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FROM THE DIRECTOR

Horses open new doors for education

To our delight, six ever-so-patient horses housed in the Dudley barn located just behind the Leatherdale Equine Center are bringing new possibilities for educating veterinary students, undergraduates, horse owners, and children. The horses were selected for their temperament from backgrounds as diverse as horse rescues to research trials. Mr. Perfect, seen with me in the photo above, is the leader of the pack and keeps the herd in order!

What have we achieved with our crew? Experienced equine students who missed their horses back home got their horse fix through grooming, feeding, and clean up after the horses. They in turn, worked with veterinary and undergraduate students unfamiliar with horses to help them get horse experience. Our experienced students also enthusiastically worked with Kelly Vallandingham to get each horse working under saddle.

Many exciting opportunities have followed. The herd has become the foundation for Gopher Adventures Horsemanship Camp. For the month of July, children ages 9 to 15 divide their day between the Equine Center and the St. Paul Gym. To see these gentle horses being led by the tiniest of kids (or vice versa) is truly heartwarming. A partnership with the Minnesota Landscape Arboretum has evolved, which capitalizes on a horse’s power to heal and to teach people more about themselves. Programs offered through the Arboretum help disadvantaged children deal with challenges through interactive sessions with horses. The herd will also be used by EAGALA, a nonprofit association for professionals using equine therapy to address mental health and human development needs, for certification training in equine-assisted growth and learning psychotherapy. Constant care and riding by undergraduate students keeps our horses calm and interactive with people with varying horse experience.

This year, the Equine Center offered a new online course, Introduction to the Horse, through the College of Veterinary Medicine’s Veterinary Population Medicine Department. Over the fall and spring semesters, 50 undergraduate students worked with our herd in interactive laboratory sessions. Students learned about equine breeds, basic nutrition, health and behavior, and horsemanship. More online courses are to come! We also offered Introduction to Horsetack Riding on campus for the first time. An amazingly diverse group of 40 students have taken this class. Students came from as far away as China, with majors ranging from mortuary sciences to economics! Our herd was also active with first-year veterinary students who developed confidence in horse handling and performing physical examinations on such a well-behaved group of horses.

A passion for horses is unmistakable at the Equine Center! While our faculty members are teaching students about horses, our horses are teaching humans to deal with life’s ups and downs. You can’t beat that!
An integrated approach to back pain

By Dr. Nicolas Ernst, Dr. Kyla Awes, and Kami Vickerman

As part of the Piper Clinic Trainers Series in April 2013, Drs. Nicolas Ernst and Kyla Awes shared a presentation about back pain from the perspectives of an orthopedic surgeon and a chiropractor working together. Ernst emphasized the importance of a specific diagnosis for the cause of back pain and Awes discussed how the way a horse is trained to use its body affects the back and the importance of a team approach to successful management of a horse with back pain.

Primary versus secondary back pain

Determining that back pain exists is relatively straightforward. The more difficult question is what is causing back pain? An accurate diagnosis is necessary to determine the future use of the horse (prognosis) and select the correct therapy. Attention is initially directed at determining whether pain arises primarily from malfunction of structures in the back itself or whether pain in the back is secondary to malfunction of structures elsewhere in the body.

Secondary back pain is far more common than primary back pain. Secondary back pain occurs when a horse carries itself differently, which often happens when there is soreness in one of the limbs. Hindlimb or forelimb lameness alters the way the back functions, and this additional strain results in back pain. (Think about wearing high heels all day!) It is therefore imperative that a thorough and complete lameness evaluation be performed in horses with back pain. Secondary back pain can also result from other disorders that affect the way a horse carries itself: neck problems, sacroiliac disease, pelvic fracture, lack of fitness or supporting back musculature, muscle diseases, dental problems, rider or horse’s inability to perform at desired level, temperament, and improper fit of tack. In cases of secondary back pain, once the source of the problem is identified and treated, the horse can gradually be put back to work in the right frame and back pain diminishes.

Primary back pain can result from soft tissue injuries to the ligaments, tendons, and muscles supporting the spine or from bony injuries to the vertebrae (e.g., kissing spine). Nerve compression is also possible. Each of these causes of primary and secondary back pain requires a different treatment regimen.

Causes of back pain

Five of the most common causes of back pain in horses are:

1. Overriding/impingement of dorsal spinous processes ("kissing spine")

There is a great degree of controversy surrounding the diagnosis of overriding/impingement of dorsal spinous processes, also known as "kissing spine." Impingement occurs when dorsal spinous processes (upward bone projections off of each vertebrae) that are next to each other rub together. Pain is caused by repetitive, traumatic contact between neighboring dorsal processes or from a primary injury to the supporting soft-tissue structures of these vertebrae. The clinical signs associated with this disease may include reduced mobility of the spine, limited side-to-side back mobility due to muscle spasms, and painful or violent responses when the saddle is placed on the horse or when the rider mounts. These painful or violent responses associated with saddling or mounting should be differentiated from improper saddle fit.

The controversy surrounding kissing spine exists because determining whether vertebrae that touch are actually causing pain is very difficult. Radiography (X-rays) and nuclear scintigraphy (bone scan) can assist in a diagnosis; however, these diagnostic techniques are not the final answer in the diagnosis of kissing spine. Numerous large-scale studies have shown that many normal horses with no signs of back pain have some impingement (kissing spine) on X-rays. Similarly, many normal horses have some abnormalities in their spine in bone scans. Since two of the most powerful imaging tests, radiography and bone scan, aren’t always diagnostic by themselves, they are often used in combination to increase the likelihood of confirming the diagnosis. Other causes of back pain must be thoroughly ruled out before a diagnosis of kissing spine can be made. This is especially important given that secondary causes of back pain (e.g., lameness) are far more common causes of back pain in horses.

If a diagnosis of kissing spine is highly likely, a combination treatment protocol may include rest, non-steroidal anti-inflammatory medications, local injections of anti-inflammatory agents, acupuncture for pain, physiotherapy, or, in severe cases, surgery. Prognosis depends on severity and whether bone, supporting soft tissue, or both are involved.

2. Supraspinous ligament injury

Supraspinous ligament injuries usually appear as a lump on the horse’s back and can be associated with pain and thickening of the area under the skin over the spine. These injuries often occur in the region of the back where the saddle sits. Diagnosis can be made using ultrasonography. Treatment usually includes rest to allow the ligament time to heal, non-steroidal anti-inflammatory medications, and rehabilitation of controlled stretching and a gradual increase in exercise. Prognosis and timeline to recovery (usually two to six months) depends on the extent of injury.

3. Vertebral facet joint arthritis

Each vertebrae of the spine has four articular facets that form the joints between neighboring vertebrae. Both trauma to the spine and everyday wear and tear can lead to vertebral facet joint arthritis. Injuries and trauma to the spine,
HEALTH & WELL-BEING

which can occur with a fall, can result in unstable vertebral joints. The musculature surrounding and supporting the spine must compensate to stabilize the spine, which produces painful muscular spasms. With severe arthritis of the vertebral facets, adjacent vertebrae may fuse, leading to decreased back mobility. Clinical signs seen in horses with vertebral facet joint arthritis may include lameness, abnormal gait, a stiff-looking or short-strided trot, difficult downward gait transitions (e.g. canter to trot), and reluctance going downhill or jumping. Diagnosis is made using a combination of radiography, ultrasonography, and/or a bone scan. Successful treatment of vertebral facet joint arthritis involves rehabilitation and development of proper muscle support for the spine. Other treatment options that may be used in addition to rehabilitation include non-steroidal anti-inflammatory medications, ultrasound-guided vertebral facet injections, methocarbamol, and rest. Prognosis depends on a number of factors, including the extent and severity of the arthritis as well as the intended use of the horse. Dressage horses tend to be more successful in return to work than jumpers or three-day eventers since these horses require different types of movement in their spine.

4. Spondylosis. Spondylosis is a degenerative condition affecting the vertebrae. It usually affects older horses. It is caused by mechanical stress on the area, which results in reduced mobility of the spine and, in the end stages of disease, complete fusion of the vertebrae. Clinical signs include generalized stiffness and reluctance to work. Spondylosis occurs more commonly in eventers and jumpers and also in working draft horses that endure large amounts of force on their backs while carrying heavy loads. Treatment relies on non-steroidal anti-inflammatory medications alone; there is no surgical technique that can stabilize the spine of these horses. Prognosis for an athletic career is guarded, because there is no way to reverse the disease process and fusion of vertebrae.

5. Sacroiliac disease. Sacroiliac disease affects one or more of the bones, ligaments, muscles, and joints (sacroiliac and lumbosacral joints) of the sacroiliac region. There are generally three types of injury in the sacroiliac region that can lead to sacroiliac disease. The most common cause of sacroiliac disease is damage to soft tissue and ligaments; this can occur from muscle weakness, fatigue from improper training, overuse, or repetitive stress injuries. Profound trauma of the ligaments, such as with a fall, can also lead to sacroiliac disease. The least common cause of sacroiliac disease is sacroiliac joint problems.

Clinical signs of sacroiliac disease may include shortened stride length in one or both hind limbs, asymmetry of the hind end, difficulty in downward gait transitions, or reluctance to go downhill. Signs are usually best seen during the canter. A lameness exam and local anesthetic blocks might help localize pain to the sacroiliac area. The imaging modality that can give you the best indication of degeneration or damage to the sacroiliac region is a bone scan, because ultrasound and radiographs are often not able to penetrate the necessary structures. Treatment of sacroiliac disease often involves stall rest, non-steroidal anti-inflammatory medications, and intensive rehabilitation to rebuild musculature. Prognosis depends on the cause, extent, and severity of injury.

When putting horses back in work that have had back soreness, it is essential that they work with proper posture and carriage. The way a horse moves and uses its body has a direct impact on its back. A horse can initiate movement in different ways that are more or less efficient and put more or less strain on the back. For example, if a horse uses its neck or head and "falls on the forehand," it isn't utilizing the powerful hindquarter muscles as much. This type of motion is inefficient and fails to build core strength critical for a healthy back. If a horse is engaged and uses its hindquarters to initiate motion, it is moving in a more efficient manner. Engagement of the hindquarter muscles in motion and the resulting efficient movement is important because it means that the horse is conserving energy, building core strength, and reducing wear and tear on the body. This is even more important when we add the weight of a saddle and rider onto the horse's back. The horse must be trained to carry itself and the rider in a way that lifts its back against this weight. Training young horses in a "long and low" position facilitates the lifting of the back, which makes it easier for the horse to active their core muscles. A neck that stretches forward and down, while avoiding curling the nose inwards, adds further stretch to the back. Training a horse in this way builds its neck, abdominals, and sublumbar core muscles, all of which are responsible for lifting the back and stabilizing the spine. Horses ridden with a high head carriage and hollowed back or horses with a long and low head carriage but with a braced back are not activating their core muscles or lifting their back. The reason the horse's core muscles must be strengthened, like when training in a long and low position, is because these muscles must stabilize the pelvis and spine sufficiently to transmit the forces generated by the powerful hindquarter muscles during engagement.

Team approach
Diagnosing and treating back problems involves a team approach at the University of Minnesota Piper Clinic in order to achieve the most optimal outcome. The veterinarians, chiropractor, farrier, riders, and trainers must all work together. If your horse is experiencing back pain, the first thing to do is get the best and most accurate diagnosis possible. Ruling out all other potential causes of back pain and achieving an accurate diagnosis means that the best and most appropriate treatment for your horse’s particular diagnosis, as well as a realistic prognosis, can be determined.
Understanding and managing navicular syndrome

By Kami Vickerman

Navicular syndrome is one of the most common causes of forelimb lameness in horses. It’s a chronic, progressive disorder, starting with mild discomfort. Over time, pain in the back (caudal) heel region of the foot worsens, and lameness becomes more prominent. Though frequently referred to as “navicular disease,” veterinarians now know that navicular lameness is not truly a single “disease,” but rather a widely varying “syndrome” with many causes and associated anatomic changes.

For a horse owner, navicular can be a frightening diagnosis to receive from your veterinarian. Once your horse has it, it’s there to stay, and his or her ability to perform comfortably seems suddenly and permanently thrown into question. But veterinarians like Dr. Mary Boyce and Dr. Nicolas Ernst at the University of Minnesota Equine Center are working hard to better understand navicular syndrome, and management techniques are improving. Understanding the anatomy of the navicular region and the impact of exercise can help you be smart about hoof care and keep your horse comfortable.

Navicular anatomy

The navicular apparatus includes the navicular bone, navicular ligaments, navicular bursa, and the deep digital flexor tendon (DDFT). Any one or more of these boney and soft-tissue structures may be affected in navicular syndrome.

The navicular bone is located just behind the coffin bone within the hoof capsule. It functions as a pivot point for the DDFT, which runs down the back of the leg, changing angles as it stretches over the navicular bone before inserting on the coffin bone. The DDFT allows the horse to flex its hoof when lifting its leg and prevents the toe from flipping upwards when the leg bears weight. The navicular bursa is a fluid-filled synovial sac that cushions and provides a gliding surface for the DDFT where it passes over the navicular bone. Two navicular ligaments,
the impar and distal sesamoidean ligaments, support the navicular bone.

The coffin joint, located between the coffin bone and the second pastern bone, is very close to the navicular bursa—which is important to remember when considering treatment options.

Causes and risk factors
The exact cause of navicular syndrome is unknown. There are clear breed predispositions associated with its development, with conformation and biomechanical forces on the navicular apparatus clearly playing a role.

The way structures in the lower limb and hoof are affected by weight and concussion vary depending on the shape and angles of the horse’s pastern and foot. Alignment of the pastern and coffin bones is affected by a horse’s natural conformation and by poor hoof care or shoeing techniques.

As a horse supports its weight, the DDFT is stretched and exerts pressure on the navicular bone. Abnormal hoof balance or conformation, such as long toes, low or under-run heels, and broken back hoof-pastern angles cause increased pressure on the navicular bone and can lead to navicular syndrome. The longer a horse’s toe, the more pressure is placed on the navicular bone. Large horses with disproportionately small feet are at increased risk, and trauma to the heel region may also lead to navicular syndrome.

Navicular syndrome occurs most commonly in quarter horses, thoroughbreds, and warmbloods aged 4-15 years. It remains relatively rare in Arabians, ponies, and other smaller horses.

Diagnosis
Suspecting navicular syndrome is relatively easy, but determining the nature and severity of each individual case requires a more thorough diagnostic process.

Detection often begins with the observation of typical symptoms such as mild front-limb lameness. Since navicular syndrome is frequently bilateral, horses are often short-strided in both front limbs with a short, choppy gait. Lameness typically worsens on a circle or on hard ground. In an effort to protect painful heels, the horse may seem to “point” its toes when standing, and in motion lay its feet in a toe-to-heel progression. As the frog is anatomically positioned over the navicular structures, the application of hoof testers across the frog will likely produce a pain response. Coffin joint effusion (swelling) may be seen and can be palpated above the coronet band. Depending on how the syndrome has progressed, individual horses may display any combination of these common symptoms.

An initial lameness exam might highlight typical symptoms and reveal which limb(s) are lame, but nerve and joint blocks are used to localize pain to a more specific region of the limb. In a horse with navicular syndrome, low nerve blocks can confirm that the pain is located in the heel region of the hoof.

Imaging of the foot is used to detect which structures in the navicular apparatus are diseased. MRIs or radiographs (X-rays) may be used, though comparatively lower costs and greater convenience makes radiographs the most common choice. Radiographs of a navicular horse serve two purposes. In addition to showing whether there are bone changes as a result of the syndrome, they allow assessment of the hoof-pastern angle and can be referenced when making shoeing and trimming decisions for treatment. In addition to standard views, specific navicular view radiographs should be taken to properly display the navicular bone and allow accurate diagnosis.

MRI, considered the “gold standard” in foot imaging, offers a three-dimensional view and visualization of very specific areas of both bone and soft-tissue anatomy. MRI provides the most accurate prognosis, as it allows a veterinarian to assess all elements of the navicular apparatus. However, MRI is significantly more expensive and may require general anesthesia.

Treatment and management: It’s all about the angles!
The mainstay of navicular treatment is corrective trimming and shoeing. It’s critical to return the foot to a more normal balance and biomechanical function so that stress on the navicular structures is reduced. This diminishes pain and slows the progression of the syndrome. With corrective trimming and shoeing, veterinarian and farrier aim to correct hoof-pastern angles, support the heel, and improve the horse’s breakover.

Shortening a horse’s toe and elevating the heel aligns the bones of the foot and aids in the correction of the hoof-pastern
angle. A lateral radiograph (direct profile of the lower forelimb and hoof) will allow a veterinarian and farrier to accurately evaluate the hoof-pastern angle and make decisions regarding such corrective techniques. Often a wedge pad or shoe is required to adequately raise and support the heel of the horse, particularly if the sole of the horse’s foot is too thin.

Breakover is the point at which a horse’s toe lifts off the ground when taking a step. Horses with long toes have a delayed breakover, putting increased pressure on the navicular apparatus; think of a human walking in scuba flippers! Trimming back the toes, setting the shoe farther back on the foot, and using a “beveled” shoe with a rounded front edge are all techniques used to increase the ease of breakover.

After diagnosis, most horses are placed on a specific hoof-care regime and prescribed a short course of anti-inflammatories. A period of stall rest may be recommended to allow time for adjustment to corrective shoeing and the reduction of painful inflammation in the foot. This regimen is generally used for a series of shoeing cycles, and is often enough to result in noticeable improvement.

If the horse remains lame following such treatment, corticosteroid injections can be added. Injections, however, will not “fix” the syndrome. While corrective shoeing and alignment can reduce stress and pressure on parts of the navicular apparatus, injections act only to temporarily reduce inflammation and discomfort. The corticosteroids can be injected into the coffin joint and/or the navicular bursa, but treatment of the coffin joint is much more common. Injecting into the navicular bursa is a notably more complex and risky procedure, and studies have shown that corticosteroids can be found in the navicular bursa six hours after a coffin joint injection. While the two structures do not directly communicate, they are close enough for the injected material to diffuse, making the simpler coffin joint injection a much more desirable treatment option.

With advanced stages of navicular syndrome, more extreme methods of treatment may be considered. A neurectomy, for example, involves cutting and removing a section of the palmar digital nerve, intended to permanently desensitize the back of the horse’s foot. However, this procedure may only prove effective for one to two years and can yield complications such as painful swelling at the nerve ends, frequent sole abscesses, damage to vessels, and regrowth of the nerves. This procedure should be considered very carefully.

Alternative treatment options for navicular syndrome include acupuncture, shockwave, or radical surgeries. Few or no studies exist on these treatments, and some are associated with high rates of complication and are not generally recommended.

What can you do?

Navicular syndrome can be a scary and overwhelming diagnosis, but there’s a lot you can do to be prepared and manage your horse’s comfort. Start by being aware of your horse’s level of risk, taking into account breed and hoof conformation. Familiarize yourself with your horse’s anatomy, and how he or she bears weight. Consult a qualified veterinarian and farrier to ensure that the angles in your horse’s feet are being properly supported and maintained. If your horse shows front limb lameness, don’t wait to get it checked out and be smart about which diagnostic tools, such as radiographs, will help you and your vet make an accurate assessment. With proactive care and management, your horse’s comfort and career may extend far into the future.

Neuroaxonal dystrophy/equine degenerative myeloencephalopathy

It’s quite a mouthful, but if your horse has ataxia and other clinical signs compatible with wobbler’s disease, it’s important to consider neuroaxonal dystrophy (NAD) as another possible diagnosis. The diseases share a similar age of onset, occur in all breeds of horses, and are associated with similar neurologic deficits. Dr. Carrie Finno is conducting research on these diseases and can be reached at finn0100@umn.edu. For more information about neuroaxonal dystrophy, visit www.cvm.umn.edu/umec/END/.
Dr. Stephanie Valberg, director of the University of Minnesota Equine Center, was inducted into the University of Kentucky Gluck Equine Research Hall of Fame in September 2012.

Established by the University of Kentucky, the Gluck Equine Research Foundation, the Equine Research Hall of Fame is the highest honor for a lifetime of contribution to the body of knowledge in equine research. For a scientist to have merited such distinction is a great tribute to their work. The work of the Hall of Fame members spans several disciplines and covers nearly 100 years of scientific investigation in all parts of the world. Valberg was the first woman to receive the honor.

Born in 1958 in Kingston, Ontario, Canada, Valberg was an avid horsewoman from an early age. She completed a degree in veterinary medicine at the Ontario Veterinary College at the University of Guelph in 1983, and was awarded a PhD in equine exercise physiology from the Swedish University of Agricultural Sciences in 1986. After postdoctoral training in muscle disorders at the University of California, Davis, she completed a residency and became board certified in large animal internal medicine in 1991. In 1993, she joined the University of Minnesota College of Veterinary Medicine, where she became director of the University of Minnesota Equine Center in 2003.

Valberg has been a pioneer in unraveling the mystery of “tying up” and other muscle disorders in horses. Through her research, previously unknown muscle disorders were discovered, their genetic basis identified, and nutritional strategies developed to minimize muscle pain.

Valberg established the University’s Neuromuscular Diagnostic Laboratory, which receives muscle biopsy submissions from horses around the world. The muscle samples formed the foundation for identifying novel myopathies, including glycogen branching enzyme deficiency and polysaccharide storage myopathy. Working with Dr. Jim Mickelson, a fellow faculty member at the College of Veterinary Medicine, she identified the genetic basis for these diseases and developed commercially available genetic tests.

Her work led her to other key insights into muscle diseases such as recurrent exertional rhabdomyolysis, immune-mediated myositis, and atypical myopathy. Valberg developed the first low-starch, high-fat feed for horses, which has become a staple in the treatment of exertional rhabdomyolysis or “tying up,” a condition characterized by skeletal muscle degeneration with light exercise. She was also a member of the team that sequenced the equine genome and identified the genetic basis for overo lethal white syndrome, a condition in which newborn foals die because of a nonfunctioning colon.

Valberg has trained more than 44 interns and residents and 13 graduate students and post-doctoral fellows, many of whom are continuing her passion for equine research. She has over 125 research publications and, through more than 250 national and international presentations, brought awareness of new methods to diagnose and treat muscle disorders to veterinarians and horse owners.

"I am honored to be among such distinguished scientists in the Hall of Fame," Valberg says. "My research has been fueled by a passion for horses, by the wisdom of colleagues such as Dr. Jim Mickelson, and by the hard work of terrific graduate students."

Valberg recognized by AAEP and MVMA

The Equine Research Hall of Fame honor wasn’t the only recognition Dr. Stephanie Valberg received this past year. On December 3, she delivered the American Association of Equine Practitioners (AAEP) Frank J. Milne State-of-the-Art Lecture, becoming the first female practitioner selected for the honor. Presented during the AAEP’s 58th Annual Convention in Anaheim, Calif., "Muscling In on the Cause of Tying Up" reviewed muscle form and function and discussed the management of exertional muscle disorders. At the Minnesota Veterinary Medical Association (MVMA) Conference on February 8, Valberg was honored with the Outstanding Faculty Award, an award given to a University of Minnesota faculty member who has provided outstanding service to Minnesota veterinarians, given time and talent to the veterinary profession, and been a dedicated contributor to organized veterinary medicine.
A team of researchers led by Dr. Stephanie Valberg from the University of Minnesota recently discovered that a toxin called hypoglycin A found in seeds of the box elder tree is the likely cause of a deadly disease, seasonal pasture myopathy. Horses with seasonal pasture myopathy suddenly develop muscular weakness, trembling, and stiffness, lay down, and are reluctant to rise, which is often mistaken as colic. In most cases, however, horses die within three days of showing signs. The research implicating box elder trees was published recently in the *Equine Veterinary Journal*. Preliminary comparisons indicate that a similar European muscle disease, known as atypical myopathy, is linked to a related tree, the European sycamore maple.

Seasonal pasture myopathy affects horses in the Midwestern United States and Canada, and the European equivalent is becoming increasingly frequent in Britain and Northern Europe. Outbreaks of both diseases tend to be seasonal, with most cases occurring in the autumn. Horses that develop the disease are usually kept in sparse wooded pastures and are often not fed any supplementary hay or feed because they seem to be in good flesh and the grass is still green. The research identified that seeds from box elder trees were consistently present in the autumn pastures of all horses enrolled in the study. Subsequently, Dr. Adrian Hegeman in the Department of Horticulture found the toxic amino acid hypoglycin A in the seeds. Hypoglycin A blocks the enzyme step in fat metabolism that is impaired in horses with seasonal pasture myopathy. Hypoglycin metabolites were identified in the serum or urine of all affected horses, demonstrating that horses ate the toxic seeds.

“This is a really important step forwards,” says Professor Celia Marr, editor of the *Equine Veterinary Journal*. “We don’t yet know for sure that the cause of the European disease, atypical myopathy, is the same as seasonal pasture myopathy in the U.S. But the clinical signs and metabolic aberrations are identical, and both conditions have a high fatality rate. It remains to be seen whether this research will help European horses, but there is no doubt that it will allow American horse owners to prevent this devastating condition affecting their horses with immediate effect.”

Valberg has established collaborative links with groups in Europe to investigate whether a similar toxin is involved in European atypical myopathy. Working with Professor Vince Gerber and Dr. Lucia Unger at the University of Bern, Valberg has obtained seeds from a tree related to the box elder found on many pastures where atypical myopathy has occurred. The solution to the cause of both muscle diseases now seems to be in hand. If you have box elder trees on your horse pastures, make sure horses get plenty of hay when pastures are sparse, shorten their time on these pastures in the fall, and consider moving pastures during the months of October and November. Young horses and horses new to these pastures are at highest risk.

**Box elder trees linked to seasonal pasture myopathy**

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**Nature features equine research**

Drs. Jim Mickelson, Molly McCue, and Jessica Petersen were among the authors of "Mutations in DMRT3 Affect Locomotion in Horses and Spinal Circuit Function in Mice," a paper published in *Nature* on August 30, 2012—and featured on the cover. The paper detailed the discovery of a naturally occurring genetic mutation in the domestic horse that likely alters the transmission of nerve signals in the spinal cord, affecting the horse’s gait.
Dudley barn resource herd helps with education and outreach

The Leatherdale Equine Center has developed an education and outreach program using a resource herd of six horses that live in the Dudley barn behind the Piper Clinic. The horses come from varied backgrounds, including donations from Equine Center employees, subjects from research studies, and rescue cases from the Minnesota Hooved Animal Rescue Foundation. The most recent additions to the resource herd are three University of Minnesota Police Department (UMPD) mounted police horses, Louie, Casey, and Redford. When the UMPD mounted unit disbanded early this year, the Equine Center adopted their three equine members, who are now happy participants in the new program.

University of Minnesota undergraduates and veterinary students are excited about this new opportunity to immerse themselves in equine care. The program focuses on providing opportunities for a community of students to develop skills and confidence handling, caring for, and in some cases, riding horses. Community liaison Kelly Vallandingham coordinates the students that provide care for the resource herd. Students with more experience are able to get their horse fix and mentor those who are new to the horse world.

The resource herd is also used for equine-assisted therapy taught by outside partners during weekend events in the Nutrena Conference Center and Barenscheer Arena. Partnerships with the Minnesota Landscape Arboretum and EAGALA (Equine Assisted Growth and Learning) offer opportunities for the community to engage in equine-assisted learning and equine-assisted therapy.

Introduction to the Horse: Care, Handling, and Recognizing Behaviors, a new online undergraduate course offered through the Veterinary Population Medicine Department, is in its second semester. The resource herd is an integral part of three required labs where students observe, handle, and learn from the horses at the Equine Center.

The Equine Center also offer a horseback-riding course. In Introduction to Horseback Riding, undergraduate students learn basic handling and grooming skills, how to tack up a horse before riding, and introductory mounted walk-trot skills. Students are encouraged to focus on improving their physical ability and self awareness, as well as developing a well-rounded sense of communication and consideration for the non-verbal partnership required in riding.

“We are so grateful for all of the support provided by the College of Veterinary Medicine, donors, and the equine community,” Vallandingham says. “Horses and students are very happy in this new program!”

A new addition to the resource herd

In July 2012, the Equine Center welcomed a pinto mare named Elderberry from the Minnesota Hooved Animal Rescue Foundation. Elderberry was seized from Lowell Friday’s farm in East Bethel last year, along with 17 other malnourished horses. After some recovery time at Hooved Animal Rescue, she joined the Equine Center for training and participation in education and outreach programs. Elderberry has a very sweet disposition, and is happy and willing about her new job.
Events

Polo Classic
On August 12, 2012, the 23rd annual Twin City Polo Classic was held at the Twin City Polo Club field in Independence, Minnesota. The Leatherdale Equine Center was the charity of choice for the second year in a row. The crowds enjoyed a rousing game of polo, an exhibition of Cindy Piper’s hunting hounds, and a competitive hat contest. Hercules, the Equine Center’s resident blood donor and local celebrity, made an unforgettable appearance, for the first time under saddle! Mark your calendar for another exciting Polo Classic on August 4, 2013. For more information about the Polo Classic, visit http://thepoloclassic.com/.

Horsemanship & Vet Careers Camp
2012 proved to be another fantastic year for horse camps at the Equine Center. The Horsemanship camp shared information about many aspects of horse care, including introductory handling groundwork and everyone’s favorite activity, grooming! The Vet Careers Camp provided hands-on experience checking vital signs and trying out wrapping techniques. Camp begins in July this year. For more information and to register, visit http://recsports.umn.edu/youth/kidsu.html.

Trainer’s Challenge
For the fifth year in a row, the Equine Center was home to the Hooved Animal Rescue Trainer’s Challenge. Each trainer is given a rescue horse for 90 days of training and preparation. The challenge culminates at the August event, where trainers compete to show off their hard work. To finish the day, the newly trained horses are auctioned off to permanent homes. The Equine Center will be hosting this event again this year. For more information about this year’s challenge, visit www.mnhoovedanimalrescue.org.

Yves Sauvignon Clinic
On November 10-11, 2012, the Equine Center hosted a show jumping clinic by internationally renowned eventing coach Yves Sauvignon. The clinic focused on bending lines and gymnastic work to improve the jumping ability of both the rider and the horse. With a large new set of jumps now available in the Barencheer Arena, the Equine Center hopes to host many more jumping clinics in the future.

Upcoming events

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<td>Danise Grice Jumping Clinic</td>
<td>May 4-5, 2013</td>
<td>Learn more at <a href="http://www.recsports.umn.edu/youth/kidsu.html">www.recsports.umn.edu/youth/kidsu.html</a>.</td>
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<tr>
<td>EAGALA Level 1 Training</td>
<td>July 26-28, 2013</td>
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<tr>
<td>Kids’ University Camps</td>
<td>July-August 2, 2013</td>
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<tr>
<td>Trainer’s Challenge</td>
<td>August 17, 2013</td>
<td>Learn more at <a href="http://www.mnhoovedanimalrescue.org">www.mnhoovedanimalrescue.org</a>.</td>
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<tr>
<td>David Lichman - Master Parelli Horsemanship Training</td>
<td>August 23-25, 2013</td>
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West Metro Equine Practice
763-479-2932

Are you ready for spring?
Here’s a checklist:

- **Coggins test**
  An annual blood test for equine infectious anemia

- **Vaccinations**
  Get at least the core vaccines: West Nile virus, tetanus, eastern/western encephalitis, and rabies

- **Dewormers**
  Start with a fecal egg count

- **Dental care**
  Have your horse’s teeth examined and/or floated every 6-12 months

Our ambulatory service is conveniently based in the West Metro.

Call 763-479-2932 for an appointment or to request a copy of our newsletter!

Visit the University of Minnesota Equine Center on the Web at www.cvm.umn.edu/umec