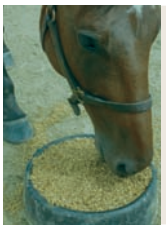


HEALTH ZONE

2013 AAEP Wrap-up

BY ERICA LARSON
AND DR. NANCY S. LOVING

While your veterinarian is stitching wounds, delivering foals, and monitoring colics, scientists from around the world are performing and publishing research to advance horse health care. So, to bring busy practitioners up to speed on the top studies in a variety of fields, a panel of veterinarians presents a program called the Kester News Hour each year at the annual convention of the American Association of Equine Practitioners. The 2013 convention was held Dec. 7-11 in Nashville, Tenn.

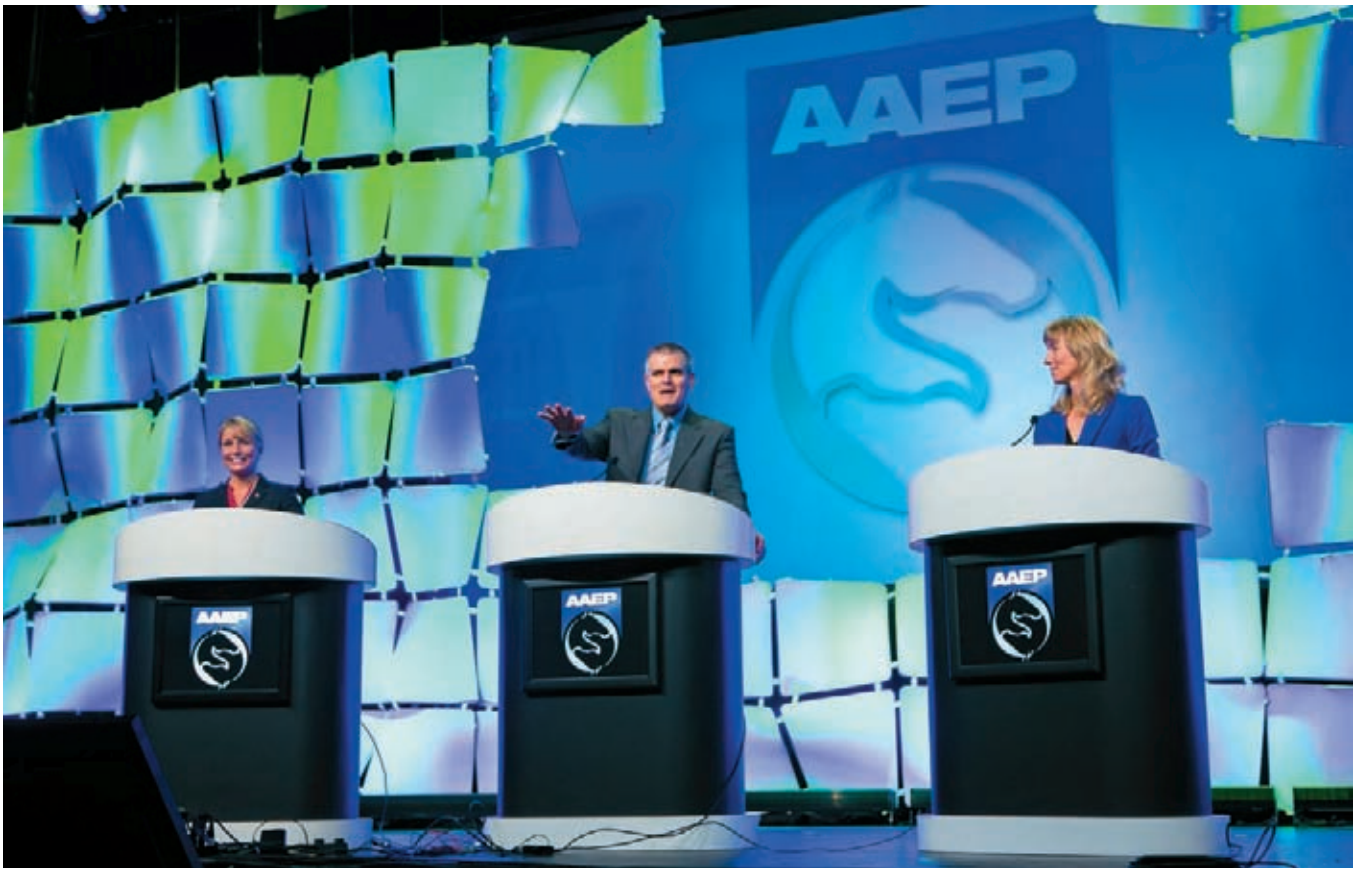
Dr. Lisa Fortier, professor of Large Animal Surgery at Cornell University's College of Veterinary Medicine near Ithaca, N.Y., shared her picks for top surgery- and lameness-related studies; Dr. Carol Clark, of Peterson & Smith Equine Hospital near Ocala, Fla., tackled medicine topics; and Dr. Pat McCue, a professor of equine theriogenology at Colorado State University's Equine Reproduction Laboratory near Fort Collins, described reproduction studies he deemed most important to veterinarians.

Upper Airway Issues

The first study Fortier described involved a recently identified upper respiratory condition called ventrorostral displacement of the dorsal laryngeal mucosa. The condition occurs when the mucosa on top of the arytenoids (flappers) progressively obstructs the airway during exercise. The researchers performing the study identified the condition in 12 of 600 racehorses presenting with owner complaints of poor performance and/or abnormal respiratory noise. Most of the affected horses had another concurrent respiratory issue, Fortier said. The condition's etiology (set of causes) remains unclear, and treatment isn't immediately necessary.

She said six of the horses' conditions resolved in six to nine weeks, suggesting this condition could be related to the level of training, immaturity, and airway disease

Equine practitioners get up to speed on a variety of topics at their annual convention Dec. 7-11 in Nashville



COURTESY AAEP

From left, Drs. Lisa Fortier, Pat McCue, and Carol Clark during the Kester News Hour at the 2013 AAEP convention in Nashville

ALL-TIME WINNING TRAINER GOES FROM SKEPTIC TO ENTHUSIAST

Scott Lake sees dramatic improvement in his thoroughbreds

By Mark Hansen

When you're one of the top all-time winning thoroughbred trainers, you're not about to jeopardize the health of your horses, your winnings, or your reputation by giving them a new performance supplement without doing your research first. That is why Scott Lake, a thoroughbred trainer with more than 5,000 all-time career wins, was - at first - hesitant to try a supplement that his colleague insisted would dramatically increase his horses' performance.

Scott said, "I was skeptical about trying anything promising to boost EPO levels because I have heard too many horror stories about horses being harmed by doping. But a friend of mine in the industry kept giving me information on this new, all-natural supplement. Then I did my own research, and I realized this isn't the synthetic EPO that damages horses. This is a 100% all-natural supplement, with data to back up its claims."

So Scott chose 6 horses that he felt were under performing to try EPO-Equine®. "The horses had coats that weren't where I thought they should be. They were dull, dry and wiry. Plus, their blood levels were a little messed up, and they were training just 'OK'. I thought, let's try it. Let's see if this supplement will help them."

After feeding his horses EPO-Equine® for a month, Scott noticed a huge improvement. "All of my horses looked better and their coats were shinier. Then 4 of the horses on the supplement won the first time I ran them. Coincidence? I don't think so. They looked better and performed better. They really turned it around. I liked seeing that."

Scott's quite certain that EPO-Equine®, the natural supplement he tried, is making a huge difference in his horses' performance. And because of the results, he plans on putting more of his horses on this natural "blood builder".

But why is it important to "build blood," and how does this supplement work as a blood builder?

Just like in people, a horse's muscles require oxygen. Red blood cells are the oxygen-carrying cells that deliver oxygen to muscles. A higher red blood cell count = more oxygen = more muscle energy. Elevated muscle energy helps the horse perform harder, faster and longer during endurance events.

EPO-Equine® contains a natural "blood-builder." Bioengineers at U.S.-based Biomedical Research Laboratories (BRL) discovered a proprietary strain of Echinacea angustifolia that's promotes red blood cell production.

Veterinarians at the Equine Research Centre in Canada ran a double-blind trial investigating the blood building properties of the active ingredient in EPO-Equine® in healthy horses. For 42 days, one group of horses was supplemented with the active ingredient in EPO-Equine® and another group of horses was given a placebo.

The supplement delivered significant blood building results, increasing red blood cell count and hemoglobin levels. Optimized blood levels leads to elevated exercise physiology… for remarkable speed, strength and stamina right out of the gate.

Trainers not only trust and rely on EPO-Equine® because it's effective, but also because of its strict quality control, extensive product testing and adherence to banned substance regulations that guarantee safety.

EPO-Equine® does not contain any banned or harmful substances. Every batch of EPO-Equine® is tested by an independent laboratory to guarantee that it's clean for use in competition.

EPO-Equine® is easy to use. Just add just 1-4 scoops (3.2 grams) of EPO-Equine® to the horse's daily feeding routine. Within 3-4 weeks of daily use, you can expect to see increased red blood cell levels with no undesirable side effects.

According to Scott Lake, "I absolutely recommend EPO-Equine® if your horse isn't performing or competing to its potential. Give it a shot. It definitely turned my horses around."

Trainers also find that EPO-Equine® is very affordable at the low price of just $59.95 per jar. Or even more affordable by saving $180 when purchasing a 12-jar case for just $539.55 and getting FREE shipping. EPO-Equine® can be ordered at www.EPOEquine.com or 1-800-557-9055, and comes with a 100% money-back satisfaction guarantee.

in young Thoroughbred racehorses.

Next, Fortier described a study in which scientists evaluated 41 horses that had previously undergone tie-back surgery (a procedure used to treat "roaring"—in which the muscles that open and close the left side of the larynx as the horse breathes are paralyzed—which involves placing one or more sutures that will permanently keep open the left arytenoid cartilage). They used video endoscopy during exercise under saddle to evaluate arytenoid abduction and stability, diagnose any concurrent upper airway problems, and correlate these with the owners' perception of surgery success, she said.

Although 93% of owners thought the surgery was beneficial and 90% believed they saw improved performance post-surgery, the researchers found 79% of horses still had respiratory abnormalities at exercise, and they identified multiple abnormalities in 41% of the horses, Fortier said.

"When investigating cases of ongoing respiratory noise and/or poor performance after tie-back surgery, exercising endoscopy should be performed (to ensure there's not another respiratory problem present) before consideration is given to tie-back revision or retirement of the horse," Fortier concluded.

Lameness

Fortier described a study in which researchers compared two needle placement approaches for either injection or centesis (sampling the synovial fluid in the coffin joint, navicular bursa, and digital tendon sheath) of the digital flexor tendon sheath: the basilar sesamoidean approach (BSA) and the axial sesamoidean approach (ASA)—basically, injections from two different directions. The team found that the BSA was faster, 100% successful for injections, and six times more successful when performing centesis than the ASA approach. Thus, Fortier suggested practitioners consider using the BSA approach with an 18-gauge needle.

She then presented a study in which researchers evaluated techniques for injecting diagnostic analgesia (nerve blocks) into the lateral femorotibial stifle joint (the lower outside of the three stifle joints). Fortier said the traditional method can be challenging, so a team of veterinary students tested whether they could accomplish the same effects by injecting the joint through the long digital extensor tendon (LDE).

Fortier said the team achieved a 100% success rate in administering diagnostic analgesia through the LDE, while the success rates for other traditional approaches were lower. She concluded that this approach provides good anatomic landmarks for veterinarians to work with, avoids cartilage and meniscus injury, and is a reliable technique even for inexperienced veterinarians.

Then Fortier described a study in which researchers evaluated the pharmacokinetic and pharmacodynamic variables and local tolerance at the intravenous regional limb perfusion (IVRLP) injection site of the antibiotic marbofloxacin, which is used to treat infections and bacterial issues.

"We would love the ability to use a fluorquinoloe (a class of antibiotic) for efficacy

ANNE M. EBERHARDT

A horse undergoing a lameness exam

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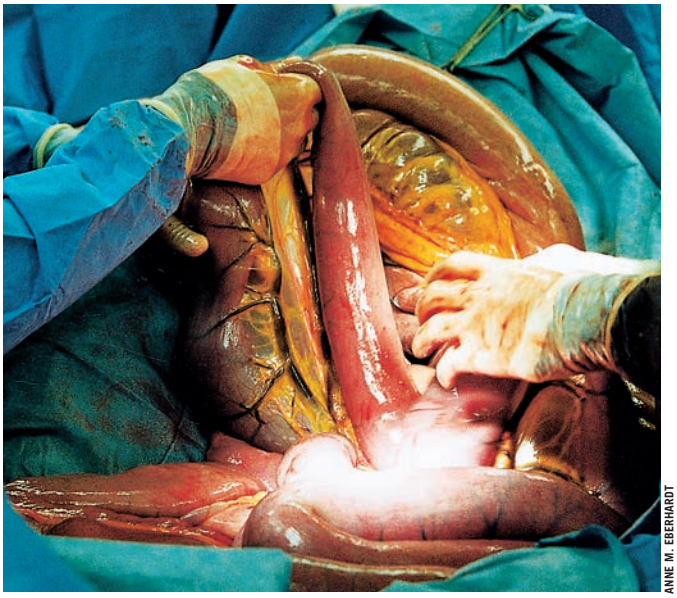
against many Gram-negative and many *Staph* bacteria," Fortier said. However, researchers have previously found that 70% of horses treated with the cousin drug, enrofloxacin, via IVRLP developed vasculitis (inflammation of blood vessels). So the team on the current study tested marbofloxacin's efficacy instead.

They found that none of the horses tested developed vasculitis, and the synovial fluid concentrations of the drug were well above the level required to combat enterobacteria and *Staphylococcus aureus*. She also noted that current availability of this drug in the United States is low.

Colic Surgery

Fortier described a study in which scientists evaluated return to use rates after exploratory celiotomy, or colic surgery. Looking at surgical data and six- and 12-month follow-ups, the team found that 77% of the 195 study horses returned to use as athletes. The team determined that horses developing hernias were seven times less likely to return to function, those that developed laminitis were nine times less likely, and those that required colic surgery while on stall rest for a musculoskeletal injury were 11 times less likely.

Along similar lines, Fortier described a study into 85 racehorses' performance after colic surgery. She said researchers found that 70% of horses that underwent colic surgery returned to racing, compared to 73% of controls, and determined that colic surgery had no significant effect on race performance.



ANNE M. EBERHARDT

Researchers found 70% of horses that underwent colic surgery returned to racing

Bone and Joint Issues

Fortier described a study in which scientists evaluated the risk of infection after 16,624 intra-articular injections in 1,103 Thoroughbred racehorses. Ultimately, 0.0008% of joints developed infections after injections, she said. Risk factors included the individual veterinarian administering the injections and the use of methylprednisolone (or Depo-Medrol) or triamcinolone (0.003% and 0.0002%, respectively). She noted the researchers reported no infections after amikacin injection, but the drug was used in only 5% of the injections.

Next, Fortier described a study in which researchers examined whether early or increased intensity of training and racing would lead to palmar/plantar osteochondral disease (POD) in Thoroughbreds. "POD is a degenerative condition affecting the distal (lower) condyles of the distal cannon bones," she said. "The condition is believed to be due to injury of subchondral (beneath the cartilage) bone associated with repetitive high strains and strain rate in bone during high-speed racing and training."

Based on their review of 1,288 condyles, the team found that POD severity was associated with an increased number of lifetime starts, increased gallops in one training session, number of seasons raced, and time between races. Essentially, she said, horses that run too hard, too frequently are more likely to develop POD. She concluded that "cumulative racing exposure may be more important than age at first exercise" for POD development.

EPM

Clark highlighted equine protozoal myeloencephalitis (EPM) diagnosis in the living horse. In one study, researchers determined that the most accurate means of detecting EPM is to use a simple titer ratio of antibodies in serum to those in cerebrospinal fluid. The team concluded that using this titer ratio offered excellent sensitivity and specificity for diagnosing EPM in the live horse, she said.

Hydration

Clark then described a paper in which authors compared the effects of oral vs. IV fluid therapy on whole body hydration. They

concluded that both "maintenance" (the standard volume used to maintain a sick horse's hydration to keep normal metabolism and organs functional) and double-maintenance dose IV fluids are effective volumes for restoring hydration in dehydrated horses. However, Clark said, the team found that a triple-maintenance dose of IV fluids did not improve horses' hydration status and increased urine output; ultimately, horses receiving triple-maintenance doses of IV fluids were less hydrated than those receiving a maintenance or double dose once IV fluid therapy was stopped. Clark also mentioned that the researchers showed that oral fluid replacement—passing fluid through a nasogastric tube into the animal's stomach—is an excellent means of restoring intestinal water levels.

Blister Beetle Toxicosis

It takes just three ingested blister beetles from hay or pasture to kill an adult horse and, in the next study Clark described, researchers evaluated which treatments work best for treating so-called blister beetle toxicosis. They examined the effectiveness of three gastrointestinal therapies—mineral oil, charcoal, and smectite (or Biosponge)—in rats that had received cantharidin, the toxic substance found in blister beetles. They found that mineral oil was associated with the highest mortality rate: six of eight treated animals died. Three of eight rats died after receiving toxin and no treatment (the control group), Clark said, while two of eight rats died after treatment with charcoal or smectite. The bottom line: Mineral oil—or any lipid soluble—should *not* be used in suspect cases of blister beetle toxicity because it appears to exacerbate cantharidin absorption and increase mortality.

Long Distance Hauling and the Respiratory Tract

Horses that travel long distances are prone to developing respiratory infections, often due to damage to their respiratory tract epithelium caused by environmental factors within the trailer (such as hay or dust), stress, and holding the head in an elevated, fixed position. Clark described a study in which authors evaluated if administration of the bronchodilator clenbuterol could provide relief to traveling horses. The research team administered clenbuterol 12 hours prior to transport and then every 12 hours over the next 48 hours and found it improved tracheal clearance

WIKIMEDIA COMMONS

It takes just three ingested blister beetles to kill an adult horse

of debris by at least 50%. The drug can reduce respiratory disease development following transport, she said. However, allow for appropriate withdrawal times in competition horses.

Inflammatory Mediator Inhibitors

Matrix metalloproteinases (MMPs) are inflammatory mediators that play an important role in the development of equine conditions such as laminitis, recurrent airway disease, hepatitis, and osteoarthritis. Clark described the results from a study in which authors compared potential MMP inhibitors—specifically, doxycycline, oxytetracycline, flunixin meglumine, and pentoxyfylline—to suppress specific MMP components that cause inflammation. Clark said the team found pentoxyfylline to be the most useful MMP inhibitor used in the study, followed by oxytetracycline.

Equine Metabolic Syndrome (EMS)

Clark shared a study in which the authors tried to find ways to blunt abnormal insulin responses. Healthy horses (not EMS-affected) were given a large dose of dexamethasone to elicit insulin resistance. Then these horses received metformin (30 mg/kg) one hour prior to receiving oral sugar. The team found that metformin reduced the horses' insulin response. Clark


KEVIN THOMPSON

One study suggested the pH of mares' milk could indicate impending foaling

said the researchers believe metformin has a local intestinal effect on reducing sugar absorption and might be a useful pre-turnout approach to preventing insulin spikes in horses that are at risk for developing EMS or EMS-induced laminitis.

Broodmares and Pregnancy

McCue reported on research in which scientists evaluated whether laparoscopic application of the hormone prostaglandin E2 (or PGE2) to the uterine tube surface could improve fertility in some subfertile mares. The team tested their theory in 20 barren embryo donor mares and eight barren mares bred to carry their own foals.

McCue said 17 of the 20 donor mares produced an embryo and seven of the eight mares bred to carry a foal became pregnant after veterinarians applied 0.2 mg of PGE2 to the mares' uterine tubes.

"This is not a panacea for all cases," he said—case selection is critical—but this technique could help improve fertility in mares with unexplained infertility.

Moving forward, McCue described a study in which researchers evaluated factors affecting live foal rates in mares that underwent manual twin elimination. Researchers looked at 129 twin pregnancies, he said, and found that live foaling rates were not significantly different between adjacent and nonadjacent embryos (whether embryos are fixed together or not); however, the mare's age impacted live foaling rates: Live foal rates in mares 9 years of age or older were lower than in mares younger than 9 years. For best results, McCue stressed that practitioners should never delay in reducing twin pregnancies.

Along the same lines, McCue presented the results of a study in which researchers evaluated pregnancy and foaling rates after another method of twin reduction: transvaginal ultrasound-guided aspiration (TUA). The team found that 49% of the 44 mares evaluated in the study delivered one live foal after TUA and that the highest live foaling rates occurred in mares that underwent TUA before Day 42 of pregnancy.

"Decisions on twin reduction should be made before 35 days," McCue concluded, adding that reductions should take place between Day 30 and Day 35, if possible.

In a recently published review of breeding-induced endometritis (inflammation of the uterine lining), McCue said the researchers diagnosed the condition in 10-15% of mares and that factors such as advanced age, poor perineal conformation, a pendulous (i.e., downward facing or slanted) uterus, and a compromised immune response put mares at a greater risk for developing this condition. He said the researchers identified six hours as the critical time frame for clearing breeding-induced uterine inflammation; mares that failed to clear inflammation by six hours after breeding remained inflamed.

McCue described a study in which researchers set out to test whether mares' milk pH could be a useful indicator of impending foaling. Their results suggest that if the milk's pH is above 6.4, she's not yet ready to foal, he explained. However, once the pH drops below 6.4, the mare will likely foal in the following few days.

McCue said owners can use test strips on the farm to determine mares' milk pH. He said he'd suggest using strips that focus on the mid-section of the pH scale (i.e., 5.5 to 8.0), rather than ones that measure ranges from 1 to 10. BH

the HORSE
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