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Partnership Helps Rescue Horses, Increases Opportunities for Student Learning

By Alison LaCarrubba, DVM

No grass will grow under the feet of our equine ambulatory program. In an effort to increase student learning and improve the skills which are integral to becoming a successful equine practitioner, the equine ambulatory program has been integrated into the core equine rotation. This increase in student interaction and time in the truck has been met with very positive feedback.

We have also been fortunate to collaborate with the Humane Society of St. Louis at their Longmeadow Rescue Ranch location in order to not only gain crucial experience to our students, but also to provide state-of-the-art-care for these rescue horses. We spend one day per month at the rescue facility treating a variety of common and uncommon conditions affecting the horse, including lameness, castrations and reproductive examinations. We are also involved in the facility's preventive care program, which includes vaccine administration and Coggins testing. This relationship has been mutually beneficially and we look forward to carrying this forward for many years to come.

This year we were also very excited to have hosted another castration day, which was supported by Pfizer Animal Health. We had the collaboration of three veterinary clinicians, three equine interns, and



more than a dozen students in castrating 12 adult stallions. The students were able to gain valuable experience with both field anesthesia and surgical techniques.

Overall, the day was a great success and would not have been possible without the support and collaboration of the clinicians of the Veterinary Medical Teaching Hospital for allowing as many students as possible to participate as well as the generosity of Pfizer Animal Health.

We certainly are looking forward to 2013 and anticipate further growth within our ambulatory program. Thank you for your continued support and please do not hesitate to call if there is anything we can do to help you.

Ambulatory Team Welcomes New Interns

Alison LaCarrubba, DVM

Dr. Alison LaCarrubba, originally from New York, graduated from the University of Missouri College of Veterinary Medicine in 2001. LaCarrubba completed an internship in equine medicine and surgery at the University after graduation and subsequently spent a year working in an equine exclusive private practice. She returned to the University in July 2003, and in 2009 she completed the credentialing process for the American Board of Veterinary Practitioners in Equine Practice and is now focused on becoming more specialized in equine dentistry. With the recent retirement of Dr. Nat Messer, our longstanding internist, LaCarrubba increased her time working with the internal medicine service and is spending fewer months per year in the truck, although she remains committed to the ambulatory program, as well as growing both the ambulatory and in-house dental programs. She has attended a variety of advanced dental training courses and recently spent a week in Texas working with two equine veterinarians with a focus in dentistry.



Martha Rasch, DVM

Dr. Martha Rasch is a clinical instructor at the MU College of Veterinary Medicine and focuses on the equine ambulatory practice. Rasch was born in Chicago, Ill., and grew up riding hunters and jumpers in St. Louis, Mo. She began to ride in three-day events in college. After earning a DVM at MU, she completed a rotating equine internship at the University. She then continued on to work as a clinical instructor for the equine ambulatory service. She spends the majority of her time instructing senior veterinary students while traveling to work on horses within the Columbia area. This year, she has also been traveling weekly to Fairmount Park in Illinois, extending our ambulatory services by offering routine care, advanced lameness and imaging diagnostics to the racehorse population there. She is particularly interested in wound management as well as critical care in the ambulatory setting. Rasch works closely with the referral clinicians in the MU Equine Clinic to provide superior care to horses.



Kirsty Husby, DVM

Dr. Kirsty Husby spent time growing up in Durban, South Africa, and Montclair, Calif. She began riding horses when she was 6, and participated in various eventing competitions during high school. She a bachelor's degree in animal science in 2007, and her DVM in May 2011, both from Iowa State University. During veterinary school she worked as an ICU technician in the Equine Clinic and with the equine surgery service. After graduation she completed an equine internship at MU and stayed on for another year to gain additional clinical experience. Her goal is to enter an equine/large animal surgery residency. She enjoys training her 6-year-old off-the-track thoroughbred gelding, and the pair brought home a first-place ribbon on their show debut this fall.



Our interns have a special interest in working with horses, and potentially going on to complete a residency, specializing in either equine medicine or equine surgery. Every June we welcome a new crop of interns. This year our interns include Dr. Katie Delph, Dr. Ann Kemper and Dr. Breanna Sheahan.

Katie Delph, DVM

Dr. Katie Delph is from Indianapolis, Ind. She grew up riding horses, participating in Pony Club, and competing in eventing and dressage. She received her bachelor of science degree in animal science from Purdue University in 2007. She attended Purdue University for veterinary school as well and graduated in May 2012. She is interested in many aspects of equine medicine including lameness, colic, neonates, and endocrine diseases. She is interested in pursuing a residency in equine medicine after this year. In her free time, she enjoys being outdoors, riding her shire/thoroughbred gelding, and hiking.



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The Effect of the Drought on our Horses

This past summer brought intense heat and drought conditions to much of the Midwestern region and mid-Missouri was not spared. Although the drought of 2012 is not quite behind us, we have been fortunate and grateful for the rain that was brought in by Hurricane Isaac, which allowed for some much needed relief. Even the small amount of rain we received during the fall allowed pastures to recover to some degree and many dirt lots have been filled in with stands of much needed green grass. Unfortunately the drought conditions affected hay production in this region as well as surrounding areas, and many of us have seen hay prices for the winter skyrocket. Since many of us had to feed hay through the summer months and into the early fall this year, our overall hay consumption increased while our supply was considerably diminished. This has created the perfect storm for the elevated hay prices we're seeing. Central Missouri received about seven inches less rain in May and June this past year than is typical. The Columbia area saw 24 days straight of temperatures higher than 90 degrees, this included more than 10 consecutive days of temperatures at or higher than 100 degrees.

Hay that was cut after May or was a second or third cutting will be nutrient deficient because of the drought conditions. Typically we expect early cut, good quality grass forage such as timothy, orchard and brome grass to contain up to 15 percent protein. Hay cut in late June or later will have a significantly lower level of

protein, closer to 6-to-7 percent, which will affect the plain of nutrition our horses receive.

One of the concerns of the drought for cattle farmers involved the high nitrates in the well-fertilized and dried out pastures, hay and silage. Fortunately we do not typically have the same nitrate and nitrite concerns with horses that we see with cattle. Although drought conditions do result in increased nitrate production in forage which cannot be well metabolized, horses are less sensitive and less affected than their ruminant counterparts. Of greater concern to horse owners is a selection for endophyte infected fescue. As many of you know, endophyte infected fescue can predispose mares to having prolonged gestation, large and dysmature foals, dystocia and agalactia. The endophyte infected fescue is more ecologically fit and will survive the drought stress more readily, resulting in an increased component of this on pasture. It will be especially important this spring to be sure that all pregnant mares are pulled off of fescue pastures at least 60 days prior to foaling.

We will continue to hope for precipitation through the winter and into the spring months so that our spring pastures can recover and promote good quality hay for next year. For now we are grateful to have grass growing in our pastures and allowing a respite to the hay feeding that we saw earlier in the summer. Soon enough there will be snow covering the ground and there will be no questions as to whether or not it's time to put the hay out.

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Ann Kemper, DVM

Dr. Ann Kemper grew up on acreage in Lincoln, Nebraska, where her family raised horses. She was heavily involved in eventing, Pony Club, and worked as a riding instructor. She received her bachelor's degree from Creighton University, and completed her veterinary education at the University of Nebraska and Iowa State University. She still has her eventer mount, Indy, who is enjoying his semi-retirement, along with several Irish sport horses she raised from foals.



Breanna Sheahan, DVM

Dr. Breanna Sheahan grew up in Bakersfield, Calif., where her parents own a veterinary practice. She began competing in Combined Driving Events at a young age, and continues to be very involved in the sport as a competitor and trainer (in her free time). Sheahan graduated from the University of California-Davis, School of Veterinary Medicine in 2012. She is interested in many aspects of equine clinical practice, including theriogenology, internal medicine, and lameness.



Bladder Stones Uncommon, but Potentially Serious

Case Study

In October of 2011 the equine ambulatory service was called to an emergency colic. Upon arrival, Brick, a 20-year-old thoroughbred gelding was clearly in pain. He was lying down and after being encouraged to stand, the horse was anxious, pawing and difficult to control. His physical examination parameters were abnormal, with an increased heart rate and respiratory rate and it was noted that the gelding's penis was slightly extended from the sheath, red and swollen, and dripping urine, an unusual finding during a colic examination. Brick was sedated and pain medications were given to facilitate a complete examination. After a rectal palpation was performed it was noted that Brick's bladder was significantly enlarged. Our concerns for Brick shifted from a primary gastrointestinal problem to a urinary tract obstruction.

We quickly cleaned the penis and were going to attempt to pass a catheter into the bladder when we noticed that there was a stone at the end of the penis, lodged and obstructing urination. Much to Brick's relief, we were able to remove the stone, which resulted in a stream of urine being released under pressure. The gelding was immediately relieved and recovered fully from this episode.

Approximately nine months after this urethral stone was removed, Brick presented to the ambulatory service once again for straining to urinate and urinating small amounts frequently. Brick was doing well in all other capacities and he did not present as an emergency and did not appear to be in pain. Upon examination the gelding was bright and alert, his vital parameters were all within normal limits and he was in good flesh. We lightly sedated the gelding and performed a rectal palpation, immediately noting the presence of a bladder stone at the neck of the bladder, which was then confirmed by an ultrasound examination. Although the stone was not obstructing urine flow, it was causing irritation and cystitis and there was the potential for urinary obstruction.

The gelding was referred to the Veterinary Medical Teaching Hospital that same week and was seen by the surgery service. Bladder stones in horses are potentially serious, but relatively uncommon. It is still largely unknown why horses form bladder stones, also known as cystic calculi, but dietary causes have not



been implicated. It is thought that growth of the stone occurs by accumulation of crystals already present in normal equine urine on the surface of the stone.

The recommended treatment for removal of bladder stones is surgical. Although there was an option for laying Brick down under anesthesia and removing the stone, Brick's owners elected to try and break up the stone using shock wave therapy and then remove the fragments through an incision made into the neck of the bladder just below the anus. An endoscope was used to visualize the stone itself and it was determined to be approximately the size of an orange. The stone was then broken into small fragments and these fragments were picked out using very long instruments, which were required to reach the fragments in the bladder. This procedure was performed under standing sedation and was broken up into two different days in order to give Brick a rest in between, as there were many fragments. After the procedure was complete and the fragments were removed the incision was left open to heal on its own, or granulate in. Brick was placed on oral antimicrobials as well as anti-inflammatories and discharged. Brick has so far done very well at home. His incision has healed nicely and he has shown no further signs of urinary discomfort, although there is a risk of recurrence of the stone. Brick will be closely monitored for any signs of recurrence, such as straining to urinate, urinating small amounts frequently or blood in his urine. For now, Brick is happily grazing with his herd mates and is grateful to the clinicians at the teaching hospital for extending his retirement.

Several Triggers Lead to Gastric Ulcer Syndrome

Equine Gastric Ulcer Syndrome is a common disease that affects more than half of all performance horses. Affected horses have ulcerations present in the stomach lining. Most ulcers are in the top part of the stomach, where the lining is similar to the esophagus (squamous mucosa). Less commonly, ulcers can also be found in the bottom two thirds of the stomach — the glandular lining. Ulcers are more common in the upper part because squamous cells do not produce the mucous that protects against stomach acid.

Who gets it?

All horses can have gastric ulcers, but performance horses and foals are most at risk.

What are signs of gastric ulcers in a horse?

A adult horses can have a wide variety of clinical signs, varying from mild colic to behavior change under saddle. Some horses lose interest in food, or act depressed. Occasionally, horses with ulcers lose weight or have chronic diarrhea.

Foals may act colicky, have diarrhea, or not eat well with ulcers, but they also can present additional signs, including grinding their teeth, drooling, or rolling on their back. These signs are not indicative of only gastric ulcers but we certainly need to consider gastric ulcers when we see these clinical symptoms being exhibited.

How do I tell if my horse has gastric ulcers?

The only way to definitively diagnose gastric ulcers is to put a long camera called an endoscope down the esophagus and into the stomach to examine the lining of the stomach. This fairly short procedure, called gastroscopy, can be performed relatively easily under mild sedation, but does require that your horse is held off of food for 18-to-24 hours before examination in order to allow the stomach to empty. Using the scope, the squamous part of the stomach, as well as the junction between the two parts of the stomach, can be evaluated for ulcers. Any ulcers seen can be scored for severity. In cases where gastroscopy is not an option, but ulcers are strongly suspected, treatment can be initiated and the response monitored. Horses with ulcers generally respond, at least in part, to treatment within three-to-five days. If response is observed, then treatment should be carried out for the full recommended time period.



What causes it?

Horse stomachs secrete acid continuously, in preparation for digestion, as they are designed to be continuous grazers. The food and saliva buffers the acid in the stomach. Acid injury appears to be the primary factor in causing gastric ulceration. Horses that are confined to a stall, have intermittent feeding, have a high percentage of grain in their diet, or travel frequently appear to be most at risk. Non-steroidal anti-inflammatory drugs (NSAIDs), such as bute (phenylbutazone) or Banamine® (flunixin meglumine), can also contribute to the formation of ulcers.

How are gastric ulcers treated/prevented?

There are many supplements and medications that are marketed for gastric ulcers. These have varying rates of success, although the only FDA-approved drug for treatment of gastric ulcers is omeprazole paste (Gastrogard®). Omeprazole is a proton-pump inhibitor, which means it decreases the amount of hydrogen ions, which make the solution more acidic, in the stomach. The recommended length of treatment is 28 days, although some horses may require a shorter or longer course of treatment, depending on their response and recheck gastroscopic examination. Minimizing stress or changing management strategies may help decrease ulcer formation. Increasing turnout, implementing continuous feeding, and feeding a decreased percentage of grain should be considered when managing a horse at risk for gastric ulceration.

Extreme Summer Causes Concern for Anhydrosis

The extreme weather conditions of this past summer brought to mind the difficulties our animals face with heat stress. Keeping horses cool during the most intense summer months can be difficult if not impossible, and if the inability to sweat develops, also known as anhydrosis, overheating is a very real concern.

Anhydrosis is a complete or partial inability to sweat that can result in overheating. In horses, sweating plays a role in thermoregulation contributing to approximately 65 percent of heat loss. When the horse is unable to sweat or cannot increase the amount of sweating needed for heat loss, overheating and heat exhaustion develop.

Why would my horse develop anhydrosis?

Cases can occur spontaneously in hot, humid environments and even in temperate climates less commonly. It usually occurs in horses moving from temperate climates to hot, humid conditions, but it may also develop in horses that are native to hot humid climates even after they have been able to sweat. It can occur in a horse of any age, gender or color, and thoroughbreds may be predisposed to the condition.

The exact cause of anhydrosis may be because of a failure of sweat gland secretion due to desensitization of receptors (adrenoreceptors) to epinephrine (or adrenaline), which is being over-secreted due to the climate stress. Horses that are being treated for airway disorders with clenbuterol or terbutaline may also be predisposed. Previously reported causes of thyroid hormone disorders or electrolyte disturbances are likely not implicated.

What clinical signs may develop if my horse is developing anhydrosis?

Clinical signs of anhydrosis may be systemic or cutaneous in origin. Horses may have an intolerance to exercise or may have decreased performance. These horses are likely to develop high respiratory and heart rates after light exercise or at rest and have prolonged recovery periods (more than 30 minutes following exercise). Their rectal temperatures may also continue to be increased more than 30 minutes following exercise. Decreased appetite and thirst may be another sign displayed by horses affected with anhydrosis. Cutaneous signs include a complete inability to sweat or patchy area of sweating where sweating is restricted to the base of the ears, along the neck, and in between the hind limbs. In long-term cases of anhydrosis, the horse's hair coat may show patchy hair loss or may be dry or even greasy at times, depending on how affected the animal is.



How can anhydrosis be diagnosed?

Diagnosis is often presumptive based on clinical signs and possible history of changing location and climate and observed lack of sweating. The diagnosis can be confirmed with intradermal tests of epinephrine injections in standard dilutions. This can determine if there is a complete failure of sweating or a partial failure and the degree of failure. Normal horses will sweat significantly to each dilution, whereas affected horses will have a prolonged response time, decreased response, or no response at all.

What steps are taken to treat anhydrosis and prevent signs of overheating?

Treatments implemented depend on the degree affected and changes that can occur in the area where the horse is housed. Measures should be taken to prevent episodes of heat exhaustion due to the horse's inability to sweat. These measures include exercising the horse at cooler times of the day (early morning or dusk) or not exercising in the hot months of the year. If exercising continues, the rider should be careful not to thermally stress the horse. The horse should be turned out at night and stabled in a well-ventilated and shaded area during the day. Fans or air conditioning in the stable can be used as well when stabled. Fans are recommended during the daytime in peak summer months, as well as a misting system or intermittent cold hosing if possible.

Monitoring water intake and urine output and having fresh clean water available to the horse at all times is imperative as this will help to prevent any episodes of subclinical dehydration that may contribute to overheating. Electrolyte supplement blocks and feeds that encourage water intake should also be available. Feeds that limit metabolic heat production should be fed.

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These feeds include high quality forage, low protein feeds that are supplemented with oil if needed instead of high protein and high starch feeds. The use of antidiuretics, vitamin E supplements, and electrolyte supplements are likely not curative, but have been used as adjunctive treatments with variable results. Commercially available supplements (One-AC) have also been used with variable results.

If the horse is not responding to these environmental changes in their current location, the horse can be moved to a colder climate for the summer months. This may not be feasible, but it may be the only option if the goal is to keep the horse at a similar performance level during warm months. Some horses respond to changes in climate location favorably especially in cases of early diagnosis; however, some horses remain unable to sweat throughout the year. Many horses do not return to normal function and level of performance if kept in warmer climate year-round giving them a guarded prognosis. If you know you are moving your horse to a warmer climate, a period of acclimatization of three weeks or more is encouraged with the first five-to-10 days are the most critical.

What steps should be taken if my horse is showing signs of overheating?

If your horse is showing signs of acute heat exhaustion, steps should be taken immediately to cool his temperature. Your horse should be taken out of the sun and heat if possible. He should be hosed and the excess water scraped off until his skin is cool to touch. He should then be placed in the shade with fans on to encourage evaporation of water and therefore heat from his body. If your horse is not showing signs of relief from the heat or has collapsed, your veterinarian should be called for immediate treatment. Heat exhaustion is an emergency situation that requires immediate attention. If your horse has shown intermittent signs of overheating or decreases in sweating, your veterinarian should be called to determine if your horse truly is anhydrotic or if he has another underlying condition causing signs of overheating.

Anhydrosis can be a challenging disorder to deal with as a horse owner; however, measures can be taken to treat the problem and prevent episodes of overheating.

Box Elder Seeds Cause Seasonal Pasture Myopathy

A toxin found in the seeds of the box elder tree (*Acer negundo*) has recently been found to be responsible for a deadly equine disease, seasonal pasture myopathy. Horses with seasonal pasture myopathy may appear to have colic or founder, but true cases develop severe muscle necrosis, leading to death in more than 75 percent of cases within 72 hours.

This disease is most commonly seen in the fall, and occasionally in the spring and summer. Horses seem more likely to eat the box elder seeds if they are on sparse pasture with short grass or without supplemental hay. Ingestion of box elder seeds results in the breakdown of respiratory, postural, and cardiac muscles, although the minimum quantity of toxin or seeds necessary to cause disease has not yet been discovered. It is also unclear why some horses pastured near box elder trees are unaffected, while other horses develop clinical signs of the disease. Potential differences include when and how long the horses are exposed to the seeds, the amount of toxin in the seeds, and whether or not there is sufficient feed in the pasture so as to make the seeds appear less appetizing, although further research is necessary to definitively understand the disease.

Seasonal pasture myopathy often resembles severe colic or founder, and you may see clinical signs in one or more horses pastured together. Affected horses will appear weak and stiff, and they may tremble. They may also lie down frequently or for long periods of time. They may develop a dark color to their gums, and may have difficulty breathing. They will often pass dark colored urine. This disease does progress quickly, and most affected horses die within 24-72 hours after onset of clinical signs. If you suspect that your horse is showing any of these signs, call your veterinarian as quickly as possible, as early diagnosis and promptly beginning intensive care will give your horse the best possible chance for survival.

You can minimize your horse's risk of developing seasonal pasture myopathy by controlling their environment. You can reduce your horse's exposure to box elder seeds by removing low-hanging tree

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Seasonal Pasture Myopathy, Continued from page 7

branches, removing the trees, or fencing the trees to prevent horses from accessing them. Heavy wind or rainstorms can blow seeds onto the ground or into pastures, so monitor your pastures following storms for increased numbers of seeds, and you can keep your horse off pastures with box elder seeds following storms. Overgrazed, short pastures can make seeds easier to accidentally ingest while your horse is searching for grass. Overgrazed pastures will also make toxic plants and seeds that your horse would not normally eat more appetizing, so supplementing pasture

with hay will minimize the appeal of toxic plants to your horse.

Since most cases occur in the fall, in horses out on pasture for more than 12 hours a day, it may be prudent to limit your horse's pasture time in the fall. There is also increased risk for horses out on pasture with box elders for the first time, so introducing new or young horses to pastures with box elder trees is best done over the winter or spring, when there are fewer box elder seeds within reach.



Missouri Sees Increase in Pigeon Fever Cases

Likely due to the hot, dry summer we experienced this year we are seeing a significant spike in the number of cases of a typically uncommon bacterial infection in our Missouri horses. Pigeon fever or dryland distemper, caused by the bacterial pathogen, *Corynebacterium pseudotuberculosis*, actually has nothing to do with pigeons. The disease was named because a common clinical sign of pigeon fever is the development of large abscesses over the horse's chest, giving the horse a pigeon breast appearance.

The pathogen thrives in a hot, dry environment and historically has been more commonly found in places like California, Colorado, the desert Southwest and parts of Texas. The most common time of year to diagnose this disease is the late summer and early fall, which is consistent with what we have been experiencing in Missouri. Horses contract this disease through wounds, and the bacteria are also spread via ticks and biting insects such as flies, as well as direct contact with pus draining from abscesses.

In a typical case of pigeon fever, the early clinical signs include swelling of the chest/pectoral area. There may be an associated fever, but usually the horse's behavior



does not change and the animal continues to eat and drink normally. There may be some stiffness or soreness associated with the abscess. Horses may also develop abscesses along their belly, extending into the sheath in geldings and stallions or udder in mares. Less commonly the infection can also spread to the limbs, resulting in a more tenacious form of the disease referred to as ulcerative lymphangitis (big leg). Some individual horses develop internal abscessation in either or both the chest or abdominal cavities. This form of the disease is much more difficult to treat. In rare instances, the infectious process causes infection and deformation of bones and joints. A bacteriologi-

cal culture of the abscess provides the definitive diagnosis. Any horses diagnosed with or suspected of having pigeon fever should be isolated in an effort to control spread of the organism to other animals.

We recommend that horses at risk of this disease, or showing signs that might be a consequence of the infection, should be examined by a veterinarian. Typically, the common form of the disease is best treated by simply establishing abscess drainage. Other treatments (such as antibiotics) may be employed in difficult or refractory cases.

The best way to prevent this disease and control spread is to isolate affected animals. These bacteria can be spread on pitchforks, buckets and even shoes of caretakers. Fly control is also critical in controlling spread of the disease. Most horses who contract the disease will recover in a few weeks time with appropriate care but it is important to monitor all animals for signs of the uncommon manifestations of the infection. Although the recent Missouri drought has surely contributed to the spike in the number of affected horses this year, it is likely that the number of affected horses will decrease as the wetter and colder weather ensues.