound edges

PRP was applied three times with an interval of 15 days between treatments. These were compared to control lesions, which were injected subcutaneously at the same frequency with saline along the wound edges.

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Wound healing in the PRP-treated lesions proceeded more rapidly (by 15 days) and with less granulation tissue than the control lesions. While there were no differences in fibroplasia, fibroblast cells and collagen maturity in any of the PRP-treated groups, the group treated with PRP gel experienced accelerated epithelial cell differentiation and tissue organized in collagen bundles.

The homologous use of PRP did not elicit any adverse reactions and can be a useful alternative treatment for extensive skin lesions and for foals, where it is difficult to obtain sufficient amounts of a patient's blood for processing.

Oral Sugar Test for Obese Horses

Laminitis is often linked to obesity-related endocrine disorders. A recent Brazilian study examined the use of the oral sugar test challenge to help diagnose equine metabolic syndrome and related insulin resistance in Crioulo horses, which have a high incidence of obesity. This metabolically efficient breed is well adapted to low energy provided by native pastures, but their recent popularity now subjects them to confinement and feeding of carbohydrate-rich diets, leading to obesity [Cantarelli, C. Evaluation of oral sugar test response for detection of equine metabolic syndrome in obese Crioulo horses. *Domestic Animal Husbandry*, Oct 21, 2017].

The dynamic oral sugar test (OST) was administered to 22 fasted Crioulo horses to test insulin responsiveness. Six non-obese individuals served as controls, with body condition scores (BCS) ≤ 7. Eight obese horses in the study had BCS ≥ 7 but no clinical or radiographic signs of laminitis, and eight had radiographic and/or clinical signs of laminitis (Obel Grade 2 or less) in addition to BCS ≥ 7. The laminitic horses demonstrated regional adiposity, bilateral lameness and divergent growth rings in the hooves. All the study horses were younger than 15 years of age and none were afflicted with pituitary pars intermedia dysfunction (PPID).

Obese horses can suffer from a variety of physical problems.

Blood samples were taken prior to corn syrup administration. Glucose was evaluated from blood samples taken at 30, 60, 75, 90, 120, 150, 180, 210 and 240 minutes following sugar administration. Insulin was evaluated at 75, 120, 150 and 180 minutes. Triglycerides levels were also measured.

At rest, all horses had normal glucose and insulin concentrations in the blood although the obese, laminitic group had higher basal insulin concentrations. Triglycerides were higher in the obese horses but, according to the study, this did not correlate with insulin dysregulation.

The most telling finding of this study has to do with the time when insulin is measured following corn syrup administration. Normally, 75 minutes is considered a useful time point to estimate if insulin concentration exceeds 60 µIU/mL, which corroborates a diagnosis of insulin resistance. But this study identified that "insulin measurement performed at other time points in those animals where peak glucose occurred later, showed significantly higher insulin values compared to the 75-minute sample, proving that peak insulin occurred in response to higher glucose levels." The control group returned to normal glucose levels by 75 minutes, but both obese groups did not return to normal glucose concentrations until 120-150 minutes.

The study pointed to the fact that it might be necessary to develop breed-specific reference ranges in addition to evaluation of insulin (and glucose) concentrations at time points beyond 75

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[1]Data on file at Merial, Safety Study, PR&D 0144901.
[2]Doucet MY, Bertone AL, et al. Comparison of efficacy and safety of paste formulations of firocoxib and phenylbutazone in horses with naturally occurring osteoarthritis. *J Am Vet Med Assoc.* 2008;232(1):91-97.
[3]EQUIOXX product labels and FOI summaries and supplements.
[4]Data on file at Merial, Clinical Experience Report PHN 471, PR&D 0030701.

minutes following carbohydrate administration. Knowing this can help achieve a positive diagnosis and aid in management strategies to reduce obesity and improve a horse's metabolic function.

Mitochondrial Changes with Training

Adaptive changes to exercise are important to developing an accomplished equine athlete. Many equestrian pursuits have horses begin training while they are young and still developing their musculoskeletal systems.

Mitochondria are the key powerhouses of each cell, generating energy vital to body functions and locomotion. Studies in humans and rodents have demonstrated that adaptive exercise training is responsible for improvements in energy production while also minimizing oxidative free radical production.

A recent study evaluated mitochondrial responses, and in particular the mitochondrial electron transport chain, to submaximal (low to moderate) exercise that is the mainstay of pleasure horses. The exercise effort used is similar to what is asked of a horse in training to be ridden, rather than more exacting demands that prepare a horse for competition [White, S.H., et al. Submaximal exercise training improves mitochondrial efficiency in the gluteus medius but not in the triceps brachii of young equine athletes. *Scientific Reports*, Oct 2017].

The study looked at the triceps and gluteal muscles of 24 Quarter Horses through a nine-week aerobic training process. It was anticipated that the triceps muscles with their high proportion of type 1 oxidative muscle fibers would respond to the training process. Instead, the study identified that significant improvements in mitochondrial biogenesis occurred mainly in the gluteus muscles.

The role of the gluteus medius is to generate forward impulsion for the hind legs; this thrust stimulates mitochondrial adaptations in the muscles cells. The authors speculate that because the triceps assumes more of a postural role, there might not be sufficient stimulation to induce mitochondrial biogenesis to the level achieved in the gluteus medius muscle.

Moreover, there were noted differences in response to exercise training between mature, adult horses and younger, still-growing horses. As well, they recognized differences in breed responses to training. The researchers concluded that "Growth itself had the greatest impact on mitochondrial function, indicating progressive improvements in mitochondrial capacity for aerobic energy production as the horse grows into maturity."

Trainers and veterinarians do not normally scrutinize micro-measurements of exercise-induced adaptations of the energetic system, such as this review of mitochondrial improvements. However, it is always interesting to understand the physiology of the effects of training on muscle development. Muscle tissue responds quickly to training with efficiency improvements developed within two to four months.

The rest of the musculoskeletal system takes longer to achieve peak strength; in particular, this applies to tendons, ligaments and bone. Young horses perform best when brought along with a thoughtful and diligent training regime that allows for appropriate development of all musculoskeletal structures and the cardiovascular system. EM

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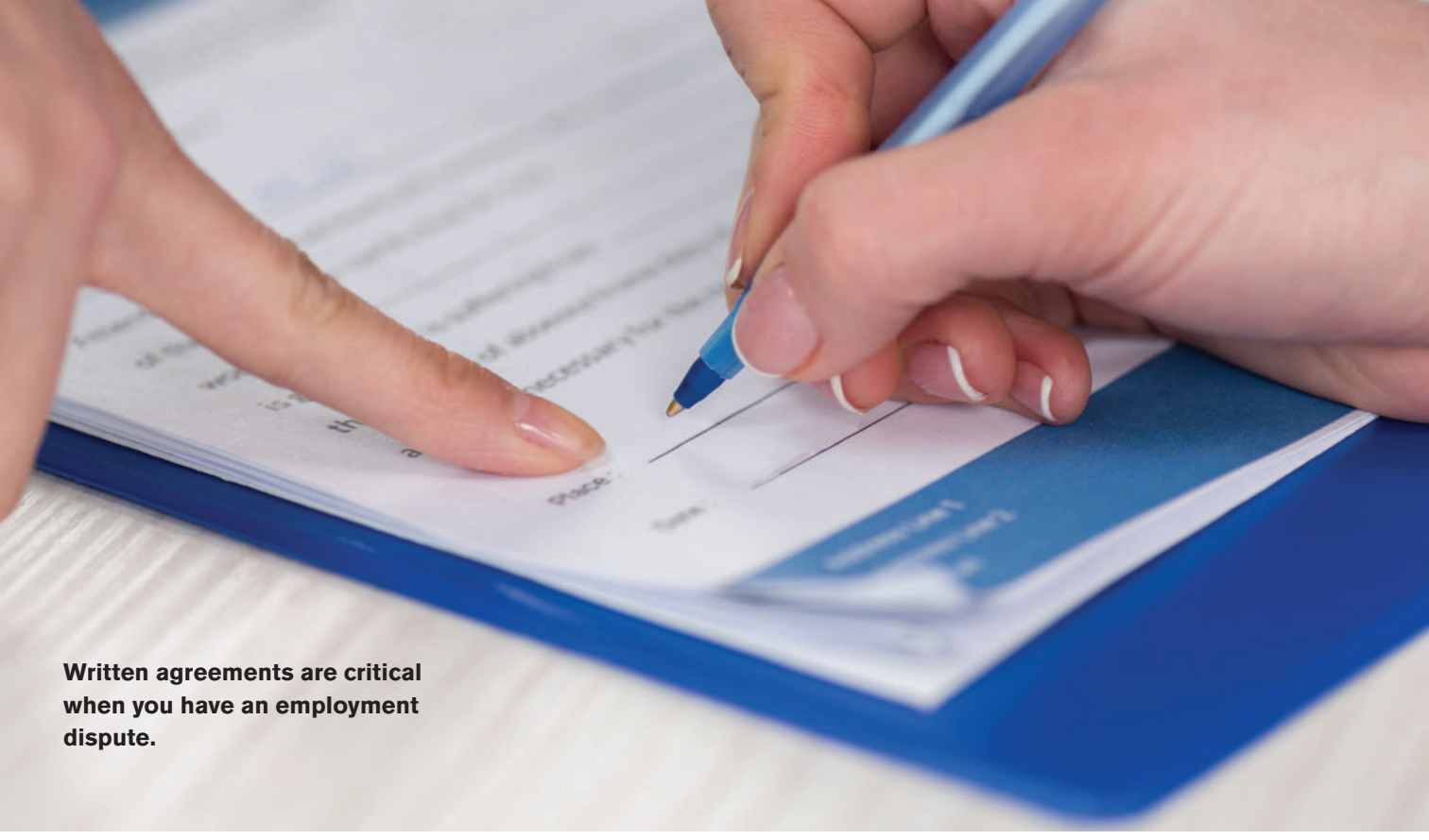

Written agreements are critical when you have an employment dispute.

Employment Agreement Essentials

When negotiating an employment agreement, employers and candidates should remember to consider the other party's perspective.

By Amy L. Grice, VMD, MBA

In this article, we will look at various components that you should require in an employment agreement. If you are working without a written agreement, then you can learn about why you should have a written document and items that should be contained in it. Written agreements are critical when you have a dispute.

Why should you have a written employment agreement?

According to James F. Wilson, DVM, JD, disputes over the terms of employment agreements occur frequently and require considerable management time and emotional effort to resolve.

Although some practice owners do not offer employment agreements to their associates, there are some very important reasons to do so. Relying on two parties' memories to align regarding the details of discussed employment compensation and benefits is risky. Differences in perception and interpretation of the elements of such a verbal agreement are common. Although all involved undoubtedly have good intentions, trust can easily be broken and the damage to relationships can be permanent.

A contract is defined as a written or spoken agreement, especially one concerning employment, sales or tenancy, which is intended to be enforceable by law. In employment, such a contract is also known as an employment agreement. To be enforceable, an employment contract, whether verbal or written, must have a clear offer of employment, an acceptance of the offer, a "meeting of the minds" over the terms

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of the offer and a consideration (compensation) for the work performed.

The agreement contains the conditions of employment and describes compensation and benefits. By having a written agreement, both employer and employee clearly understand the accepted terms of employment and can refer to the document if necessary.

What are the key elements of an employment agreement?
The key elements of an employment agreement include the length or term of the contract, compensation, duties and work schedule, emergency duty requirements, vacation or other time away from work, benefits, a non-compete clause and conditions of termination.

Expecting all these segments to be clear without a written document is wildly optimistic. By proactively considering all situations that might arise, expectations are set and questions or concerns that arise can be worked through while the issues are still theoretical. A written document memorializing the understanding of the terms of employment allows all parties to be confident they will not be surprised.

How long is a contract typically in effect?
The term of an employment agreement is generally either a designated length of time, such as 12 months, or "shall continue until terminated as hereinafter provided." Having a set number of months allows a natural time for renegotiation, but also might cause some trepidation that the contract will not be renewed or will not be renewed with the same terms.

What about compensation?
Compensation is in the form of salary, or a base salary with the opportunity for a production bonus, or straight commission based on revenue production. The employment agreement will define the method and details of the compensation arrangement, including whether any part of emergency fees generated will be paid to the veterinarian attending the emergency.

The most common compensation method is straight salary, according to the 2015 AVMA Veterinary Compensation Report. However, the 2016 AVMA AAEP Equine Economic Survey indicated that more than two-thirds of equine practitioners prefer a base salary with the opportunity to earn a production bonus. Such an arrangement can be a significant source of additional income.

When determining the percentage of collected gross revenue production to use for compensation, practices must consider their unique situations. However, the total cost of employing a veterinarian should never exceed 25% of their revenue production. This expense includes payroll taxes, Workman's Compensation insurance, benefits (licenses, professional liability insurance, memberships, continuing education, vacation, etc.) and compensation.

How are duties and schedule defined?
Duties and schedule are usually described in general terms, such as "Employer hereby employs Employee, and the Employee accepts such employment, to render veterinary medical services. Employer determines the specific duties to be performed by Employee. Employer shall also determine the assignment of clients to Employee, and Employee must perform services for such clients assigned to her. Employer shall determine hours of employment within reasonable standards within the profession."

Although this legal language sounds harsh or all-encompassing, it simply details the relationship between employer and employee. There are distinct disadvantages to narrowly defining the duties that are to be performed by an associate or the hours worked, due to the possibil-

ity of needs changing in the veterinary business due to unforeseen circumstances such as an injury or illness. Despite this, some agreements specifically call out a laundry list of tasks; then, the final task is "performing such other duties as may be assigned by the Employer."

Scheduling and the number of hours worked can be so variable that they are rarely called out with any specificity. Typically, "the Employee shall provide such weekday, evening, weekend, holiday and emergency coverage as shall be reasonably assigned by Employer, and Employee agrees to work the hours needed to accommodate the needs of the Employer and its clientele and will work equitably with other practice veterinarians to meet such needs." Other language could simply call out "hours of employment within reasonable standards within the profession."

Should emergency duty be included in the contract?

Some description of the expectations for emergency duty should appear in the employment agreement. Requirements for emergency duty might specifically state that duty will be shared equally among the practice's veterinarians or could state that the emergency duty schedule "shall be determined by the Employer, and the Employee shall provide such emergency coverage as shall be reasonably assigned by Employer."

Having what seems to be vague language in the agreement allows the employer to manage unexpected situations, such as emergency coverage if an injury or illness occurs among the team members. If an associate has questions about how the language in an agreement would apply, it is important to clarify these concerns.

What about vacation and other paid time off?

Time off from work is also covered in most employment agreements. Some practices offer sick days, personal days, vacation days and time away for continuing education, and call these out specifically in the contract. Others utilize a Paid Time Off (PTO) system where time away is not designated. Still others make no note of time away in the agreement and utilize an employee manual to designate how this is handled.

Regardless of which way the employer handles time off from work, both parties should have a clear understanding of the expectations. Most employment agreements state the number of days of vacation to which the associate is entitled. It is recommended that "days" be used instead of "weeks," as equine veterinary practices have broad-

ly defined "work weeks." A "week" of vacation could mean four days in some contexts and seven days in another. To minimize misunderstandings, it is best to be very clear. If PTO is accrued, the employment agreement might state the method of accrual, or that could be left for an employee manual.

Are benefits catalogued in an employment agreement?

The provision of benefits varies widely between practices, but typically they are specifically called out in employment agreements. Benefits that are offered by an employer might include:

- professional liability insurance
- professional licenses
- memberships (AVMA, AAEP, local VMA, etc.)
- continuing education
- health insurance
- disability insurance
- retirement plan (401(k), SIMPLE)
- sick/personal days
- discounted veterinary services/medications
- maternity leave

In the 2016 AVMA AAEP Equine Economic Survey, 720 respondents indicated the benefits they received as associates or purchased if they were practice owners. The benefit that respondents reported as most frequently provided was continuing education expenses (85.97%), followed by liability insurance (79.58%), licenses (78.75%), association dues (76.94%) and continuing education leave (65.0%). A little over half of practices (52.08%) provided health insurance and paid vacation leave (51.94%). The chart on the previous page illustrates the results.

Benefits might or might not be described in detail in the employment agreement, but most contracts indicate whether a benefit is provided by the employer, or whether an employee is responsible for that cost. For example, "Employee will directly pay and be responsible for Employee's professional license fees for New Mexico and Arizona, as well as dues and membership fees for the AVMA and AAEP" or "Employer shall directly pay for professional liability and license defense insurance insuring the Employee for professional errors, omissions, negligence, incompetence and malfeasance upon such terms and in such amounts as Employer shall deem adequate but not less than $1 million per claim/$3 million per aggregate."

Some practices choose to utilize an employee manual to describe benefits so that necessary changes can be made without the need to sign new contracts. Because of this, generally any employment agreement language is vague. For example, "The Employee shall have the option of accepting a medical insurance plan if such a plan is offered by the Employer and the Employer shall pay a percentage of the cost associated with such plan." An employee manual is also the appropriate place for stating the practice's policies for time off for bereavement, jury duty or military service.

What should the contract specify if there will be use of an employee-owned rather than practice-owned vehicle?

If an associate will be using his or her own vehicle, the employment agree-

Benefits Provided	Freq.	Percent
Continuing Education Expenses	619	85.97%
Liability Insurance	573	79.58%
Licenses	567	78.75%
Association Dues	554	76.94%
Continuing Education Leave	468	65.00%
Discounted Veterinary Care for Personally Owned Animals	464	64.44%
Medical/Hospitalization Plan	375	52.08%
Paid Vacation Leave	374	51.94%
Employee Contribution/Match to a Tax-Deferred Retirement Plan (i.e., 401(k), IRS Qualified Profit-Sharing Plan)	334	46.39%
Disability Insurance	305	42.36%
Personal Use of Practice-Owned Vehicle	288	40.00%
Paid Legal Holidays	272	37.78%
Uniform/Clothing Allowance	257	35.69%
Paid Sick Leave	251	34.86%
Tax-Deferred Retirement Plan (i.e., 401(k), IRS Qualified Profit-Sharing Plan	220	30.56%
Life Insurance	214	29.72%
Dental Plan	195	27.08%
Reimbursed Mileage for Practice Use of Personal Vehicle	119	16.53%
Paid Maternity Leave	55	7.64%
No Benefits Provided/Purchased	41	5.69%
Informal Profit-Sharing Plan (Not Tax-Deferred)	26	3.61%
Other (Specify)	26	3.61%
Paid Paternity Leave	17	2.36%

ment should describe this and provide a detailed account of compensation for such. Most practices utilize the annual IRS reimbursement rate for mileage in this case, but some states offer a different published rate that might be lower.

The published rate that will be used must be stated, along with the parameters for submitting mileage and the method of payment. For example, "The Employee shall provide a vehicle from which to practice. The Employer, at its sole expense, will provide such veterinary equipment and supplies that the Employer deems necessary (excepting vehicle and vehicle cabinets) as needed for the practice of veterinary medicine. At the termination of this agreement, Employee shall return all such equipment and supplies in good condition within 24 hours. The Employer will reimburse the Employee for mileage incurred for business purposes according to the rate established by the Internal Revenue Service (IRS). The Employee must maintain a mileage log in accordance with IRS regulations, and submit that log at the end of each month to the Employer. Mileage will be reimbursed monthly, no later than the 15th of the month following the month submitted."

What about maternity leave?

Understanding available maternity leave is increasingly important as the demographics of the profession change. It is important to establish the practice's policy regarding maternity leave. If this is not expressly written in the employment agreement, employers will still want to determine their stance, and female associates should inquire if they anticipate the need for this benefit.

Although the federal Family Medical Leave Act (FMLA) provides up to 12 weeks of unpaid leave during a 12-month period to care for a newborn, adopted or foster child, or to care for a family member, or to attend to the employee's own serious medical health condition, the law only applies to private employers with 50 or more employees. However, the FMLA also allows states to set standards that are more expansive than the federal law, and many states have chosen to do so.

A typical maternity leave clause might read: "No salary will be paid during any period of maternity leave beyond the Employee's accrued and unused accumulated vacation, personal and sick leave days. However, the position of associate veterinarian shall be held open for return of the Employee for a period of 12 weeks following the birth or adoption of an infant. If

Employee has accepted the option of a medical plan through the Employer, if such a plan is offered, the Employer will continue to honor any Employer obligation to fund said plan during any period of maternity leave granted."

Isn't maternity leave just another type of disability leave?

Yes, it is. For this reason, it is prudent to state your disability leave policy in the employment contract, especially if you state a maternity leave. Your disability leave must not be more generous than your maternity leave policy, or you could face a discrimination suit.

What about non-compete agreements?

Non-compete clauses are also termed restrictive covenants, and for the employer, they are one of the most important parts of an employment contract. By introducing and encouraging the formation of strong client-doctor relationships, the practice owner is assuming a risk that his or her business will be harmed if the associate leaves.

Non-compete clauses can take several forms. They can include a radius of distance from the practice's physical address as well as a length of term, or they can specify that the departing doctor cannot perform services for any clients seen by the practice as of the departure date for a specified length of time. Some specify terms for a buy-out of the non-compete. The important factors in a non-compete clause include: What is reasonable? And will it stand up in court?

Each individual practice will vary in what is reasonable in terms of distance. It is unusual for a length of time to exceed two years unless it involves a former owner of the practice. Terms of a buy-out of the non-compete usually include payment of a percentage of the revenue earned by the departing employee in the previous 12 months, or payment of a percentage of future revenue earned from the practice's clients.

Often the language of a non-compete seems draconian and harsh, and many associates hesitate and become fearful at this point. It is important to understand just what the agreement means in terms of future opportunities, and for both parties to be comfortable with the restrictions.

Under what conditions can termination occur?

Conditions of termination for cause are standard, and typically include if the employee becomes disqualified to practice veterinary medicine, fails or refuses to faithfully or diligently perform the duties of his/her employment and the provisions of the agreement, or dies.

Most agreements also state that either party can give the other written notice of some number of weeks in advance of the date of which a termination of employment is to take effect. Most commonly this is 12 weeks, but if the employee is terminated by the employer for cause, the employment tends to end immediately and the salary is simply paid for the stated period. States frequently have statutes about lawful termination, which must be determined and followed.

Should negotiation of the terms of the contract be expected?

Negotiation of the terms of an employment agreement is so common that it should be expected. The initial contract document is essentially a draft of the offer, after which negotiations will refine the final agreement.

As an employer, being able to begin an employment relationship with an associate that will yield a long-term rewarding tenure requires investigating what he or she values the most in the terms. Being flexible and looking for common ground is the best approach. If you have been chosen as the candidate to whom an offer of employment is made, remember that the practice has identified you as the veterinarian they want on their team. You do have some leverage in negotiating the terms of your employment. You don't have to simply sign a contract without discussion.

Having a conversation about the terms of an employment agreement is a negotiation. Most people feel anxious about these interactions and wish they could avoid them. Every individual has a preferred communication style, and these innate differences can influence negotiation success. (Search for "Negotiate Like a Pro" on EquiManagement.com to learn more about communication styles.)

An essential concept for all negotiators is that of BATNA, or Best Alternative To A Negotiated Agreement. Because of their awareness of their true "bottom line," negotiators with a thorough understanding of their BATNA have power and confidence, and generally they are more successful in achieving their goals.

If you know your BATNA, you know when to stop negotiating and walk away.

Take-Home Message

When negotiating an employment agreement, employers should seek to understand the prospective associate's challenges, and candidates should remember to consider the practice owner's or owners' perspective.

Both parties should be comfortable asking for time to consider the offer or counter-offer, and associates should have an attorney or consultant review the agreement.

Don't be afraid to politely ask for what you think is fair, and offer to renegotiate after one year if significant concessions were made by one side. After that time, the new employee might have added considerable value to the practice. EM

Editor's note: Visit EquiManagement.com and search for "employment agreement essentials" for additional information to consider when you are negotiating, including negotiation of the agreement.

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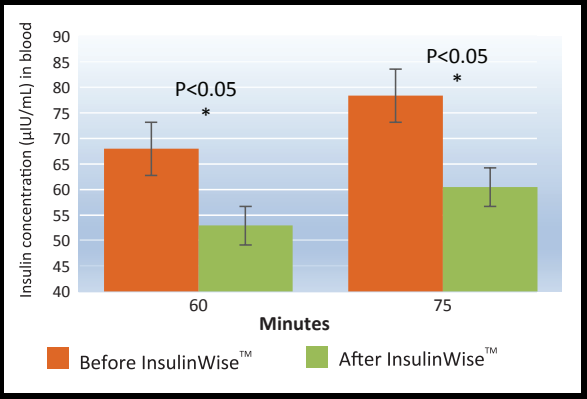
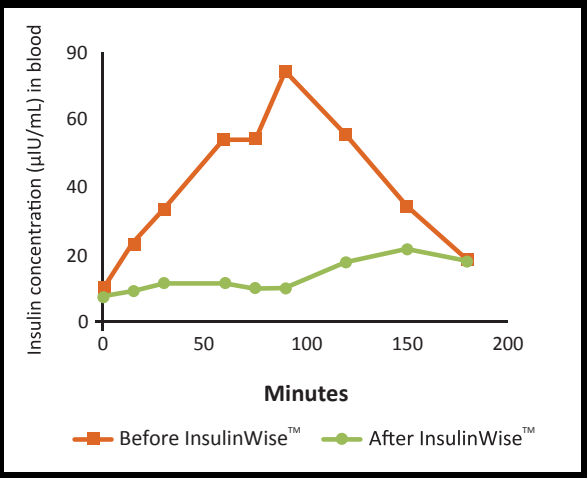
Insulin Concentrations Following OST Challenge

Supplementation with InsulinWise significantly reduced insulin blood levels, signifying increased insulin sensitivity.



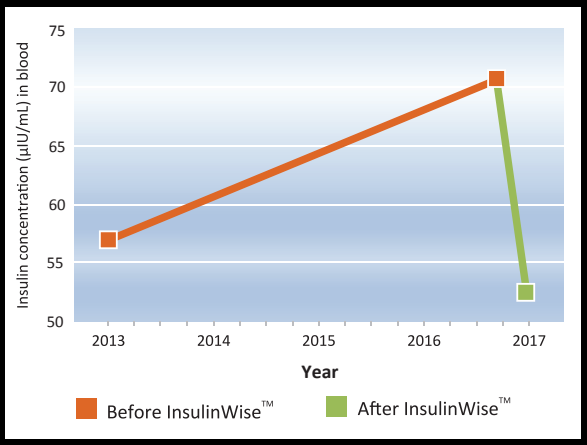
InsulinWise Supported a Decrease in Insulin Resistance

In four of the horses previously identified as insulin resistant, insulin regulation reverted to levels classified as normal after supplementation with InsulinWise.



Insulin Levels at 60 Minutes During Oral Sugar Tests from 2013 to 2017

Over time EMS horses become more insulin resistant. Supplementation with InsulinWise significantly reduces insulin levels in the blood, signifying a decrease in insulin resistance.



Left unchecked, excess weight can lead to the development of other, more serious conditions.

Managing Fat Horses and Their Owners

Learn tips for starting the conversation about equine weight management, and consider creative solutions for managing the owners.

By Katie Navarra

Obesity is as problematic for horses as it is for humans. The root causes are often the same in both—too many calories and not enough exercise. Left unchecked, excess weight can lead to the development of other, more serious conditions.

Humans are in control of what and how much horses eat, and horses don't have a concept of what it means to eat too much, said Colleen Best, DVM, PhD, of the Ontario Veterinary College.

"The population in America is so overweight that we start to normalize it and downplay its significance," Best said. "If the owners don't believe their horses are fat, they won't do anything to change it."

The reality is that dieting isn't fun, and it takes effort.

"Nobody likes putting themselves on a diet," said Carey Williams, PhD, an equine extension specialist at Rutgers University with a focus on nutrition. "So horse owners find it hard to put their horses on a diet, but they have to understand that a little tough love is needed."

Veterinary schools don't extensively cover nutrition, and that can create an uneasiness in new veterinarians about addressing this problem with clients.

THINKSTOCK

"You do learn enough to start the conversation. You can talk about how obesity leads to lameness, arthritis and metabolic syndrome," Best said. "And you can educate an owner about the body condition score."

UC Davis Equine Field Service clinical faculty Emily Berryhill, DVM, added that horse owners tend to hear what they want to hear. "Sometimes I think it's easier for owners to only hear the bits and pieces of our conversations that either are easy to understand or are intuitive, and not see the whole picture," she said.

A barn manager's or horse owner's management practices directly impact the horse's weight. Since these folks don't often understand equine nutrition, it's the veterinarian's job to explain and educate the horse owner about nutrition and body condition score.

The Root Cause

When working with a client who has an overweight horse, the first step is understanding the management practices and attitudes toward feeding routines. Spring visits for vaccinations and other routine work are a good time to begin a conversation with owners about the importance of nutrition and a horse's overall body condition. Asking questions about how the horse is fed can yield interesting feedback about what is contributing to a horse being fat.

"Owners overfeed because they feel they are taking the best care of their horses," Berryhill said. "To them, food equals love."

These horse owners feel guilty if they don't give one horse grain when every other horse in the barn receives some.

"We've all seen that pony that gets a handful of food, but can't fit through the door," Best said. "It's not much different from the quintessential grandma who loves to feed her family. We don't want to take away that joy of giving food, but we have to move grandma's focus away from fried foods to veggies."

It's also likely that the horse's owner just doesn't believe the horse is fat. They don't see the fatty deposits or fat pads that a veterinarian does. Best once had a client who also owned a dairy farm. The horse was turned out on lush pasture with the cattle. Taking the horse off pasture wasn't an option. Best spent 40 minutes trying to explain that the horse was overweight. The owner simply couldn't see it.

"I finally had to tell her that if her horse were a human, it would be a candidate for gastric bypass surgery," Best said. "As soon as she understood how dire the situation was, she agreed to using a grazing muzzle."

Other horse owners find enjoyment in hearing their horses eat. Best once had a client who owned draft horses that were so overweight they were lame, but he wasn't willing to eliminate the evening feed.

"Listening to the horses chew was his stress relief," she said. "That was important to understand when creating a management plan to help the horses lose weight and maintain the proper weight."

Chances are, the horse owners or caretakers are uneducated about nutrition and body condition scores.

"Horse owners don't always understand that a horse needs to be fed 2% of its body weight, and if overweight, that should be cut down to 1.75% or 1.5%," Williams said. "They tend to just throw hay and grain at the horse and don't think about how that relates to the horse's daily intake."

Many horse owners also feel that a horse must have grain. But if they are feeding a good-quality forage, they are typically meeting all the horse's needs.

During an annual Junior Breeders Symposium that Williams helps host, she teaches attendees how to body condition score and use a weight tape, then use the results to determine an appropriate ration.

A grazing muzzle can cut down forage intake by 30-80%, depending on the horse and the pasture.

It's also important to understand what access the owner has to the horse. A horse owner who purchases the feed and provides the care has direct control over what and how much the horse is eating. That individual might also be more open to sending the hay out for an analysis.

"If the horse is at a boarding facility where the owner has less control, then the barn manager needs to be brought into the conversation," Best said.

Thinking Outside the Box

Change can be difficult to accept. It means adapting to a new process and taking time to weigh out feed and hay rather than eyeballing the ration.

"Many times, owners are fortunate enough to not have had problems, which makes it challenging to convince them to change their program when it seemingly was fine before," Berryhill said. "It can also be quite difficult to convince owners that changing their feeding programs is absolutely necessary when the presenting medical problem is something that may seem unrelated, like feet or joint issues."

That's when thinking outside the box benefits the horse and its owner. When an owner or caretaker won't conduct a hay analysis, Berryhill encourages the client to switch to a variety that generally has lower sugar levels.

"If an owner won't switch hay, I then recommend that they soak their current hay. This isn't the best approach, but is better than nothing," Berryhill said.

Soaking hay can actually remove up to 30% of the sugar content in hay, which can significantly reduce the calorie content the horse is eating, Williams added.

There are creative ways to encourage owners to increase their horses' amount of exercise, such as a part-lease or shared riding agreement.

"I've had owners who want to get involved and are looking for a fun way to help their horse lose weight, so I had them jog alongside their horse part way through a ride, then mount up and ride the rest of the routine," she said. "Another way to add exercise is to try a new discipline."

Best said that small animal practices excel at keeping in touch with customers, especially those with overweight pets. They take a "Jenny Craig" approach and encourage pet owners to bring their pets for weigh-ins. A similar approach can work with equines.

"You can encourage a horse owner to get a weight tape and use it at different intervals within the month and have them record the measurement on a calendar," she said. "It's not perfect, but when used consistently, it can help

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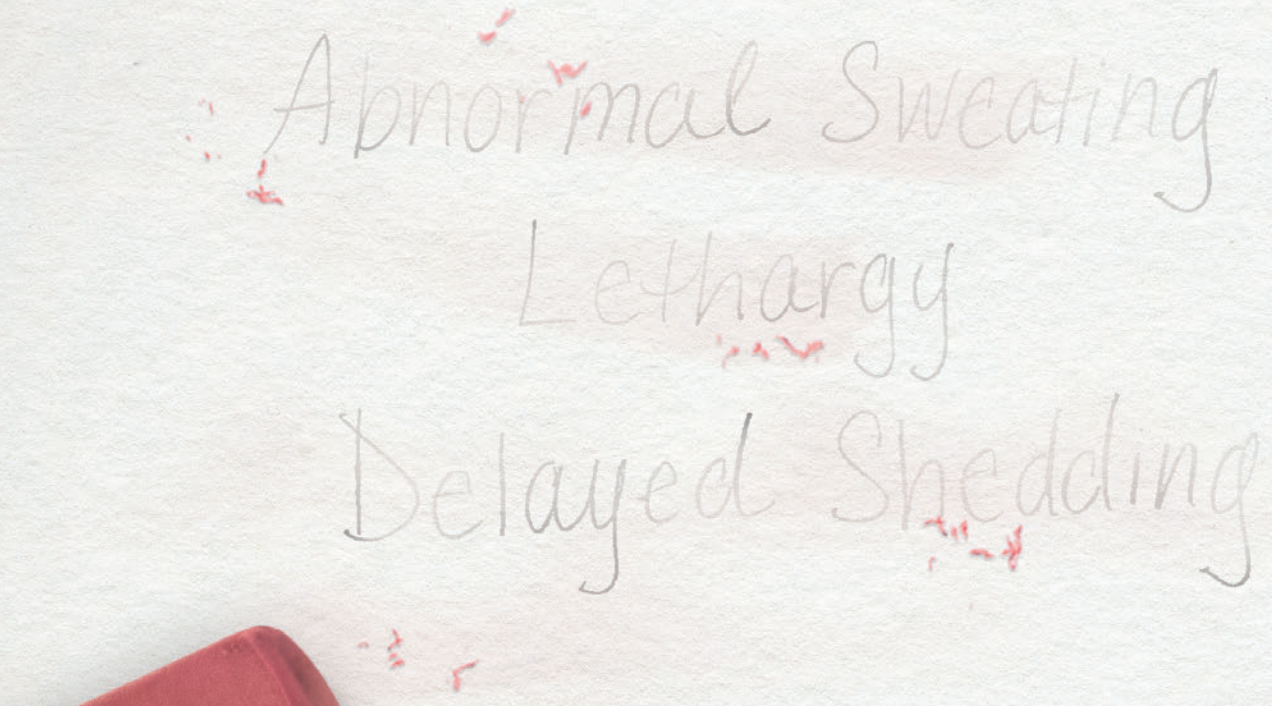

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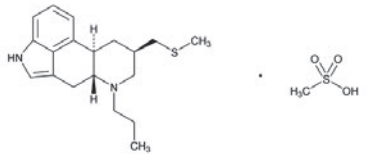

monomethanesulfonate. The chemical structure is:

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 inappetance.

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

Inappetance 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 inappetance or decreased appetite as compared to the 32.8% of horses that experienced inappetance or decreased appetite during the study. Most cases of inappetance were transient and occurred during the first month of treatment; however, some horses experienced sporadic inappetance throughout the study. Two horses required a temporary reduction in dose due to inappetance 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 (Cmax) was 4.05±2.02 ng/mL with the median time to maximum concentration (Tmax) being 0.415 hours.

The area under the curve (AUC) was 14.08±7.46 hr·ng/mL. The mean half life (T1/2) 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:

[1] Orth, D.N., Holscher, M.A., Wilson, M.G., et al. (1982) Equine Cushing's Disease: Plasma Immunoreactive Proopiolipomelanocortin Peptide and Cortisol Levels Basally and in Response to Diagnostic Tests. Endocrinology. 110(4):1430-41

[2] 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.

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them get the horse's weight down."

The key is making solutions manageable.

"I try to make the ultimate diet plan as simple as possible, with a good source of appropriate forage and a ration balancer," Berryhill added. "Once the foundation diet is established, it can certainly be tinkered with over time."

Grazing muzzles, nibble nets, slow feeders and mowing pastures are other methods horse owners can use to slow a fast eater and limit overall intake.

According to Williams, proven research shows that with slow feeders, it can take a horse two to three times longer to work through its hay. "And a grazing muzzle can cut down intake by 30% to 80%, depending on the horse and the pasture they are in," she said.

Food for Thought

Starting the conversation about nutrition and body condition scores is the most important first step. Developing a relationship based on trust and genuine interest in the horse's well-being establishes the foundation for tackling the topic of obesity in horses.

"Ask a lot of questions in a non-judgmental way," Best said. "You can learn a lot about what is contributing to the obesity and how to create a strategy for managing it."

There are countless continuing education programs that are available for veterinarians who want to learn more about nutrition. Equine nutritionists always welcome the opportunity to consult with veterinarians and horse owners to create the best diet for the horses. Williams encourages veterinarians to visit extensionhorses.org, an online resource that includes research-driven, university-based, unbiased information on a wide range of topics, including nutrition.

Each state also has an extension agency that often includes a nutritional specialist. For states that don't have a nutritional specialist, those within the same geographic region often have partnerships and are willing to assist.

"This is a free service paid for by state taxpayer dollars, so you might as well use it," Williams said. "To find your states extension service just Google "(*your state*) Cooperative Extension" and it will give you the state site—then you can find your local county or regional office."

Take-Home Message

There is no quick fix to managing an overweight horse or its owner. Management of obesity occurs over the long haul and requires regular check-ins.

"Continued communication with the horse owner to follow up and see how things are going is key to success and beneficial for the horse, the owner's continued education and the veterinarian," Berryhill said. EM

You can't really identify a horse that is metabolic just by looking at it.

ARND BRONKHORST PHOTOGRAPHY

Equine Metabolic Syndrome

Research shows that even horses with a normal or low body condition score can develop this disorder.

By Katie Navarra

Typically, overweight, middle-aged horses have been considered the prime candidates for developing equine metabolic syndrome (EMS). Because insulin resistance is one of the diagnostic criteria for EMS, the disorder can often be confused with Cushing's Disease.

Ohio State University Galbreath Equine Center Associate Professor Teresa A. Burns, DVM, PhD, DACVIM, has emphasized that breed predisposition to EMS might be as important as body condition in predicting the disease.

Some breeds are simply more prone to developing EMS than others. For example, Arabians, Tennessee Walking Horses, American Saddlebreds, Paso Finos, ponies, donkeys and mules are more susceptible to the syndrome. Individuals of predisposed breeds can be affected even when the horse is lean.

"This likely has to do with a genetic tendency toward insulin resistance/dysregulation that is common in these breeds," she said. "Horses of predisposed breeds can be affected even when they are of normal body condition (or even thin); in this case, the breed is 'typical,' but the degree of adiposity is not."

EMS was first described in 2002, but it is perhaps the most common endocrine disorder encountered in equine veterinary practice. It can have diverse effects on the horse's reproductive physiology and fertility, including effects on reproductive seasonality, ovulation efficiency, implantation, early pregnancy loss and lactation. Like the human metabolic syndrome, EMS is a constellation of clinical findings that is predictive of an

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While metabolic syndrome in humans is predictive of type II diabetes mellitus, atherosclerotic cardiovascular disease, stroke and certain types of cancer, EMS is predictive of laminitis in affected equids. The reasons underlying this species difference in the complications of obesity remain obscure, but dietary composition and genetics are likely involved. It is clear, however, that nutritional obesity is associated with disease risk in both horses and humans.

Ongoing Research

Despite the potential for a genetic connection, risk of EMS is still higher in horses that are overweight. This is due to the effects of their increased body fat mass on systemic insulin and glucose dynamics.

"Adipose tissue tends to become more insulin resistant at the tissue level as it expands when storing more lipid (such as in diet-induced obesity) in parallel with macrophage infiltration of the tissue and increased production of inflammatory cytokines," Burns said.

These local changes in adipose tissue can ultimately have body-wide effects on insulin sensitivity, with horses that have a greater degree of adiposity being more likely to be insulin resistant. Insulin resistance increases the likelihood of elevated serum insulin concentrations (hyperinsulinemia) following ingestion of soluble carbohydrate, which is linked tightly with the risk of laminitis. This is one way in which increased adiposity can be associated with EMS.

EMS is an active area of research for several groups around the world. Current studies are attempting to identify the link(s) between insulin/growth factor signaling and derangements of the cytoskeletal structure of the epithelial cells of the laminae, she said. This ultimately results in displacement of the coffin bone within the hoof capsule in laminitis.

Additional work is being done to optimize diagnostic testing for insulin dysregulation in horses. This would make testing more accurate and convenient for performing on-farm. It would also allow researchers to evaluate therapies that have been shown to be effective for other forms of laminitis (such as distal limb cryotherapy) to gauge their efficacy in the treatment of EMS-associated laminitis.

Donkeys and mules are genetically predisposed to be more susceptible to metabolic syndrome.

"Identification of the pathophysiological players in laminitis associated with EMS will hopefully lead to new points at which we can intervene therapeutically," she said.

As researchers continue to investigate endocrine disorders, advancements in diagnostic testing and management methods enable veterinarians to more readily identify EMS. Burns provided an update on both that can aid veterinarians working with EMS patients.

Diagnosing EMS

Determining whether or not a horse has EMS can be challenging. Commonly, diagnosis begins with ruling out other disorders such as pituitary pars intermedia dysfunction (PPID, or equine Cushing's syndrome). Obesity tends to be the most widely recognized clinical sign of EMS. However, even horses with a normal or poor body condition can be candidates for EMS.

"Thin animals of breeds predisposed to EMS often retain regional fat deposits, such as a cresty neck and/or tail head fat pads, even if they have little visible fat deposition elsewhere," Burns said.

Because obesity isn't always directly correlated to EMS, laminitis provides another hint that a horse might have an endocrine disorder.

In recent years, the development of more dynamic testing to measure insulin dysregulation has made the diagnosis of EMS more efficient and effective. Specifically, the combined glucose-insulin tolerance test (CGIT) and the oral sugar test (OST) have been optimized for field use, so it is easier for veterinarians to make a diagnosis on-farm.

"The lab evidence of insulin dysregulation, such as increased basal insulin concentration or abnormal combined glucose and insulin test or oral sugar test, are clearer indicators of EMS," she said.

She cautioned that limitations of the sensitivity of some available tests, such as the basal insulin concentrations and the OST, have been identified.

"They are specific tests, but they may miss some affected horses due to their relatively poor sensitivity," she said.

EMS Management

Creating a treatment plan depends on the horse and its current body condition. The plan of action will likely be directly correlated to the specific horse's genetic risk of insulin dysregulation.

Dietary changes are the most effective method for managing the majority of horses with EMS. Burns recommended minimizing dietary non-structural carbohydrate content to minimize the risk of elevated serum insulin concentrations and the risk of laminitis.

"It's important to encourage weight loss through careful dietary restriction and reducing the horse's total caloric intake," she said.

Like people, horses can effectively lose weight when fed less and exercised more. Low-carbohydrate diets are now more readily available commercially and have made the dietary management of horses with EMS easier in the past several years. Limiting access to fresh, lush grass either through use of a grazing muzzle or dry-lot turnout is as important as choosing the right feed.

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"Horses that are undergoing a weight loss program can be initially offered 1.5-2.0% of their body weight in hay per day," Burns said. "Ideally, hay that has been analyzed and shown to contain <10% NSC on a dry matter basis should be offered. If this reduction does not yield weight loss after four to six weeks, then further reduction of the daily hay ration to 1.0-1.5% of body weight is recommended."

Feeding less than 1.0% of body weight in hay daily is not recommended, and EMS horses that fail to lose weight with reasonable dietary caloric restriction might be good candidates for the use of drugs such as levothyroxine. This medication is used until the weight loss is achieved, then discontinued.

Horses that are overweight with EMS rarely need the extra calories contained in concentrate feed; instead, a small amount of a high-protein ration balancer product can be used to supplement hay. Lean horses with EMS, particularly those that are in regular work, might require supplemental calories in addition to their daily forage ration to maintain (or safely increase) their body weight.

In those cases, supplemental concentrate feeds that provide calories from fat and fiber, rather than non-structural carbohydrates, are safer choices. Beet pulp, vegetable oils, rice bran and coconut meal might be good options for supplemental calories, depending on the circumstances.

Horses that are not actively laminitic benefit from regular aerobic exercise. A horse owner's time constraints can make it difficult to increase the frequency or duration of exercise. Encouraging a client to consider a part-lease or an arrangement with an appropriately skilled rider can provide benefit to the horse by increasing its activity.

Medications can be used in some cases to enhance a horse's insulin sensitivity. Thyroid hormones increase insulin sensitivity as well as enhancing basal metabolic rate, which allows the horse to burn more calories and enhances weight loss if dietary intake is appropriately restricted at the same time.

"If needed, medications such as levothyroxine or metformin can be used," Burns said. "These drugs are particularly useful in horses that are laminitic and therefore can't humanely be subjected to an exercise program."

An actively laminitic horse, or one that has historical evidence of laminitis such as morphological changes in the hoof capsule and radiographic changes, will likely benefit from therapeutic podiatry and analgesia. Regular trimming and shoeing to encourage more appropriate alignment between the bones of the digit and the hoof capsule and ease breakover are very important to the rehabilitation of a horse with EMS-associated laminitis. With appropriate foot care, affected horses can recover the ability to perform athletically.

Pain management, including medications such as non-steroidal anti-inflammatory drugs, acetaminophen, gabapentin and/or opioids, are also important for the comfort of affected horses. Regular supervision of the program by a veterinarian is important to maximize efficacy and minimize the risk of adverse effects.

Take-Home Message

Once a veterinarian has determined that a horse has EMS, there is no magical cure. Management is an ongoing, long-term process that requires buy-in from the horse owner.

However, a treatment plan that is comprehensive, regularly monitored and optimized as needed in response to clinical findings can enhance the quality of life of horses with EMS and maximize the likelihood that they can return to their intended functions after they are properly diagnosed and treated.

"Helping horses heal after an EMS diagnosis can be achieved through the team effort of horse owners and veterinarians," Burns concluded. EM

Veterinarians and Health Insurance Survey

Know and understand the options available to you for various health, disability and long-term care coverages.

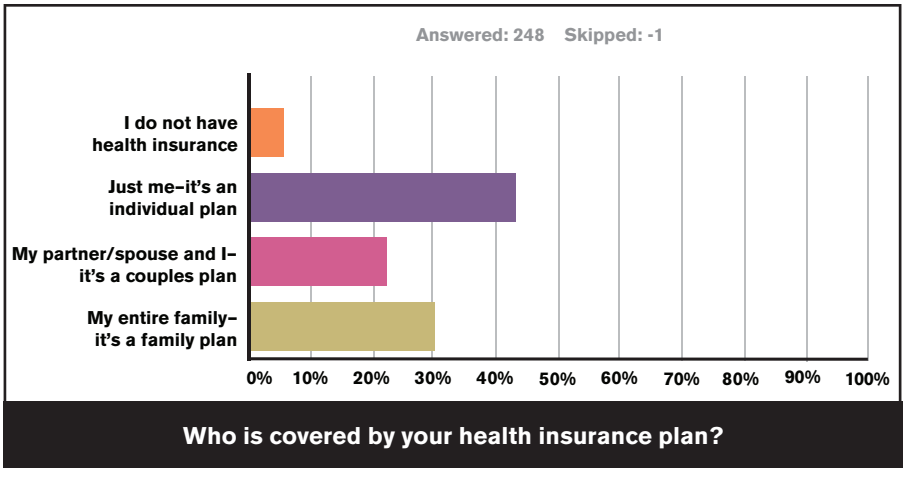
By Amy L. Grice, VMD, MBA

In 2018, the future of the health insurance market became uncertain due to numerous federal changes to insurance provisions. These included the hold on cost-sharing reductions, the shortened timeframe to sign up for coverage under the federal health insurance exchange, President Trump's executive order to allow purchase of insurance plans across state lines, and the tax package's repeal of the individual mandate.

According to the National Conference of State Legislatures, the numbers of people who signed up for insurance during the enrollment period for 2018 through the federal and state marketplaces were just a few percentage points below the previous year. Premiums rose significantly in many counties across the country, in part due to the decision of the Trump administration to cease payments to insurers for cost-sharing reductions. Insurer participation also declined in many areas, leaving more counties with only one insurer, which likely contributed to the high rate of premium growth.

Nationally, the unsubsidized premium for the lowest-cost bronze plan increased an average of 17% between 2017 and 2018, the lowest-cost silver plan increased an average of 32%, and the lowest-cost gold plan increased an average of 18%.

With the individual mandate repealed and the ability of healthy individuals to seek low-cost insurance outside of the marketplace, premiums are destined to rise for those with pre-existing health conditions or more need for comprehensive coverage. These increases might price health insurance out of the reach of those who need it the most.



Who is covered by your health insurance plan?

One change that could be beneficial for veterinarians is the proposed rule by the U.S. Department of Labor (DOL) that would allow small businesses to band together and purchase health insurance without some of the regulatory requirements that the individual states and the Affordable Care Act (ACA) impose on smaller employers. The proposal could make it easier for small businesses to afford better coverage for their employees.

"Many small employers struggle to offer insurance because it is currently too expensive and cumbersome," the DOL said in a press release. "Up to 11 million Americans working for small businesses/sole proprietors and their families lack employer-sponsored insurance … These employees—and their families—would have an additional alternative through Small Business Health Plans (Association Health Plans)."

In March 2018, a link to a 14-question survey about health insurance was distributed to equine veterinarians on the Facebook pages Equine Vet2Vet and Women in Equine Practice, as well as on the general Listserv of the AAEP. The survey was open for one week and had 247 responses. The respondents were 77% female and 23% male. Fifty-nine percent graduated in the last 15 years, but the remaining respondents

were well distributed over graduation years from 2002 to before 1976.

Almost all of the respondents (96.3%) reported that they have health insurance. When asked about who was covered by the plan, 43.5% indicated they have an individual plan, 22.2% have a couple's plan and 30.6% have a family plan.

Of those with an individual plan, 50.0% reported that they pay the entire premium themselves, 30.8% said they pay part of the premium and their employers pay the remainder, and 18.7% responded that their employers pay all the cost. Fewer than 10% of these veterinarians received a subsidy for their individual coverage through the exchange.

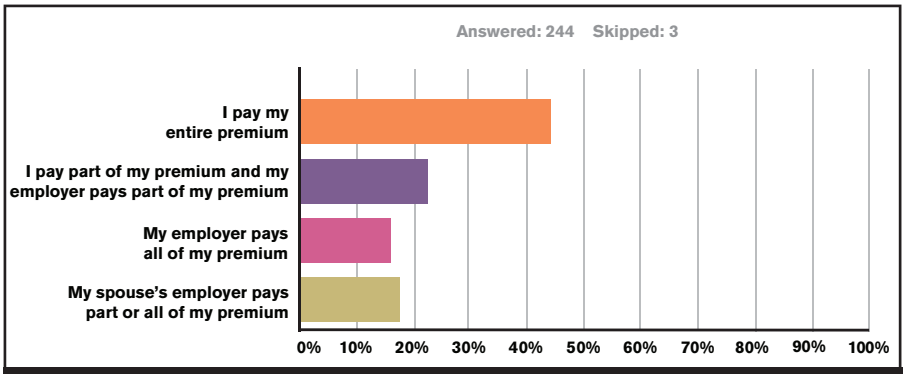
Of the 76 respondents with a family plan, 36.8% pay the entire premium themselves, 17.1% pay part of the premium themselves and their employers pay the other part. 11.8% are fortunate to have their employers pay the entire cost, while 34.2% receive all or part of their health insurance premium through their spouses' employers.

When all respondents are considered, 20.9% reported that their health insurance was obtained through their spouses.

Nearly 80% of respondents reported that their health insurance plan is compliant with the Affordable Care Act, 4.9% reported that it is not and 15.6% did not know. A subsidized premium was reported by only 5.7% of respondents, and 8.6% did not know whether their premium was subsidized. The majority of respondents (85.7%) did not qualify for a subsidized premium.

High-Deductible Health Plans

High-deductible health plans were reported by 39.6% of respondents. A high-deductible health plan (HDHP) is a plan with a higher deductible than a traditional insurance plan. The monthly premium is usually lower, but you pay more health care costs yourself as your deductible before the insurance company starts to pay its share.



Who pays your health insurance premium?

A high-deductible plan (HDHP) can be combined with a health savings account (HSA), allowing you to pay for certain medical expenses with money free from federal taxes. The IRS defines a high-deductible health plan as any plan with a deductible of at least $1,350 for an individual or $2,700 for a family. An HDHP's total yearly out-of-pocket expenses (including deductibles, copayments and coinsurance) can't be more than $6,650 for an individual or

Benefits Provided	Percent of Respondents
Continuing education expenses	85.97%
Liability insurance	79.58%
Licenses	78.75%
Association dues	76.94%
Continuing education leave	65.00%
Discounted veterinary care for personally owned animals	64.44%
Medical/hospitalization plan	2.08%
Paid vacation leave	51.94%
Employer contribution/match to a tax-deferred retirement plan (i.e., 401(k), SIMPLE IRA, etc.)	46.39%
Disability insurance	42.36%
Personal use of practice-owned vehicle	40.00%
Paid legal holidays	37.78%
Uniform/clothing allowance	35.69%
Paid sick leave	34.86%
Tax-deferred retirement plan (i.e., 401(k), IRS qualified profit-sharing plan)	30.56%
Life insurance	29.72%
Dental plan	27.08%
Reimbursed mileage for practice use of personal vehicle	16.53%
Paid maternity leave	7.64%
No benefits provided/purchased	5.69%
Informal profit-sharing plan (not tax-deferred	3.61%
Other (Specify)	3.61%
Paid paternity leave	2.36%

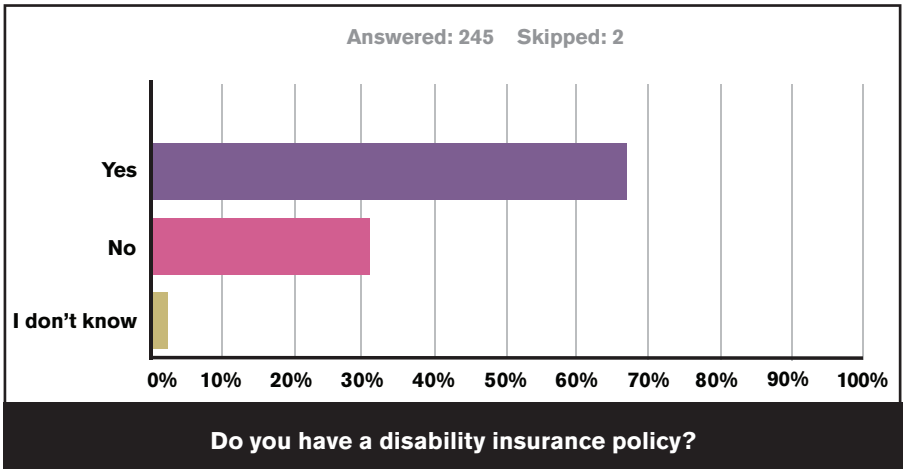
720 individuals responded to this question

$13,300 for a family. (This limit doesn't apply to out-of-network services.)

Of those respondents who have a HDHP, 35.1% have a deductible of $6,000-$7,999, 24.7% have a deductible of $4,000-$5,999, 17.5% have a deductible of $10,000 or more, 13.4% reported $3,000-$4,999, and 3% have a deductible of $8,000-$9,999.

After meeting their deductibles, respondents with a HDHP were responsible for varying percentages of medical costs, with 22.1% having no additional contribution and 28.4% having responsibility for 11-20% of any other medical costs. Almost a third (30.5%) did not know what percentage of costs they would need to pay after their deductible was met.

A high-deductible plan can be combined with a health savings account (HSA) to allow you to pay for certain medical expenses with money free from federal taxes. Internal Revenue Code Section 223 allows individuals who are covered by a compatible HDHP health plan to set aside funds on a tax-free basis up to the contribution limit to pay for certain out-of-pocket medical expenses.



Do you have a disability insurance policy?

Health Savings Accounts have a triple tax benefit—funds go into the account tax-free, grow tax-free and remain completely tax-free when used for eligible medical expenses. They are owned by the participant, and can be funded by you, your employer or even a third party.

HSAs carry over from year to year and are portable if employment changes.

The IRS sets the annual contribution limits and limits the types of health plans that qualify for an HSA. Contributions can be made at any time up until the tax filing deadline, typically April 15. HSA funds can be used for paying qualified medical expenses for yourself, your spouse and your dependents even if you become ineligible to contribute in the future. In 2018, the contribution limits are $3,450 for individuals and $6,900 for a family. HSA holders aged 55 and older get to save an extra $1,000, or a total of $4,450 for an individual and $7,900 for a family. These contributions are 100% tax deductible from gross income and are not taxed when spent on qualified medical expenses.

The IRS determines which expenses are eligible for reimbursement. Eligible expenses include health plan copayments, dental work and orthodontia, eyeglasses and contact lenses, and prescriptions. A comprehensive list of qualified expenses is found at: https://www.wageworks.com/employees/support-center/hsa-eligible-expenses-table/.

Of those survey respondents who have a HDHP, only 61.5% have an HSA account. With the significant financial benefit of these accounts, all those who qualify should consider participating.

Disability Insurance

About two-thirds of respondents (66.5%) reported that they carry disability insurance. One respondent commented, "I wish I had. I am now disabled." Another stated, "I accidentally let my AVMA disability insurance policy (which had been started at the end of vet school) expire. I then was declined by the AVMA. I have sought other policies but have found the premiums to be quite high, so I do not have a policy at this time. I'm also not sure I would pass the underwriting."

Another wrote, "This is very important. Please promote."

One important thing to note about disability insurance is that if you pay the premiums with after-tax dollars, the benefits you receive are tax-free. However, if your employer pays for an individual disability insurance policy for you, any benefits you receive if you are disabled will be taxable, unless you declare the premium payments each year as taxable income. Also, unlike health insurance premiums, you can't deduct premiums paid for individual disability income insurance as a medical expense.

Long-Term Care Policies

Long-term care insurance policies help cover long-term care expenses. The phrase "long-term care" refers to the daily help that people with chronic illnesses, disabilities or other conditions need over an extended period. The type of help needed can range from assistance with simple activities (such as bathing,

dressing and eating) to skilled care that's provided by nurses, therapists or other professionals. Health insurance will not pay for daily, extended-care services.

Medicare will cover a short stay in a nursing home or a limited amount of at-home care, but only under very strict conditions.

If your income is low and you have few assets when you need care, you might quickly qualify for Medicaid. Unfortunately, to qualify for Medicaid, you must first exhaust almost all your resources and meet Medicaid's other eligibility requirements. If you have accumulated significant assets over the course of your career, long-term care insurance can help prevent the loss of your savings and home if you should require care.

Policies offer many different coverage options. Since you can't predict what your future long-term care needs will be, you might want to buy a policy with flexible options. Depending on the policy options you select, long-term care insurance can help you pay for the care you need, whether you are living at home or in an assisted-living facility or nursing home. The insurance might also pay expenses for adult day care, care coordination and other services. Some policies will even help pay costs associated with modifying your home, so you can keep living in it safely.

Because equine veterinary practice is physically risky, considering such a policy might be wise.

With close to 40% of the equine veterinary profession being solo practitioners, there are large numbers of folks at risk. If they are hurt on the job, there will be no Workman's Compensation insurance to fall back on.

In this survey, 16.7% of respondents reported having a long-term care policy. 39.0% of these 41 respondents were male, and 61.0% were female. They were fairly equally distributed across graduation years, with five from 2013-2017, 10 from 2008-2012, five from 2003-2007, two from 1998-2002, seven from 1987-1997, nine from 1976-1986 and three before 1976.

Take-Home Message

While insurance for health coverage, disability and long-term care can be expensive, being prepared for unexpected events can make you and your family more secure, particularly if you have valuable—and thus vulnerable—assets.

If the unthinkable should happen, knowing that you or your family member will be able to receive care can be reassuring. It takes time to explore the available options, but it is time well spent. EM

Formalizing a submission-and-review process for telemedicine communications can lead to increased profitability for your practice.

Three Reasons to Use Telemedicine in Your Equine Practice

Telemedicine is likely something you are already doing, but you can formalize the process for increased customer service and profit.

By Katie Navarra

Chances are that many veterinarians are already communicating with clients via text message and are using electronic image and video sharing applications (telemedicine) on their smartphones. Telemedicine is not designed to replace a comprehensive on-site examination by a veterinarian. Rather, it is often intended to replace no action at all, or to determine which action is needed by the veterinarian.

Formalizing a submission-and-review process for these telemedicine digital files and communications can lead to increased profitability for the practice, more organized recordkeeping and more efficient pre-and post-visit outcomes.

Ten minutes into an hour-long conversation, veterinarian Bob Grisel, DVM, received three telemedicine requests from clients. These individuals requested

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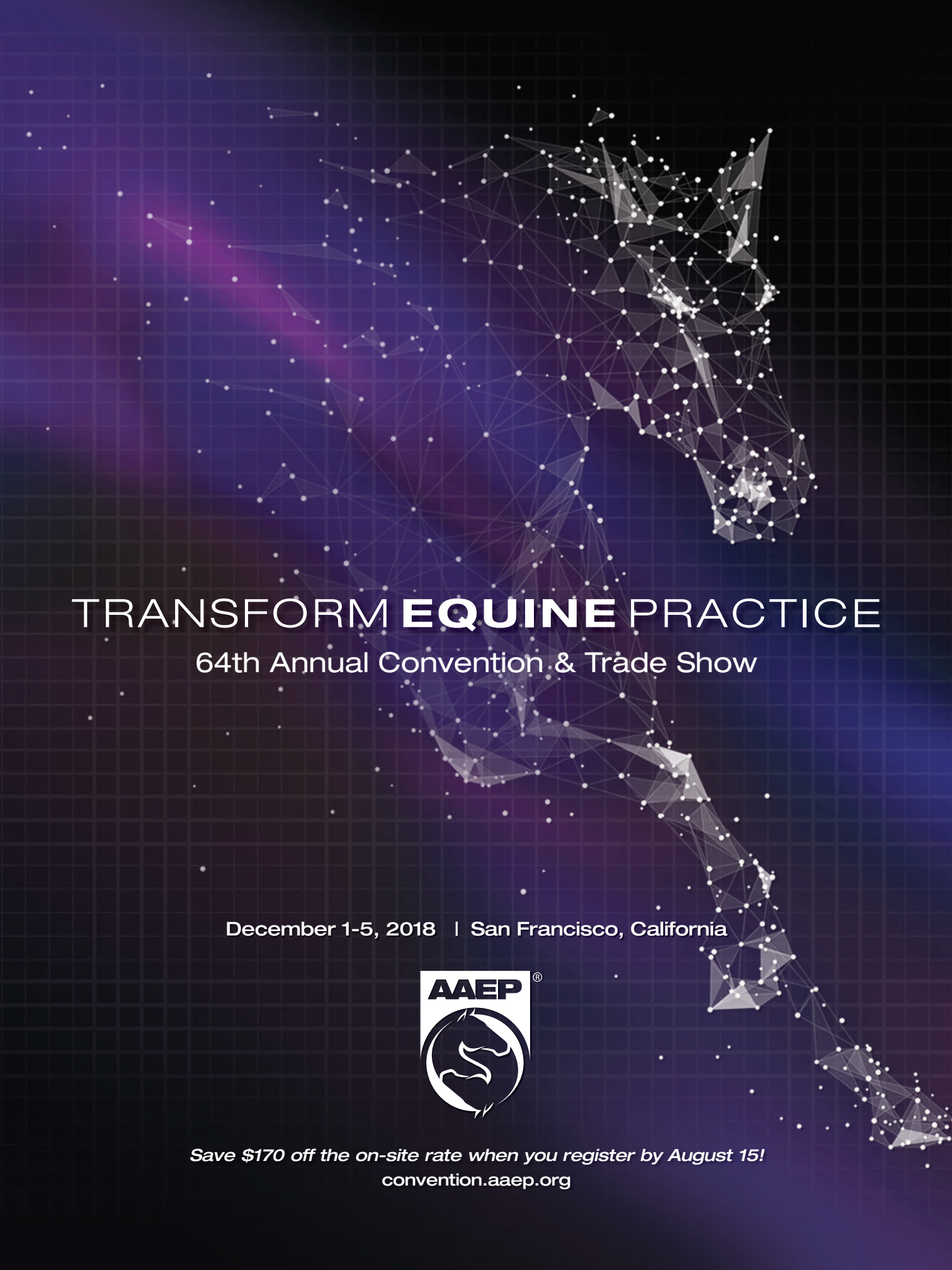
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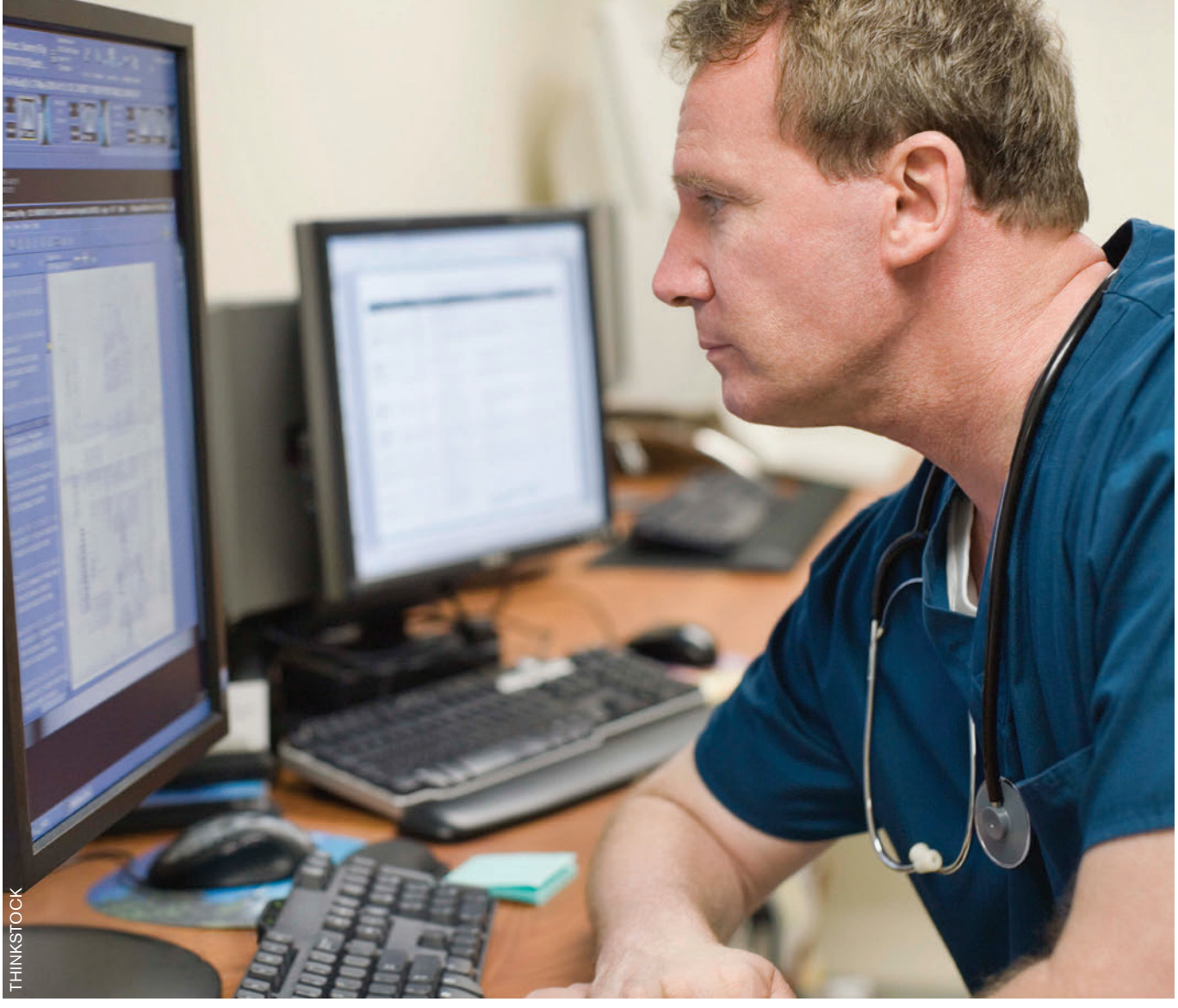

THINKSTOCK

Telemedicine isn't designed to replace live visits by a veterinarian to a client, but can enhance that experience.

guidance regarding pre-purchase screening, pre-appointment assessment and post-appointment rechecks.

He travels all over the country for performance horse medicine, sports medicine and lameness diagnosis. Some areas he visits more frequently than others. But through telemedicine, he is able to stay regularly updated on each and every horse's progress.

"We can review up to 100 videos per week without the restrictions of distance and time," Grisel said. "A setting in which a single examiner can evaluate a large number of subjects has been suggested to be a crucial part of refining one's diagnostic accuracy."

Grisel has been electronically interacting with clients since 2000. Before the penetration of cell phones and smart devices, horse owners and caretakers shared video footage through email. With the prevalence of texting and social media, it's easier than ever for clients to communicate with veterinarians on the fly.

"Horse owners and caretakers have already established that telemedicine is something equine veterinarians need to implement. It was a matter of figuring out how we were going to do it," Grisel said.

According to the Pew Research Center Information & Technology, the vast majority of Americans (95%) now own a cellphone of some kind. And of that cellphone-owning group, 77% own smartphones that are equipped to take videos and photos and share files instantaneously.

There are several key phrases used to describe electronic health communication. These phrases are often used interchangeably, but it's important to understand the distinctions between each.

The overarching term *telehealth* encompasses all uses of technology geared to remotely deliver health information, education or care, Grisel explained. In human medicine, this is said to have started as early as 1876, when Alexander Graham Bell invented the telephone and patients could call in from a remote location.

"Telemedicine is a subcategory of telehealth and refers to a tool, or use of a tool, to augment the practice of veterinary medicine," he said. "A phone

app which enables the visual assessment of an animal as part of the communication between a professional and a client is an example."

Teleconsulting is a subcategory of telehealth that occurs when a primary (local) veterinarian utilizes telehealth tools to communicate with a second (remote) veterinarian for the purpose of gaining further insight and advice regarding the medical care of a specific patient.

Electronic consultations are not intended to replace on-site visits. Instead, this is an opportunity to make sure a horse owner reaches out for assistance rather than not at all. It is also a method for veterinarians to stay informed about a patient's progress and to find expert advice on a condition a veterinarian might not have treated previously.

Telemedicine and a strategic plan for collecting, reviewing and implementing this information can dramatically enhance a veterinarian's ability to administer care. In this article, Grisel identifies three ways an equine practice can benefit from embracing telemedicine and the ethical considerations that come along with the technology.

Pre-emptive Diagnostics

Reviewing video files prior to a hands-on evaluation allows veterinarians and farriers to develop a working theory regarding the horse's condition before arriving on-site. There are distinctive markers that can be picked up on video that will provide an indication of where to begin the exam. This creates a more efficient visit, which means more time to consider treatment strategies.

"Reviewing video footage in advance of an on-site visit can cut evaluation time by one-third," Grisel said. "Vet schools can significantly benefit from having the ability to streamline the evaluation process."

Traditionally, vet schools require clients to show up with their lame horses at 7:30 a.m., and it can take until 6:00 p.m. to determine a diagnosis and treatment plan. It's a lengthy process for the school and the clients.

"A pre-emptive digital review can get a lot accomplished before the horse owner arrives," he said. "That means less time is spent waiting around, thereby creating happier clients."

Grisel asks clients to take video from specific angles, including:

- footage of the horse standing squarely on a level surface;
- dorsal views of the thoracic feet and limbs together, plantar views of the pelvic feet and limbs together, lateral views of each thoracic and pelvic foot separately, and right and left lateral views of the entire animal;
- the horse moving on a hard (e.g. asphalt) surface: cranial and lateral views of the horse walking and trotting in a straight line on a loose lead;
- the horse on a soft (e.g. arena) surface: lateral views of the horse at the walk, trot and canter on the longe line and under saddle;
- additional (special) footage as dictated by history.

The video becomes a part of the horse's permanent veterinary record that can be reviewed and used for comparative purposes as the horse progresses through treatment.

Continuous Follow-Up

Telemedicine allows veterinarians to stay connected with clients and informed about a horse's progress. From the customer service standpoint, clients feel like they have greater access to expert advice and a stronger relationship with their professionals, especially when they are located several hours to several states away.

"Even though they may only see us three or four times a year, they feel like they are constantly connected," he said.

On the flip side, it allows Grisel and his team to stay updated on a horse's progress and allows for modification of a treatment plan as needed.

"I feel like I can see any horse every day if I want to," he said. "I can also make changes to the treatment protocol if I see the horse isn't progressing as I'd like."

Client Peace of Mind

Horse owners and caretakers are on the "front line" and best positioned to observe issues with their horses because of the routine contact with the animals. However, they are not trained to evaluate a situation the same way as a veterinarian is trained. Timely advice from a practitioner accelerates the recognition of a problem, meaning that diagnosis and treatment can occur more quickly after the problem's onset.

"I've found that horse owners aren't looking for telemedicine to replace a necessary visit, but instead they are looking for general guidance and confirmation that the situation is serious enough for a visit," he said.

Telemedicine can also save clients time and money throughout the horse-buying process. Complete pre-purchase exams are costly and time-consuming, especially for trainers who might look at 10-15 horses in one buying trip.

Through online consultations, Grisel helps clients identify the strongest prospects to consider for full-fledged pre-purchase exams.

"Clients will send videos of the eight or 10 horses they are looking at, and by watching the horses move, I can suggest which horses to pass by and which are strong candidates," he said.

Ethical Considerations

Implementing a system to receive, review and store video files can be overwhelming. However, proper file retention of these digital documents for legal reasons is important in veterinary medicine.

When Grisel first formalized online consultations, he received a plethora of file formats that weren't necessarily easy to use. He recently helped to develop a phone app that can handle this task and organize both the original file and review notes so that it becomes a permanent part of the horse's medical record.

Grisel acknowledged that telemedicine challenges a practitioner's personal ethics.

"It is important that the professional community regard telemedical review as a means of replacing a lack of assessment as opposed to replacing direct hands-on evaluation," he said. "Providing a diagnosis based on a video review alone is inappropriate and unethical."

Horse owners often will contact veterinarians who are not licensed to practice in their states. Grisel and the American Veterinary Medicine Association (AVMA) are working to address these concerns. The AVMA has several documents available on its website for reference, but it's still a work in progress, as the use of telehealth in veterinary practice evolves.

"In our practice we require each client to list a primary veterinary and that professional's address and contact information, even if we maintain a veterinary-client-patient-relationship (VCPR) with that individual. We send any information generated through a teleconsultation to that local veterinarian," he said. "It's the local veterinarian's prerogative to follow the recommendations or not."

Take-Home Message

Telemedicine is widely available in human medicine, and it's already a part of equine medicine, whether equine practices choose to fully embrace it or not.

"Ultimately, it improves care for horses and enhances customer service," Grisel said. EM

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