



Volume 17: Issue 1 Fall 2021

## On-farm Service Options Expanding

**T**he pandemic has touched everyone somewhat differently, but it is safe to say we have all been affected. The impact of the pandemic on the veterinary community has been far-reaching and profound. As essential workers, veterinarians, technicians and staff had to think fast in order to stay safe as we continued to treat not only emergency situations, but also provide routine care. Veterinarians have faced increased demands, while struggling to maintain proper staffing.

At the start of the pandemic, veterinary groups around the country struggled with best practices in order to keep employees and clients safe while giving our patients the care they needed. Most practices moved to curbside service. This was difficult at times for everyone involved. We love animals and we also adore and appreciate each and every one of you. I have always loved working outdoors, but during the pandemic this has been a saving grace. It has been truly wonderful to visit with all of you, our friends and clients, and to care for your animals without interruption.



Last year, we added the Lameness Locator to the ambulatory practice, and this tool has been valuable, both for true lameness exams, as well as pre-purchase examinations. This tool is indispensable and allows us to provide state-of-the-art care on all of our farm calls

During this past year we have also been able to purchase new dental equipment thanks to an extraordinarily generous donation. Many of you have commented on the headstand we use for many of our den-

tals currently. The horses also seem to enjoy it! Improving our dental toolbox has unquestionably improved services, both routine and referral cases

Perhaps our biggest news this year is the impending purchase of new field endoscopic equipment made possible by another incredibly generous donation. Moving forward, we will have the capacity to perform gastric endoscopy on farm. This will allow our local client base to have better access to procedures that historically have only been performed on a referral basis. As a group we couldn't be more excited. No practice can be static. We must always be building and growing and changing. Medicine is ever changing, and we need to keep pace.

As we move into 2022, we look forward to visiting with you and your horses. As always, we thank you for your continued support, kindness, and generosity.

**Sincerely,**  
**Alison LaCarrubba, DVM**  
**Diplomate, ABVP**  
**(Equine Practice)**

### Mission Statement:

The mission of our equine ambulatory service is to provide the highest standard of medical and surgical care to our patients while training the next generation of veterinarians.

# Meet the Equine Ambulatory Team

Alison LaCarrubba, DVM, DABVP

**A**lison LaCarrubba, originally from New York, grew up riding hunter-jumpers and dressage from a young age. After graduating from Cornell University with a degree in animal science, LaCarrubba moved to the Midwest to obtain her veterinary degree. She graduated from the University of Missouri College of Veterinary Medicine in 2001. LaCarrubba completed an internship in equine medicine and surgery at the university and subsequently spent a year working in an equine exclusive private practice. She returned to the university in July 2003 as a clinical instructor, and in 2009 she completed the specialty boards with the American Board of Veterinary Practitioners in Equine Practice.



LaCarrubba's love of equine dentistry has inspired her to continue her training in this area. In recent years she has attended a variety of advanced equine dental courses, which have allowed her to develop specialized skills and expertise in this field. As the equine dentist for the university, LaCarrubba is excited to see all things dental, from routine work to more complicated extractions. When she is not at work, she is spending time with her husband and three children. The whole family enjoys horses and riding together on Missouri's beautiful trails.

Martha Scharf, DVM, DABVP

**M**artha Scharf practices equine ambulatory medicine at the Equine Hospital. Scharf was born in Chicago and grew up riding hunter-jumpers in St. Louis. Since moving to Columbia, she has continued to ride and started to explore three-day eventing. After earning a DVM at MU, she completed a rotating equine internship at the university. Scharf has obtained certification in equine practice by the American Board of Veterinary Practitioners and completed chiropractic training for large and small animals. She continues to work as an assistant teaching professor for the Equine Ambulatory Service.



Scharf spends the majority of her time instructing senior veterinary students while providing quality medical care for horses within the Columbia area.

She is particularly interested in wound management and emergency care in the ambulatory setting. Scharf works closely with the referral clinicians in the Equine Hospital to provide superior care to horses.

Kelly Sandelin, DVM

**K**elly Sandelin, a resident in the Ambulatory Service, grew up in Waterloo, Illinois, a small farming community just outside of St. Louis. She started riding horses when she was young, primarily showing in the jumper ring. After completing her DVM at the University of Missouri in 2019, she spent a year as a rotating intern through the Equine Medicine, Surgery and Ambulatory services. Sandelin is now the equine ambulatory resident and is working toward an ABVP certification in equine practice.



In her free time, she enjoys spending time with her fiancé and two Australian shepherds, cooking, and being with friends and family.

**O**ur 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 Johanna Klein, Betsy Larsen and Alexandra Warren.

Johanna Klein, DVM

**J**ohanna Klein, originally from Pueblo, Colorado, grew up on her family's farm and ranch. She graduated from the University of Missouri's College of Veterinary Medicine in 2020. After graduation, she went on to complete a year-long equine medicine and surgery internship at Oakridge Equine Hospital in Edmond, Oklahoma. Klein is excited to be back at Mizzou.



She has an interest in emergency care and colic management, lameness, and soft-tissue surgery. In her free time she enjoys riding her horses, Blaze and Frankie, watching movies with her cats, Oats and Rye, kayaking, hiking and baking.

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# Ready Horses for West Nile Season

Lynn M. Martin, DVM, MPH, DACVIM (LAIM)

**H**ave you noticed an increase in pesky mosquito bites? It's that time of year when we need to be thinking about West Nile virus infections in our horses. I have seen a number of West Nile cases (usually late summer and fall) in which horses were either unvaccinated or had not received a booster vaccination within the past six months.

West Nile encephalitis is an infectious viral disease, which is spread from avian hosts by infected mosquitoes (and some other bloodsucking insects) to horses, humans and other mammals. Horses are dead-end hosts and cannot directly transmit the disease from horse to horse or horse to human. Infection can result in clinical signs of fever and neurological disease. Horses can also be asymptomatic carriers (showing no signs of disease) or even show signs more consistent with lameness. The overall death rate is approximately 33 percent.

Vaccinations for West Nile virus are readily available to aid in prevention of viremia and reduction of clinical disease. The American Association of Equine Practitioners recommends West Nile virus vaccination as a one of five core vaccines that are considered essential standard of care for all horses in North America. Keep in mind that no vaccination is perfect, but the vaccines available for West Nile virus are well-tolerated by horses and better than no immunological protection at all.

Adult horses that have been previously unvaccinated or have an unknown vaccination history should receive a



series of two doses administered at three- to-six-week intervals, depending on the specific type of vaccine used. Adult horses that have been vaccinated previously should be boosted every six to 12 months in Missouri. For more details about adult horses or pregnant mares and foals, consult your veterinarian.

If you would like to monitor equine West Nile virus cases for 2021, go to the USDA APHIS website and look for the "West Nile virus Annual Testing and Case Summary Reports." Note that reporting of positive West Nile virus cases in Missouri is not mandatory, and there are likely more positive cases in our state than what is shown on this website.

Another great resource for keeping track of Equine Health Alerts is the Equine Disease Communication Center (EDCC; [www.equinediseasecc.org](http://www.equinediseasecc.org)). Sign up for their email alerts and stay informed.

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Betsy Larsen, DVM

**E**lizabeth "Betsy" Larsen grew up in Green Bay, Wisconsin, where she showed quarter horses on a national level. She attended Colorado State University for her undergraduate degrees where she pursued a double major in equine science and biomedical sciences. She stayed at Colorado State University for her doctor of veterinary medicine degree and graduated in 2019. She was then an equine rotating intern at Mississippi State University from 2019-2020, which was followed by a large animal surgical internship at Tufts University from 2020-2021.



She would like to obtain a large animal surgical residency and has a particular interest in orthopedics and sports medicine. In her free time, Larsen enjoys CrossFit, roller derby, and hiking with her miniature dachshund, Gus.

Alexandra Warren, DVM

**A**lexandra Warren is originally from Calgary, Canada, but spent most of her childhood living overseas. She grew up riding horses, primarily English show jumpers. Warren returned to Canada in 2014 to begin her university studies. She graduated with her doctor of veterinary medicine degree from the Western College of Veterinary Medicine, University of Saskatchewan, in June 2020. Following graduation, she completed a one-year equine surgical internship at Hagyard Equine Medical Institute in Lexington, Kentucky.



She is interested in pursuing an equine surgery residency after completing her internship at Mizzou. In her free time, she enjoys being outdoors, cooking and reading.

# Lodged Bullet Behind Inflammation

Alison LaCarrubba, DVM, DABVP (Equine Practice)

**C**ash is a 12-year-old Tennessee walking horse who presented to the Veterinary Health Center in late May for discharge from the right nostril. Cash was purchased in 2013 and had no significant health problems. He was routinely vaccinated and dewormed, Cash was used as a trail horse.

Upon arrival to the VHC, it was noted on physical examination that there was an asymmetry to Cash's face, most notably a swelling or enlargement of the right sinus region. With the exception of a malodorous nasal discharge and the observed swelling, there were no other abnormalities noted with Cash. Cash was in good body condition and otherwise bright and alert.

Routine blood work was run and proved to be mostly normal with small indicators of a chronic inflammatory process.

Radiographs of the sinuses and cheek teeth were taken. This area can be complex and difficult to interpret but it was immediately obvious that Cash had masses in his sinus, but perhaps more dramatic, was the metallic foreign body associated with his first molar tooth. Incredible! There appeared to be an actual bullet located within or near the base of the first upper molar tooth.

The roots of horse teeth, especially young horses with a long reserve crown, actually sit in a horse's sinus. Dental problems, most notably tooth root abscesses, are in fact, the most common cause of sinus disease in horses. The puzzle pieces were starting to come together.

Needless to say, Cash's owner was shocked by these findings. Since she had owned Cash over the past eight years, she had not noticed a single problem or traumatic event. This bullet must have been lodged in Cash's tooth since before she owned the horse. In order to plan

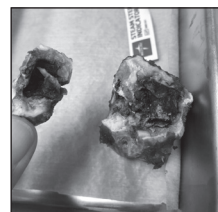
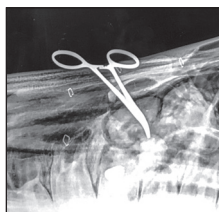
appropriately for surgery, a computed tomography scan was performed to better evaluate the sinuses and cheek teeth. The CT showed not only a likely bullet, but that the right sinus was full of what appeared to be large bony structures that were likely a reaction to this chronic irritation and later determined to be osteomas. The osteomas were likely secondary to the chronic inflammation caused by the bullet and the damage it had done to the first molar tooth.

The following day, Cash was placed in stocks and with the use of standing sedation and the appropriate nerve blocks, surgical intervention was initiated. A bone flap was used to open the right maxillary sinus and essentially peel away the large, round osteomas, or bony reaction, that filled the sinus and were the reason Cash's face was distorted. After removing the large masses, the tooth was then repulsed into the oral cavity.

Where was the bullet?

A radiograph was taken of the extracted tooth, and low and behold, the bullet was embedded within the tooth. The tooth was cracked open to reveal the bullet. Although we have seen other horses with a bullet in the sinus, none of us had ever seen a horse with a bullet actually embedded within the tooth itself. Perhaps that tooth saved this horse!

Cash's surgical site was closed, and the tooth socket was packed with dental putty to prevent feed material from entering the sinus. The sinus was flushed postoperatively for a few days and Cash was sent home with antimicrobial therapy. Cash returned two weeks later for a recheck. The sutures and the dental plug were removed and the socket evaluated. The socket was healing well and the hole between the sinus and the oral cavity was significantly smaller. Cash was sent home to return six weeks later, at which time it



*Top photo: Cash is sedated and ready for the procedure to remove the large, round osteomas that filled his sinus cavity.*

*Lower left: A radiograph shows the bullet in Cash's tooth and the osteomas in his sinuses*

*Lower right: The tooth that was removed was opened up to reveal the bullet.*

was difficult to even see the suture lines on his face and the socket had healed in nicely.

Cash's owner is back to trail riding, and we are all certain Cash is feeling better without having a sinus full of chronic inflammatory tissue, infection and a tooth with an actual bullet within in. We are thrilled for Cash's return to health and function, and he will long be remembered as the horse with the bullet tooth. Cash sure does have a story to tell!



# Help! My Horse is Suddenly Lamé

Johanna Klein, DVM

**W**e have all been there: You go to catch your horse that was perfectly sound the day before and he's suddenly three-legged lame. Oh no, what do you do now?

As veterinarians, we consider several causes of acute lameness in a horse and our exam findings help indicate what could be the cause. So, how do we handle an acutely lame horse in the field?

First, remain calm. Inspect your horse's leg and hoof for any wounds or a foreign body in the hoof. Remember, if a foreign body is present in the hoof, do not pull it out until your horse has been seen by a veterinarian. Then, if safe to do so, move your horse to a safe space and put in a call to your vet.

On arrival, expect your veterinarian to perform a full physical exam, including taking your horse's temperature and listening to their heart. Then, the veterinarian will examine the sore limb looking for wounds. If no trauma is isolated along the limb, the veterinarian will next closely examine the hoof, including cleaning it thoroughly and using hoof testers to identify areas of pain in the hoof.

Your veterinarian will also want to see your horse walk, while assessing the degree of lameness and how your horse stands at rest. Additionally, your veterinarian will ask you about your horse's history, including previous lameness issues, any medications, duration of current problem, and if you have administered any anti-inflammatories since you first noted your horse in pain. The findings of this initial exam will guide the remainder of the veterinary visit.

The most common cause of acute lameness in the horse is a subsolar hoof abscess. If suspected, your veterinarian will take radiographs to assess the hoof and see if a gas opacity is visible in the hoof sole. Then, your veterinarian will pare out the hoof sole under guidance of the radiographs and hoof tester results to establish drainage. The hoof will then be packed with an antimicrobial dressing and bandaged.

Laminitis is also a common cause of acute lameness in the horse. If your veterinarian suspects laminitis as the cause of your horse's lameness, they will likely administer a local anesthetic to relieve pain in your horse's feet so that radiographs can be taken to assess the degree of rotation of their coffin bone and if it is sinking in the hoof capsule. From there, hoof blocks using foam will likely be placed on your horse until your farrier can place a more adequate long-term shoe to help relieve pain.



If a foreign body is found in your horse's hoof, your veterinarian will use radiographs to assess where the foreign body penetrates prior to removing it. The hoof will then be packed with an antimicrobial dressing and bandaged. Again, if an infected joint or tendon sheath is suspected, your veterinarian will likely recommend referral to a surgical facility for treatment.

Another cause of acute lameness could be due to a wound. If a wound is identified on the limb, the veterinarian will treat the wound appropriately. This can include checking to see if a joint or tendon sheath is involved with the wound, cleaning the wound thoroughly, suturing the wound if indicated, and placing a bandage or hoof cast. If an infected joint or tendon sheath is suspected, your veterinarian will likely recommend referral to a surgical facility for treatment.

The most catastrophic cause of acute lameness is a fracture. If your veterinarian suspects a fracture, radiographs will likely be utilized to identify the nature and location of the fracture. Depending on location and nature of the fracture, referral to a surgical facility for care will be recommended, after the limb is safely stabilized for transport.

Fractures can be difficult to treat in horses so quality of life of the horse must be carefully evaluated prior to treatment, as euthanasia is sometimes warranted.

# Corneal Ulcers Demand Quick Care

Martha Scharf, DVM, DABVP (Equine Practice)

**H**orses are experts at finding ways to hurt themselves and unfortunately, this can include injuring their eyes. Because horses react so quickly and powerfully to their environment, and due to their wide set eye placement, horses can commonly poke themselves in the eye and scratch their cornea (the clear front window of their eye). Less frequently, cornea injury can also be the result of chronic irritation like ingrown eyelashes, splinters, or abnormal blinking.

The resulting defect to the cornea is called a corneal ulcer. These wounds are extraordinarily painful and result in tightly closed eyelids, tearing, swelling around the eye, cloudiness of the cornea, and a constricted pupil. Any of these signs should warrant an urgent examination by your veterinarian; they can indicate an ulcer or another painful eye condition. To definitively diagnose a corneal ulcer, your veterinarian will examine the eye and apply a yellow dye called fluorescein stain to the cornea that temporarily sticks to the injury and highlights it under a blue light.

Unfortunately, corneal ulcers heal more slowly than skin wounds because the cornea doesn't get its nutrition and healing factors from a normal blood supply. Therefore, it's extra important to support the healing of the eye by preventing infection and treating for inflammation



and pain. A non-healing ulcer can lead to serious consequences such as blindness or loss of the eye.

To treat the ulcer, your veterinarian will likely prescribe several medications. First, a topical antibiotic eye ointment will prevent infection and aid in healing. Depending on the humidity and wetness in the environment, they may also prescribe a topical anti-fungal cream. These medications should not contain a steroid, which can be catastrophic to healing. The antibiotic and anti-fungal will typically be applied several times each day.

Secondly, topical atropine eye ointment will be used to dilate the pupil. In the presence of an ulcer, inflammation of the eye causes painful spasms of the pupil that make it inappropriately small. Atropine will make the horse more comfortable as the eye heals and prevent

internal scarring from the inflammation. It's important to make sure the horse has an area of shade while the eye is dilated to prevent overexposure to the sun, but they should otherwise be minimally affected by the dilation. This medication will be applied once or twice per day.

Finally, an oral non-steroidal anti-inflammatory, like Banamine or bute, will be used. This reduces overall inflammation and pain from the injury.

Often, a fly mask or eye cup will be used to protect the eye. Some horses also appreciate a hot wet compress over the eye to clean the drainage. This extra care may make the horse more comfortable for eye medication administration, as it can be tricky in some patients. Usually with practice, pain relief, and sometimes horse treat bribery, the horse learns that the medications aren't too bad. If difficulty persists, your vet can insert a tube called a sub-palpebral lavage tube that runs from under the eyelid to the mane and can ease the process.

If the appearance of the eye dramatically changes or the eye remains painful, a repeat veterinary visit is generally warranted. Most of these injuries heal within approximately a week and without complication. Remember that abnormal eyes are always an urgent concern worthy of veterinary attention. Never hesitate to call us questions or concerns so we can try to help conserve the com-

## Monitor for Tendonitis to Prevent Injury

Alexandra Warren, DVM

**I**n the sport horse, tendon injuries are relatively common. These injuries can range for mild, where the horse needs a few days off work, to so severe that the horse is required to retire. Tendon injuries in horses generally refer to damage to the superficial and deep digital flexor

tendons that run along the back of the cannon bone and attach to the pastern and coffin bones. These tendons are both vital for the horse's ability to perform. Tendon injuries can occur in a variety of ways, frequently from overextending themselves, which can occur during ridden work in all disciplines as well

as out on pasture. Tendon injuries most commonly occur when the horse moves at high speeds, when working in soft or uneven ground or when they are not properly conditioned or warmed up prior to hard work. Horses with poor hoof care are also more at risk of injury.

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Tendonitis, continued from page 6

The fibers that make up the tendon can be stretched too far, become inflamed and in some cases tear from their insertion points on the bone. These tendon injuries are called tendonitis. Tendonitis is most common in the forelimbs, and the superficial digital flexor tendon is most commonly affected.

People generally associate tendonitis with bowed tendons and a lame horse. Horses with more chronic and severe tendonitis will have thickened and swollen tendons that result in a more bowed appearance and the heat, pain and lameness is generally obvious. However, if the injury is relatively mild or when the injury first occurs, there may be no obvious swelling. The lameness may only be apparent under certain circumstances and difficult to see or feel when the horse is ridden. With these mild injuries, the injury is easily missed, leading to the horse continuing to be worked resulting in further injury. Monitoring your horse for tendonitis is important to help prevent a catastrophic injury.

Daily palpation of the tendons can help assess for tendonitis. Palpation is first done with the horse standing, bearing weight on the limb, and then the leg held off the ground. Move your hand down the back of the leg, applying consistent pressure on the sides of the tendons. Feel for tenderness, heat or swelling.

There are three structures you can palpate, the first is the superficial digital flexor tendon, then the deep digital flexor tendon and the suspensory ligament that lays against the back of the cannon bone. You can palpate each of these structures separately, especially with the leg held up with the horse non-weight bearing. Sometimes, horses will respond to palpation by pulling the leg forward. This can be a pain response, but can also be the horse fidgeting. To determine if it is a pain response, go back over any areas that get a response and see if it is repeatable. If the horse consistently responds to pressure at a particular spot, this can indicate tendon-

itis. The more often you do this, the more familiar you become with how the tendons normally feel and how your horse responds. When you are familiar with what is normal, you can better detect any abnormalities.

Your veterinarian can diagnose tendon injuries using ultrasound imaging. The ultrasound allows your vet to assess the location, size and severity of the lesion in the tendon. If you suspect tendonitis, you should call your vet for a lameness exam with an ultrasound exam. Until your appointment, rest your horse, preferably in a stall or small pen where they cannot run. Wrapping the legs in standing wraps can be useful to provide support, and if there is swelling in the limb, a sweat wrap can be applied. Using ice and cold water hosing is also recommended, especially just after the injury occurs, as it can help reduce the inflammation and make the horse more comfortable. In cases where there is a lameness, a weight appropriate dose of bute (phenylbutazone) or Banamine (flunixin meglumine) can be given to help make the horse more comfortable. Always consult your veterinarian prior to administering medications to ensure the correct dose and that there are no contraindications to use.

Treatment of tendonitis involves rest and rehabilitation. Rehabilitation generally involves gradual return to work under supervision of a veterinarian. Generally, after several weeks of strict rest, the horse can begin hand walking for short periods of time. The activity level will gradually increase in length and frequency before starting to work under saddle and progress to trot work and eventually working at the canter. It commonly takes a minimum of six months before you are able to reintroduce your horse back into regular work. Veterinarians will commonly repeat lameness and ultrasound exams throughout this process to determine if the tendon is healing appropriately and the horse is able to resume work at the next level. If at any point during the rehabilitation the horse becomes lame, it is recommended to drop back down

to the previous level. For example, if your horse was sound when doing 30 minutes of daily walking under saddle and then started adding in five minutes of trot work and became lame, it is recommended to go back to 30 minutes of walking. It is also recommended to let your vet know about the lameness so they can evaluate your horse again. Rehabilitation requires patience and time.

In some cases, other therapies can be used, such as shockwave, laser therapy and injection of the lesion with regenerative therapies. Regenerative therapy includes, ProStride, platelet rich plasma (PRP), interleukin-1 receptor antagonist and stem cells, which are thought to help speed healing by providing pro-healing compounds that are naturally occurring in the body directly into the lesion. In certain instances, multiple therapies can be used together, such as using shockwave and PRP. These therapies can be controversial in the veterinary community. There is not a significant volume of peer-reviewed research to support their use, however, many veterinaries have had success using these therapies in conjunction with a rehabilitation program.

Tendon injuries are not the end of a horse's career if they are managed properly and promptly. Some horses may never return to their original jobs, but are able to perform at a lower level or in a different discipline. In cases of severe injury, the horse may not be able to be ridden again. The majority of horses will return to their regular jobs with time and treatment. Horses that have suffered from tendonitis in the past are more likely to suffer from tendonitis again in future. Watching your horse for signs of tendonitis, such as routine tendon palpation, and ensuring your horse gets good hoof care, is ridden in good footing, and is being warmed up before hard work like jumping or barrel racing, will help prevent injury. And should injury occur, a swift veterinary assessment can help you get on top of tendonitis before it becomes more severe.

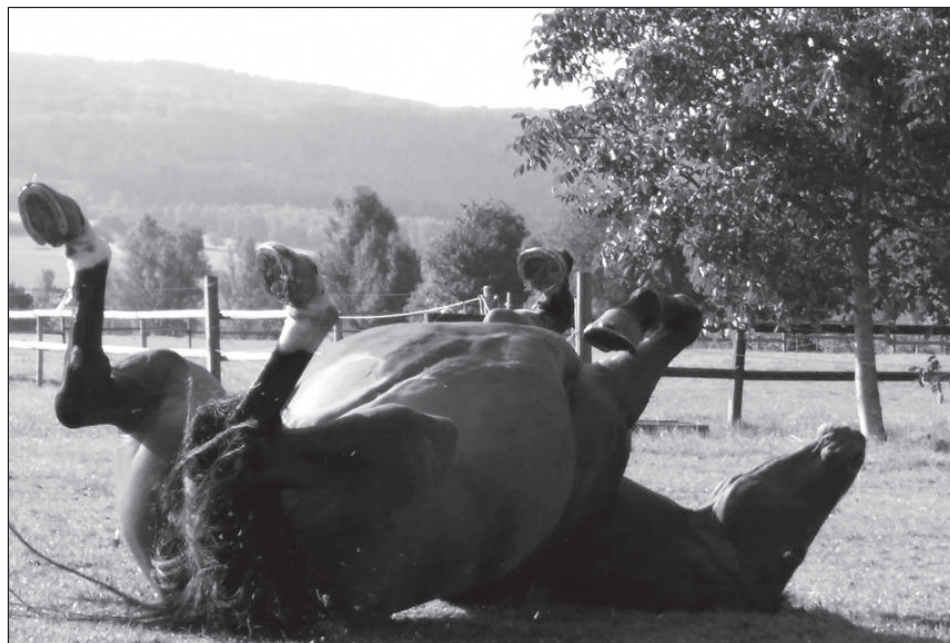
# Colic 101: What You Should Know

Betsy Larsen, DVM

**T**he word “colic” simply refers to abdominal pain. It covers a multitude of abdominal and intestinal problems, ranging from simple excess gas in the intestines to sand ingestion to impactions to severe torsion or twisting of the intestines. It can also include stomach ulcers, uterine pain in pregnant or post-foaling mares, early onset of colitis, and pain associated with disease in organs of the abdomen. Colic is a broad term, and thus there are numerous causes. These can include things such as an obstruction or impaction, disruption of blood supply to vital organs caused by a torsion or twist, distension of the intestines due to gas build up, inflammation of the bowel wall, and parasite infection. Factors that put a horse at high risk of colic include inadequate water consumption, lack of dental care or improperly chewed food, feeding on sandy soils, restricted mobility, poor quality hay, and inconsistent feeding times or amounts.

It is critical to recognize early signs of colic, because the sooner the horse is seen and treated, the greater chance of recovery. Colic presents differently in every horse with ranging severity of symptoms. Simply put, some horses are just more stoic than others. Signs include flank watching (turning the head toward the flank), groaning, pawing, kicking at the abdomen, stretching out, laying down, rolling, lack of appetite, lack of bowel movements, Flehmen response (lip curling), and depression.

If your horse is showing any of these signs, it is best to call the vet. Don't medicate without your veterinarian's approval, as pain medication can mask clinical signs. If signs of colic persist more than 20 to 30 minutes after flunixin meglumine (Banamine) administration,



**"A displaced large colon can turn into a twisted colon quite quickly, meaning your horse may go from being able to be medically managed to needing surgery immediately."**

do not administer more. Call your veterinarian. The lack of response to pain medication is a key indicator that your horse needs to be further evaluated.

The vet will do several things when seeing your horse. Initially, the vet will conduct a thorough physical examination, evaluating for signs of pain and dehydration. Other diagnostics and treatments will depend on the findings from the physical examination. These include bloodwork, abdominal ultrasound, passing a nasogastric tube and checking for excess fluid in the stomach, abdominal palpation per rectum, and abdominocentesis (collection of abdominal fluid for evaluating vi-

ability of intestines). While one test alone cannot give a veterinarian a full diagnosis, these tests combined can help to give a more accurate representation of what is going on within the horse's abdomen.

Because of the broad range of causes of colic, the treatment will depend on what your veterinarian finds. In all cases, early treatment is critical. Treatment for colic can range from administration of Banamine to needing emergency surgery. The level of treatment needed can change quickly.

For example, a displaced large colon can turn into a twisted colon quite quickly, meaning your horse may go from being able to be medically managed to needing surgery immediately.

Consider getting major medical (not just surgical) insurance to cover the costs of advanced medical and surgical care for your horse. It is not as expensive as you might think and can save you the stress of wondering where to come up with the funds if needed to save your horse.



# EPM Known as the Great Pretender

Kelly Sandelin, DVM

**E**quine protozoal myeloencephalitis (EPM), as many astute horse owners are aware, is an important neurologic disease of horses. EPM is often considered by veterinarians as “the great pretender” due to its ability to manifest in a variety of ways. Because of this, the disease has a tendency to have an air of mystery surrounding it and can be easily misunderstood.

While clinical signs of EPM can vary, the most consistent observations noted include an asymmetry in the horse's gait and muscle atrophy or wasting typically noted over the gluteal muscles. However, other initial signs of disease can include atypical lameness, abnormal airway function, or even seizures. This is due to how the parasite infects the brain, brainstem or spinal cord and affects the grey or white matter of these structures. When the grey matter is affected, one may see muscle atrophy as described, or muscle weakness. However, when the white matter is affected, ataxia or weakness in the hind end is noted.

Some of the early signs of EPM in a horse is stumbling or being “off,” which is often confused with lameness. During this time, the rest of the horse remains pretty typical — vital signs remain normal, and the horse remains bright and alert to its surroundings.

But how does a horse become exposed to the parasite that causes EPM? The majority of cases of EPM are caused by *Sarcocystis neurona*, however some cases can also be caused by *Neospora hughesi*. *S. neurona* reproduces in the intestinal mucosa of the opossum, which then spread the parasite through



contaminating the environment through defecation. Horses become infected by ingesting food or water that has been contaminated with feces from the infected opossum. Luckily, *S. neurona* cannot be transmitted from horse to horse and opossums tend to be the main source of infection.

To combat the potential infection, owners can implement different preventive approaches. Owners can reduce exposure to the parasites that cause EPM by limiting the contact of feces from opossums. This may include not feeding horses on the ground, providing separate sources of fresh water for horses, and preventing wildlife access to horse pastures, paddocks or stalls.

However, if a horse is showing signs that may be indicative of EPM, it is important to contact a veterinarian for further examination. To achieve the highest accuracy for diagnosis while the horse is alive, a veterinarian will first

confirm the observed clinical signs through a neurologic examination. Other potential causes of neurologic disease, such as wobblers, can then be ruled out via radiographic imaging. EPM can be elusive and difficult to diagnose. The most reliable way to get diagnosis is to acquire cerebrospinal fluid and send that to the lab with a paired blood sample to compare antibodies in the blood and spinal fluid.

By performing these diagnostics, a veterinarian can then help horses and their owners with the next steps moving forward by providing anti-protozoals and repeat neurologic examinations.

EPM is becoming a more widely known disease among horse owners and is commonly encountered by veterinarians. If you believe that your horse may have EPM or have any questions about this disease, please feel free to call the University of Missouri Veterinary Health Center Equine Hospital.

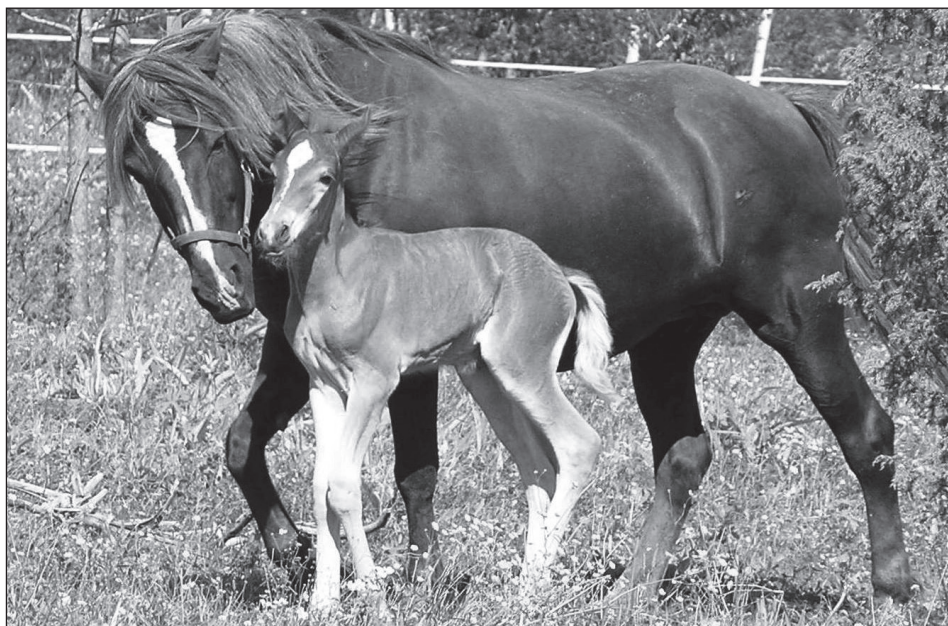
# Planning is Path to Successful Foaling

Alison LaCarrubba, DVM, DABVP (Equine Practice)

**W**hat is important to know before foaling out your mare? There are so many things to consider before foaling out to make sure the mare and foal have the best chance at a successful delivery. The gestation length for a mare is 340 days, plus or minus 20 days, but we really need to start planning before she is even pregnant. It's a good idea to make a calendar with all of the important information. Vaccinate against equine herpesvirus 1 at five-, seven- and nine-months gestation to avoid late term abortion. Mark this on the calendar once pregnancy is confirmed so it is not forgotten.

At a minimum, 60 days prior to foaling, take the mare off fescue pasture, feed non-fescue hay, such as alfalfa, timothy, or brome and ensure mare is comfortable being handled. One month prior to foaling, deworm mare, separate the pregnant mare from other horses, and booster ALL of mare's vaccines. Boosting vaccinations will boost the colostrum prior to foaling. Foals do not have any maternal antibody transfer in-utero so they are considered immunologically naïve and must ingest good quality and a significant quantity of colostrum to have adequate protection against dangerous bacteria.

Also, 30 days prior to foaling, provide the mare access to dry shelter bedded with straw. Somewhere between 14 and 30 days prior to foaling the udder will begin to change and become engorged. Just prior to foaling the teats will "wax." Waxing refers to a drop of colostrum that is suspended from the end of the teat. This typically will occur just prior to foaling. Sometimes the mare will actually start leaking or streaming colostrum. This can be a problem because if the colostrum is lost the foal will not have appropriate antibody protection during the first months of life. If you notice the mare dripping a significant amount of milk or colostrum, call your veterinarian to



collect and freeze this colostrum to be administered soon after birth.

There are three stages of labor once the mare begins to foal:

## **Stage 1**

Onset of contractions

- Generally lasts one to two hours
- Mare may stand up and lay down or roll

## **Stage 2**

Expulsion of the foal

- If this stage lasts longer than 30 minutes, call IMMEDIATELY
- In a normal delivery the front feet will present first, with one foot in front of the other with soles of feet facing down
- DO NOT cut the umbilical cord, it will break naturally
- Leave mare and foal alone to bond for at least 30 minutes

## **Stage 3**

Begins after delivery of the foal

- The afterbirth (placenta) is expelled
- If this stage lasts longer than three hours, call IMMEDIATELY
- Do not pull on the afterbirth if still attached to the mare
- Save the placenta for examination by your veterinarian

## **Activities of the newborn foal:**

- Stretching and breakage of the umbilical cord occurs one to two minutes after birth

- Normal breathing efforts occur within one minute (increased respiratory rate at birth)
- Righting reflexes are established within five minutes
- Suck reflex is established within five minutes
- Attempts to stand occur within 30 minutes
- Ability to stand unassisted occurs within 60 to 120 minutes
- Foal should nurse multiple times an hour
- Nursing from udder occurs within 60 to 180 minutes
- First stool (meconium) should pass within six to 12 hours

If you notice any problems with the above events, call immediately.

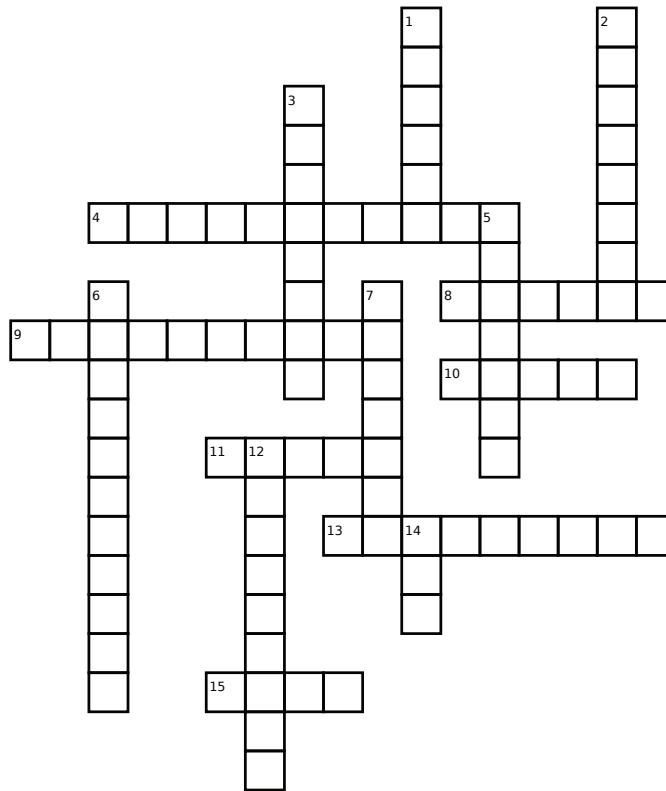
## **Newborn foal care:**

- Dip umbilicus in dilute chlorhexidine within the first hour
- DO NOT lift foal with arm under abdomen/belly
- Do not get between mare and foal
- Call to have blood drawn 12 to 24 hours after foaling to ensure sufficient colostrum intake. At this time, a complete examination of the mare and foal will be performed.

These tips are all great rules of thumb but if you feel anything is not going as planned it is always better to call sooner than later.



# Horse-lovers Crossword



## Down:

1. DDFT stands for the deep digital \_\_\_\_\_ tendon
2. the commonly known name for the medication "flunixin meglumine"
3. type of skin cancer commonly seen on gray horses
5. a medication one doesn't want to use with a corneal ulcer
6. technical term for colts who are "high flankers"
7. the joint that is affected in a horse with "high ringbone"
12. excessive growth of hair and failure to shed appropriately which commonly occurs with PPID
14. a horse color that has a characteristic dorsal stripe

## Across:

4. an infectious disease that causes diarrhea in horses
8. equine \_\_\_\_\_ virus can cause respiratory or neurologic signs in the horse
9. when a horse's heart beats in an abnormal rhythm (some can be normal in athletic horses)
10. abdominal pain in horses
11. common signs of this emergency include excessive salivation and green nasal discharge after eating
13. the only way to definitively diagnose equine gastric ulcers
15. a horse with a fecal egg count above 500 eggs per gram is considered to be a \_\_\_\_\_ shedder

Answer key is on page 12.

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## Crossword Solution

