Here at The Horse we endeavor to take important and often complex equine research and translate it into something owners can understand, talk to their veterinarians about, and use as they manage their horses. Part of that effort involves attending veterinary conferences both here and abroad to bring updates from around the world.

Each year since 1961 the British Equine Veterinary Association has held its Congress in a variety of U.K. cities. The latest edition, held in Birmingham last September, gave attendees the opportunity to listen, learn, network, and have discourse on important equine health conditions. Here are some of the highlights.

**Is My Neurologic Horse Safe to Ride?**

Take a thousand-pound equine athlete, add a neurologic disorder such as equine protozoal myeloencephalitis or cervical vertebral stenotic myopathy (often referred to as wobbler syndrome), and you get a situation that undoubtedly presents safety risks for riders and handlers, not to mention the animal itself. Less clear is the horse’s athletic future; each equine patient is unique, as is its neurologic condition, and veterinarians must shoulder the complex task of declaring whether the horse is safe to ride.
A neurologic condition “is not an automatic disqualification for use, but you must be careful,” said Martin Furr, DVM, Dipl. ACVIM, PhD, MA Ed, head of the Department of Physiological Sciences at Oklahoma State University’s Center for Veterinary Health Sciences. He described how he makes a call on these cases.

The decision involves balancing rider safety, liability matters, animal welfare issues, and concerns for handlers.

The questions he considers during these assessments are not so different than those posed during prepurchase exams.

“The first thing I think about is the severity and nature of the deficit,” he said. Seizure disorders, spinal ataxia (incoordination), or peripheral neuropathy (damage to the nerves in the horse’s extremities) are some examples. “Obviously, the ultimate diagnosis is important.”

Here are a few of his guidelines:

- Most horses with Grade 1 spinal ataxia (subtle neurologic deficits only noted under special circumstances, such as walking up a slope) are rideable;
- Most Grade 3 or 4 horses should not be ridden (Grade 3: moderate deficits at all times/obvious to all observers, regardless of expertise; Grade 4: severe deficits with tendency to buckle, stumble spontaneously, and trip and fall);
- Horses with seizures or a history of seizures must be seizure-free off medication for at least 30 days before they are considered safe to be ridden;
- Horses on anticonvulsants should not be ridden; and
- Peripheral neuropathies are the wild cards—their rideability all depends on the nature and severity of clinical signs.

Progression of the condition, whether slow or abrupt, also dictates how long the horse will be safe to ride. So Furr considers suitability for the rider’s goals.

The horse’s demeanor can also affect how he responds to having a neurologic deficit. For instance, a “hot” horse might become frantic when it loses its footing, whereas a more stodgy one might not.

And, finally, rider skill, knowledge, and experience can make a difference, though Furr acknowledged he doesn’t know how important these are. Sometimes it doesn’t matter how much experience and finesse a rider or handler has—there’s little you can do to prevent a fall.

Furr said he decides what risk the horse’s deficits pose, then communicates it to anyone involved, including riders, handlers, shippers, etc. Because legalities vary in different parts of the world, he advised veterinarians to seek guidance from appropriate professionals on how and what to communicate to owners.

Personally, Furr prefers to make his decision unambiguous to the owner.

“I put it in writing,” he said. “They’re not our children. All we can do is let them know what we think, and they’ll make their own decisions.”

“Of the 40 active/clinically relevant fractures, only 17.5% were considered painful (on rib palpation),” she said, and only 20% of the 50 total rib fracture cases (10) had a history of trauma.

“Three were transport injuries, one reared over backwards ridden, and one sustained a rotational fall over a transport partition,” she said. Three others were racing and eventing falls, one sustained trauma going through a gate, and one was injured by a farrier’s rasp handle.

Presenting complaints included lameness (37.5%), resistance under saddle (32.5%), history of trauma (15% of the clinically relevant cases—four had healed), and pain on palpation (2.5%).

The clinicians commonly used scintigraphy (74%) and diagnostic anesthesia (nerve blocks, 34%), and often used ultrasound (82%), usually to confirm diagnosis.

“In total we had 64 individual ribs affected, 64.1% on left, 35.9% on right,” she said. Fractures were most commonly in the 18th rib (the final, 32.8%) and the 10th rib (10.9%).

Fractures of the first rib (T1) caught Wylie’s attention, because all five occurred in racing Thoroughbreds 2 to 7 years old. They were all lame on the same side as the fracture. Three returned to racing, and one died as a 2-year-old (cause of death was not available).

Five of the study horses had multiple rib fractures (10%; none of these were T1 fracture horses), and two of those had no history of trauma. Veterinarians performed surgeries in five horses, with two getting resections (bone portions removed) under general anesthesia and two with standing sedation. Surgeons applied a locking compression plate in one horse under general anesthesia.

Wylie said it’s important for vets to be aware that rib fractures can be present and causing lameness/pain/resistance when ridden even with no history of trauma or obvious clinical signs of a rib fracture. Because diagnosing rib fractures isn’t easy—and in many cases reliant on scintigraphy—referral might be necessary.

“We think T1 fractures are unique to racehorses and likely represent fatigue fracture pathology,” she added. “Our sample is small, but it would be interesting to explore this further to identify the prevalence of T1 fractures in racehorses and increase awareness as a potential cause of lameness.”
For veterinarians, staying up to date on the latest research is a key component of ensuring they provide their patients with the best possible care. But some practitioners reside in remote areas and countries without easy access to peer-reviewed journals, conferences, or other forms of education. So the World Equine Veterinary Association (WEVA) takes its continuing education on the road, visiting a different part of the world to host a veterinary congress every other year. In late 2015 WEVA traveled to Guadalajara, Mexico, to conduct its 14th Congress. During three days of lectures, the veterinarians learned about such topics as mare and stallion management, nutrition, colic, the musculoskeletal system, maintaining the equine athlete, hoof care, and more. Following are some highlights from the congress. Find more coverage at TheHorse.com/WEVA2015.

**What to Expect When Your Horse Comes Home After Colic Surgery**

Getting a horse through colic surgery successfully is only half the battle; supporting him through recovery is fraught with its own set of challenges. Louise Southwood, BVSc, MS, PhD, Dipl. ACVS, reviewed what to expect following colic surgery. Southwood is an associate professor of Emergency Medicine and Critical Care at the University of Pennsylvania School of Veterinary Medicine’s New Bolton Center, in Kennett Square.

**Endocrine disorders, such as equine metabolic syndrome, often seen in obese horses, are currently the focus of many internal medicine specialists’ research.**

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**Does your horse have gastric ulcers? There’s a specialist for that. Is he showing signs of an endocrine problem such as pituitary pars intermedia dysfunction or metabolic syndrome? There’s a specialist for that. How about a heart problem that might affect his performance and safety as a riding horse? You guessed it … there’s a specialist for that, too.**

What you might not realize is all these specialists are internists board-certified by the American College of Veterinary Internal Medicine (ACVIM). The field of equine internal medicine is always progressing, and researchers are learning new things about how particular issues develop, the best treatment options, and everything between. Each year the ACVIM hosts an annual forum—this year’s took place in June in Denver, Colorado—at which members present research results, share successes and challenges, and learn from each other.

Here’s a look at several of the studies covered. Find more recaps at TheHorse.com/ACVIM2016.
Complicated Corneal Ulcers

Equine corneal ulcers are notoriously difficult to treat, mainly because veterinarians must understand the underlying destructive processes to manage them effectively—and the variety of pathogens that can be involved. To complicate things further, ulcers can expand and deepen in the absence of infection because of how the horse’s immune system on the surface of the eye responds. Worst-case scenario, ulcers can lead to the loss of vision or the eye itself, if not properly managed in time.

An ulcer—a loss of epithelium and stroma (the top two corneal layers) down to the third layer, Descemet’s membrane—is a host response that has gone horribly wrong,” said Andrew Matthews, Hon Member ACVO, Dipl. ECEIM (Ret), FRCVS, an equine practitioner and ophthalmologist from Angus, Scotland. He described managing complicated cases.

A variety of factors can make ulcers “complicated,” he said, including:

- **Progressively getting worse** despite aggressive therapy.
- **Fungal presence**, which Matthews noted is still relatively rare in the U.K., but fungal ulcers occur in other parts of the world. Be suspicious of fungus when blood vessels approaching the ulcer as part of the healing response abruptly stop short of the ulcer.
- **Presence of certain bacteria** that can promote an aggressive host white blood cell response—called a polymorphonuclear neutrophil leucocyte (PMN) response—in susceptible horses.
- **Insults to the area** such as a foreign body or an eyelash growing in incorrectly (distichia).
- **Melting**, which is aggressive and rapid stromal breakdown due to the intensity of the horse’s white blood cell response.
- **“Gutter” formation** at the edge of the ulcer, which represents sloughing of dead corneal tissue—this is a normal part of the healing response, but it can happen at an exaggerated rate. “Dramatic sloughing in an ulcer bed can presage healing, but don’t take it for granted,” Matthews cautioned.

Other problems that can develop include extensive scarring of the healed cornea, especially after surgery; perforation (full thickness holes in the cornea) leading to iris prolapse; and eye loss.

Rib Fractures and Performance Horse Discomfort

Suzy Hall, BVetMed MRCVS, a resident in lameness and diagnostic imaging at Liphook Equine Hospital, in Hampshire, U.K., noticed that rib fractures have not been widely reported as a possible cause of discomfort and poor performance in sport horse patients. Curious, she performed a case review of horses with discomfort under saddle caused by rib fractures to better understand the connection.

Digging through 15 years of Liphook records, Hall found 15 cases involving horses brought to the hospital with back pain and poor performance and diagnosed with rib fracture. “All presented due to a sudden change in ridden behavior,” she said. “Only one of these horses had a history of trauma.” Clinical signs included bolting, bucking, or resistance to work. But, interestingly, she said, six of the 15 (40%) were sound.

When veterinarians could localize pain with palpation (20% of cases), it was consistent with the site of injury. All 15 horses underwent nuclear scintigraphy, revealing “intense focal radiopharmaceutical uptake in a rib,” suggesting active bone remodeling in that area. Each horse had only one fracture, and 10 of those horses had a fracture of the 18th rib, just to the outside of where the last rib head connects with the thoracic vertebrae.

In 13 of the cases, veterinarians used ultrasound to successfully localize rib fractures. They could find fractures in five of eight cases they examined using radiography.

Owners rested the case horses for three months to a year before resuming ridden work, and some horses underwent additional physiotherapy in the meantime.

Hall reviewed each horse’s images and gathered follow-up information by repeat physical exam or an owner telephone interview. Eight horses were available for long-term follow-up, and seven of those (88%) had returned to their previous exercise level. She said one horse responded poorly to conservative management and underwent rib resection. It developed postop complications, responded poorly to treatment, and was euthanized.

She noted that one of the major study limitations was that only one horse underwent percutaneous analgesia, or local infiltration of anesthetic to numb an area and prove it’s painful.

Hall reminded veterinarians to keep this in mind as a diagnostic possibility: “Rib fractures should be considered as a cause of riding discomfort,” she said. “Fracture of the caudal ribs was most common, and palpation was frequently unrewarding.”—Stephanie L. Church

[These scintigraphy images show increased radiopharmaceutical uptake over the fractured rib.]
where the benefits of intervention are weighed against potential harm,” he said. Veterinarians must “optimally use topical treatments in most cases,” and remote delivery systems—the subpalpebral lavage, which allows them to administer drugs through a catheter—are “mandatory,” said Matthews. “Remember that a topical solution remains on the ocular surface for less than 7 minutes,” and for an even shorter time with increased tearing.

He said that once the infection and stromal lysis (disintegration by those white blood cells) are controlled, and the horse's tear film (a layer of tears that keeps the eye moist, which needs to be established and maintained as soon as possible) is stabilized, the best option for completing treatment is to taper off topical therapies.

**Immediate Treatment** Matthews urged clinicians first to assess the depth and extent of the ulcer using fluorescein stain, remembering that Descemet's membrane neither retains the stain, nor is that layer painful if the ulcer approaches it.

Other steps veterinarians should take:
- Identify complicating factors.
- Take samples from the ulcer bed and wall for microbial culture and PCR (polymerase chain reaction testing, basically a DNA test for pathogens).
- Remember that certain fungi, including *Aspergillus* and *Fusarium*, should always be considered significant. But if PCR is fungal-positive for any organism, treat as a precaution.
- Examine scrapings from the ulcer bed and wall under the microscope, looking for any evidence of fungus.
- Start topical treatment.
- Use a topical broad-spectrum bactericidal and dose-dependent antibiotic every two hours until culture results are back. Then change antibiotic if indicated.
- Begin an anti-enzyme therapy, including EDTA and serum every one to two hours or using continuous lavage. This controls the destructive white cell response. He reminded practitioners that “good practice is to administer topical serum and antibiotics separately.”
- Control the inevitable uveitis, or inflammation of the uvea, with atropine and systemic (not topical!) non-steroidal anti-inflammatory drugs. “Intervene (surgically) if there is a descemetocoele and corneal rupture/iris prolapse present,” he said. “However, in some instances small corneal ruptures can heal without surgery, but at the expense of extensive scarring and with a high risk of eye loss during the healing period.”

**Shedding Light on Posterior Uveitis**

If a horse injures the anterior part of his eye—anywhere from the lens forward—or otherwise develops a problem there, it’s usually obvious. He squints or has a weepy eye, and clouding, discoloration, or even a surface lesion might be visible. But the back of the eye can be a little more mysterious—even to the practitioner.

Professor Derek Knottenbelt, OBE, BVM&S, DVM&S, Dipl. ECEIM, MRCVS, an affiliate and equine consultant in veterinary pathology, public health, and veterinary pathology, public health, and disease investigation at the University of Glasgow, in Scotland, shared what he has learned about posterior uveitis—infammation in the back of the eye—to help clinicians document cases. Posterior uveitis is:

**Very easily overlooked** “Most cases are detected incidentally, you aren’t expecting anything,” he said. “In other words, it tends to be a prepurchase … or an insurance examination finding, or when you look at the eye because it’s bashed its head. There’s an incredible dilemma for us all in assessing the significance … for the safety of the riders, for the welfare and, indeed, the value of the horse.”

**Deceptively benign** and “almost insignificant to look at in the earliest stages and only a subtle change in more advanced cases,” he said. Sometimes mild changes are evident, but whether they're a significant problem varies.

**Largely nonpainful**, so the owner and veterinarian only detect the problem late in the course of disease. The horse might not look or behave any differently than usual. “The posterior uveitis complex is generally speaking very benign symptomatically … there’s nothing to show the owner to call the vet, and there’s nothing to indicate any changes that look as though it’s going to progress to blindness.”

**Usually slow and insidious in onset**, meaning it worsens gradually.

**Poorly described and understood** because scientists have conducted little published research on it. Posterior uveitis is, “an end point for various etiologic causes that we as yet do not understand,” he said, noting that viruses (equine herpesvirus-1), bacteria (primarily *Leptospira spp*), and immune-mediated syndromes (equine recurrent uveitis) can cause it, as can traumatic insults. He said the infectious causes are probably the most noticeable, and that herpesvirus is the only cause that's been described in the literature.

**First evident as a green vitreal coloration** The vitreous (a jellylike substance behind the lens) will seem a bit cloudy, and the veterinarian will not see the definition of the normal retinal anatomy.

Knottenbelt said veterinarians can see the main posterior anatomic features and problems using ophthalmoscopes and ultrasound. But because these cases don't become apparent until late in the game—retinal damage and blindness can be the main clinical signs at the initial exam. “These are cases where the horse is blind but there's very little pathological change to explain it,” he said, so he described the diagnostic landmarks he uses.

“The retinal blood supply, in my view, is probably the best indicator of retinal disease, and subtle variations occur early,” he said, noting that the blood supply can atrophy, or it regresses and then the retina changes as a consequence. “It’s most likely the former in almost every case.”
Knottenbelt uses the smartphone app Camera Awesome to capture an image of the fundus (the back of the eye) before conducting a more detailed exam later. He recommends clinicians share footage with colleagues to get other opinions or simply learn about how these cases appear.

“You can freeze the frame and count the blood vessels if you want,” he said, “The value of this technique first described by Tim Knott and Dennis Brooks cannot be overstated.”

He showed examples of “bullet-hole” and “butterfly lesions” in the retina, which are caused by EHV-1, gathered this way.

Knottenbelt said this is a difficult disease to diagnose, predict, and manage, and the veterinary community needs more information, “and so my plea is for (veterinarians) to get out there with their smartphones and share cases of posterior uveal and vitreal pathology.”

Putting Two Potential Ulcer Medications to the Test

A research team in Australia has been examining equine gastric ulcer syndrome (EGUS) from a different angle than most scientists have in the past, measuring pH levels in two areas of the stomach over time rather than testing gastric fluid from a fasted horse. In doing so, they’ve found that in some horses on certain diets, the duration of acid suppression of oral omeprazole—the current gold-standard for ulcer treatment—could be inadequate for ulcer healing. So, they’re taking the research a step further and considering alternative therapeutic approaches.

Ben Sykes, BSc, BVMS, MS, MBA, Dipl. ACVIM, ECEIM, PhD, adjunct associate professor at the University of Queensland, presented preliminary results from two studies. In each study he and colleagues used an intragastric pH probe to monitor the acidity of the environment for 23 hours (the 24th hour was used to reset and recalibrate the probe) in the ventral (lower) region of the stomach. In an earlier study with the pH probe that appeared in the Equine Veterinary Journal (see page 10), Sykes and his team revealed that while omeprazole did a great job raising intragastric pH in horses on high-grain/low-fiber diets, it didn’t perform so well in horses on hay-only diets.

They also found that in some conditions dosing had a cumulative effect, meaning the longer the treatment regimen (measured up to five days), the higher the pH, which is a new finding in horses. In the end, they determined that a cookie-cutter dosing recommendation might not be appropriate, and veterinarians must consider a horse’s diet and management when recommending a dose.

This research got Sykes wondering about other treatment approaches, specifically oral esomeprazole and a long-acting injectable omeprazole formulation. “In the case of esomeprazole, it’s approximately four times more potent than omeprazole in other species,” he said. “In meta-analysis studies (a statistical approach to combining results from multiple studies), it’s considered the proton pump inhibitor (a class of drugs designed to reduce gastric acid production) of choice in human medicine.”

With the use of esomeprazole we can get good acid suppression, and we can still feed high-fiber diets in the therapeutic phase, giving us the best of both worlds.”

DR. BEN SYKES

Oral esomeprazole Sykes examined effects of dose and diet with two esomeprazole doses (0.5 and 2.0 mg/kg bodyweight per day) and evaluated the percentage of time intragastric pH was over 4 (considered a healing range in other species). “We used the same six horses (as in the EVJ study), and I think that’s important because there’s individual variability in responsiveness, so we can compare apples to apples,” he said. “We found a very similar effect in the high-grain/low-fiber diet, both of the doses were very effective, and even the lower dose was up above the minimum requirement for healing in other species.

“Where it got quite exciting, though, is when we looked at the hay-only diet. What we saw is that by Day 5 the average observed percentage of time intragastric pH was over 4 was up around 80%;” he said. “And, in fact, five of the six horses were well above that.”

Sykes said these results are encouraging, as they suggest the effects of a hay-only or high-forage diet can be overcome. “We don’t necessarily need to change our recommendations for how we manage these horses, or their diet, because (feeding a high-fiber diet) is a good thing to do to horses. With the use of esomeprazole we can get good acid suppression, and we can still feed high-fiber diets in the therapeutic phase, giving us the best of both worlds,” he said.

“I think as far as oral therapy, esomeprazole has a lot of promise,” he added, acknowledging it warrants further investigation as an omeprazole alternative.

A long-acting omeprazole? Next, Sykes looked at the pharmacodynamics of an injectable form of omeprazole. He and colleagues gave a single 20-mL dose intramuscularly and ran the experiment again, this time looking at the percentage of time gastric pH was higher than 4 over seven days. They only looked at the hay diet.

Sykes and his team saw a very rapid response, noting acid suppression within one to two hours for most of the horses. “We had complete acid suppression for a four-day period in all horses, and then between five and seven days, several of the horses still were responding well, some of the horses started to taper off,” he said. “This would support a once-weekly dosing regimen.”

Ultimately, this was a pilot study for a once-weekly drug that is still in development, but Sykes noted it “has a lot of promise for overcoming the dietary effects (of a hay-only diet) observed.

“One of the striking things is when you scope these horses (with a gastroscope),” he said. “With oral omeprazole the squamous ulcers may have healed but the mucosa often still looks a little rough or thickened. In the horses treated with the injectable, the squamous mucosa appears completely normal. That was really encouraging.”

In summary, Sykes said the magnitude of acid suppression he saw was consistent with healing in other species. “This warrants clinical investigation and has a lot of promise in terms of overcoming the dietary effects we’ve seen with oral omeprazole,” he said.

Sykes noted in his presentation that he is a consultant to Luoda Pharma, which funded the research.

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