

HEALTH ZONE

What Happened in Vegas...

A wrap-up of the
2015 AAEP convention



The 2015 AAEP convention took place in Las Vegas Dec. 5-9

In horses there is not enough data to know how long favorable effects will last. While the researchers have yet to see full resolution of cancer in the study horses, all tumors became smaller or stopped growing. Slow-growing melanomas seem to respond best and, so far, the vaccine has demonstrated good short-term efficacy. Again, at this time, the vaccine is not yet approved in horses, and its use is considered extra-label. Owners of affected horses should have a conversation with their veterinarians that explores all available treatment options.

This vaccine is not without cost. A horse owner might expect to pay \$2,200-\$3,000 for the initial series of four injections and then a quarter of that for each booster.

By Dr. Nancy Loving

Rodenticide Causes Sudden Death in Exercising Horses

Veterinarians with the California racing necropsy program have recently discovered a less obvious cause of sudden death among race horses: rat poison.

Dr. Rick Arthur, the equine medical director at the University of California, Davis, School of Veterinary Medicine, and colleagues took a closer look at sudden death incidents caused by rodenticide and at racehorses' risk of exposure to the poison.

Over 22 months of racing, from 2012-14, six out of 374 sudden deaths on four California racetracks were due to idiopathic (having no obvious cause) hemorrhage. Necropsy results revealed traces of anticoagulant rodenticide in all six horses' liver tissue. These substances inhibit the horses' blood from clotting, causing massive internal bleeding.

The levels of anticoagulant rodenticide found upon necropsy, however, were well below what's considered toxic in horses, Arthur said. Thus, he hypothesized, "strenuous exercise might alter the toxic threshold for anticoagulant rodenticide in these horses."

These post-mortem discoveries prompted the California Horse Racing Board to launch extensive investigations into understanding the poison's source.

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Below are items of interest to Thoroughbred breeders and owners from the American Association of Equine Practitioners annual convention that took place Dec. 5-9, 2015, in Las Vegas, Nev. The event offered more than 135 hours of equine veterinary continuing education and a large trade show.

Canine Melanoma Vaccine Testing in Horses Underway

If you own a gray/roan horse and melanomas aren't already on your horse health radar, they should be. Eighty percent of grays older than 15 develop this skin tumor, and while some horses have just a few benign lesions, others have highly invasive, performance-limiting, or even life-threatening melanomas. Few effective treatment options exist, but researchers are looking into how a canine melanoma vaccine, shown to be effective in extending the life span of dogs with oral melanomas, works for treating horses.

In 2009 the canine vaccine came on the market. Recently, the Morris Animal Foundation awarded a grant to explore use of the canine vaccine (called Oncept) in horses. Researchers are actively working to get this vaccine USDA-approved and labeled for use in horses. Dr. Jeffrey Phillips, of Lincoln Memorial University, led a question-and-answer session about the study at the convention. The trial to establish the vaccine's efficacy involved 15 horses with confirmed melanoma. Veterinarians saw a favorable result from the vaccine protocol in 13, but not in the other two. There were no adverse reactions. Manufacturers developed the targeted DNA vaccine by inserting the human gene for tyrosinase, a protein found on melanoma cells, into a DNA ring to stimulate an immune response. It's adjuvant-free, meaning the component often charged with triggering vaccine reactions has been omitted. The veterinarian uses a specific applicator to inject the vaccine through the skin into the pectoral muscle. In some horses, resecting (cutting away) the bulk of the tumor might help improve vaccine efficacy to control tumor growth.

Dogs undergoing the vaccine protocol receive four injections—one injection every two weeks—and then a booster every six months, indefinitely. Researchers recommend the same protocol for horses. The vaccine is not considered a cure in dogs, but it has been shown to extend their life expectancy from two to 24 weeks after diagnosis to 18 months to five years.

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LUITPOLD
ANIMAL HEALTH

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They evaluated each track's pest control program and found that three out of the four racetracks used commercial vendors to set bait out in sealed and secure stations, away from horse's stalls. The fourth offered mechanical traps to trainers as needed.

The CHRB also interviewed barn personnel, some of whom admitted to distributing anticoagulant rodenticide around the barns.

"From statements made to investigators, unauthorized anticoagulant rodenticide use occurs because barn personnel considered rodent control efforts inadequate and believed it was necessary to take matters into their own hands," said Arthur.

At the end of the investigation, the CHRB established that rats are clearly a frustrating problem at the barns they investigated and that the most likely source of equine exposure is from barn personnel doing their own rat control.

Because toxicity thresholds are so low in horses, Arthur recommended strictly monitoring anticoagulant rodenticide use at racetracks and other locations that are stabling strenuously exercising horses. And "anticoagulant rodenticide toxicity should be considered in sudden death cases with idiopathic hemorrhage," he said.

By Alexandra Beckstett

Pain Management Options for Laminitis and More

During the conversation-style Medical Pain Management Table Topic, practitioners relayed their pain management experiences and discussed the pros and cons of various drugs. Dr. Lori Bidwell, a certified veterinary acupuncturist from Kentucky-based East West Equine Sports Medicine, and Dr. Debra Sellon, director of Washington State University's Veterinary Teaching Hospital, facilitated the session.

In particular, they focused on laminitis. Some of the drugs they said they use most commonly to treat pain in laminitic horses include gabapentin, tramadol, acepromazine, acetaminophen, and NSAIDs such as phenylbutazone (Bute).

Attendees discussed ketamine bolus administration, but the risk of laminitic horses falling down had many veterinarians nervous about trying this drug. Bidwell and Sellon encouraged veterinarians to consider morphine. Subcutaneous

administration of butorphanol (a κ -agonist opioid) is another option, and a new study shows that subcutaneous butorphanol administered at 0.1 mg/kg body weight lasts longer than intravenous or intramuscular administration, said Sellon.

The panel strongly dissuaded the practice of "stacking NSAIDs," in which veterinarians administer more than one NSAID at the same time. And attendees universally voted dimethyl sulfoxide (DMSO) "off the island" and deemed it ineffective in laminitis patients.

The conversation quickly moved forward to address methadone, a μ -agonist-like morphine, as an economical analgesic option, particularly for laminitic pregnant mares.

Lidocaine patches taped or glued to horses' fetlocks also earned accolades. Wrapping up, Bidwell and Sellon broached topical ketamine's potential benefits for laminitic horses that underwent hoof wall resection.

They also briefly discussed other painful conditions, such as septic (infected) joints in foals, back pain, osteoarthritis, and castration. To read about the entire discussion, see TheHorse.com/37088.

By Dr. Stacey Oke

Veterinarians: Always Perform Post-Mortem Exams on Aborted Fetuses

Studies report that 8-19% of equine pregnancies result in abortion. While not pleasant to think about, a post-mortem examination is crucial to determine what caused the abortion; confirming disease (if there is one to blame) is the catalyst for taking appropriate biosecurity measures to halt its spread.

Dr. Luke Bass, a field service veterinarian at Colorado State University's Veterinary Teaching Hospital, in Fort Collins, reviewed the steps practitioners should take when performing a post-mortem exam on an aborted fetus.

"There are many causes of abortion, and identifying them could aid in further prevention of subsequent abortions," said Bass.

He described some of the common causes based on four retrospective studies of 7,800 cases:

- The majority (58.5-67.3%, depending on the study) were infectious;
- Noninfectious causes included twinning (5%), placental insufficiencies, umbilical cord problems (torsions making

up 5-60%), congenital abnormalities, and fetal resorption;

- The cause of 17% of abortions was unknown;

- Bacterial placentitis (inflammation of the placenta) was the most common cause of infectious abortion at 21%;

- Viral causes of abortion included equine herpesvirus (EHV)-1 and -4 and equine viral arteritis, with EHV-1 being most common (4%); and

- 13% of bacterial cases were due to leptospirosis.

When the veterinarian arrives to examine an aborted fetus, he or she must decide whether to perform the necropsy on the farm, collect tissue samples and send them to a laboratory, or send the entire fetus to a laboratory. If the veterinarian opts to perform the exam on the farm, he or she should find a well-lit large, flat surface to work on, said Bass, and practice biosecurity measures, wearing protective outerwear until infectious disease has been ruled out.

The veterinarian should first clean, weigh, and examine the placenta for tears, missing sections, inconsistent coloring, exudate (pus), or other abnormalities. Then evaluate the amnion that surrounds the embryo and the umbilical cord, as leptospirosis and mare reproductive loss syndrome, for instance, cause umbilical cord disease, he said.

The practitioner can then move onto the fetus itself, noting its weight, length, body condition, and physical abnormalities. He or she should sample the spleen and stomach contents and collect any tissue for culture, said Bass, remembering to use clean gloves and instruments to avoid contamination and ensure accurate results. Most state diagnostic labs offer an abortion panel, which includes tests for a variety of tissues. After finishing the necropsy, the veterinarian should clean the area and dispose of the body properly.

"Performing a necropsy to diagnose the cause of abortion is very important as well as a relatively simple and straightforward procedure," Bass said. It's worth the \$250-\$300 cost of the procedure and lab submission to make a diagnosis that might help the veterinarian and farm manager prevent further pregnancy losses.

Also, "Necropsies are an educational opportunity for the horse owner to get involved and see certain disease processes that can affect their horse population," he added.

By Alexandra Beckstett

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Which Agents Disrupt Biofilm in Endometritis Cases?

Chronic bacterial endometritis (uterine lining inflammation) in mares is a major source of economic loss to the breeding industry. This condition can be difficult to treat because many times the bacteria form a protective biofilm that antibiotics have trouble penetrating. Colorado State University researchers wondered whether antibiotic alternatives would do a better job getting through, so they pitted them against various uterine pathogens. Dr. Kristen Loncar, of CSU's Equine Reproduction Laboratory, in Fort Collins, presented their results.

She and colleagues produced an in vitro (in the lab) biofilm from *Streptococcus equi* subspecies *zooepidemicus*, *Escherichia coli*, *Pseudomonas aeruginosa*, and *Klebsiella pneumonia* isolates of mares with endometritis. They tested nine agents' ability to disrupt each species at recommended doses when challenged for six hours and found that:

- Chelating agent Tris-EDTA, hydrogen peroxide, N-acetylcysteine, dimethyl sulfoxide (DMSO), and the antimicrobial peptide mimic Ceragyn significantly degraded *E. coli* biofilm and also significantly reduced bacterial load.

- Ceragyn and DMSO reduced *K. pneumonia* biofilm mass. These agents and hydrogen peroxide significantly reduced bacterial load.

- Hydrogen peroxide and Ceragyn sig-

nificantly reduced half of the *P. aeruginosa* isolates' biofilm. N-acetylcysteine significantly reduced its bacterial load.

- All agents except ozone significantly disrupted and reduced bacterial load of *S. zooepidemicus*.

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• Hypochlorous agents Vetricyn and OmniPhase were only effective against *S. zooepidemicus*.

“No single nonantibiotic agent reliably disrupts biofilm in all bacteria species tested,” Loncar said, adding that Ceragyn and DMSO were the most effective.

Therefore, she said, “It’s very important to test and identify the bacteria species prior to treatment to determine which treatments will be most effective.” *By Alexandra Beckstett*

Gait Analysis Sensor Placement Crucial

Inertial sensor systems give veterinarians a way to collect objective lameness data when they’re conducting research and to record subtle movement abnormalities when they’re assessing difficult-to-pinpoint and/or multiple-limb lamenesses in patients. Ideally, veterinarians and assistants place wireless sensors consistently in specified locations. But, because humans are not machines, there can be some slight variation in that application. One research group wanted to see if the system remained accurate when sensor locations were altered.

Dr. Valerie Moorman and colleagues at Colorado State University’s Orthopaedic Research Center, in the College of Veterinary Medicine and Biomedical Sciences’ Department of Clinical Sciences, looked at the effects of changing two sensor placements ever so slightly.

The team hypothesized that shifting the position of the right fore pastern sensor would not significantly affect the system’s



COURTESY DR. VALERIE MOORMAN

While it doesn’t mimic a horse trotting over ground, work on a treadmill helps ensure consistent speed and data collection

output, but that moving the pelvic sensor would. They examined 12 horses trotting on a high-speed treadmill, which, while it does not exactly mimic a horse trotting over ground, does help ensure consistent speed and data collection between trials. On each horse the team tested the right forelimb sensor in its recommended spot (dorsal midline) and then 2 centimeters medially (toward the center of the horse’s body) and 2 centimeters laterally (toward the outside). In another session they tested the pelvic sensor in five locations: in its recommended midline position, 2 centimeters to the right and left of midline, 2 centimeters cranially (toward the head), and 2 centimeters caudally (toward the tail).

Moorman said the researchers saw lameness in 11 forelimbs: nine in the right, two in the left, with a median lameness of 1 out of 5, with 5 being most severe. They saw lameness in 20 hind limbs, with a median lameness 1.25 out of 5. They didn’t notice any significant differences with the right forelimb sensor measurements, but pelvic sensor location significantly affected their measurements.

In the end, the team found a sensor position change of 2 centimeters could result in the sensor inaccurately diagnosing hind-limb lameness, so placement of this sensor must be anatomically accurate. Moorman expressed that repeating the pelvic sensor testing with a 1-centimeter difference might yield different results.

By Stephanie L. Church

Sesamoiditis Associated with Suspensory Branch Changes

Severe sesamoiditis (inflammation of the sesamoid bones at the back of the fetlock) can predispose a horse to suspensory ligament injuries. Dr. Sarah Plevin (Florida Equine Veterinary Associates) wondered whether early detection of significant sesamoiditis and suspensory ligament branch changes could indicate likelihood of suspensory ligament injury. She performed X-ray and ultrasound exams on 50 yearlings at a Thoroughbred training facility prior to the start of their racing careers and observed them for signs of suspensory branch injury as training progressed. She found a significant relationship between severe sesamoiditis and suspensory branch changes, Plevin said, adding that veterinarians can use this information to identify at-risk horses and manage them appropriately.

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Scientists Can Count Equine Parasites with a Cell Phone

Researchers have developed a fast, easy, and on-site way to perform fecal egg counts for deworming programs: Collect the sample and let your cell phone do the counting. Dr. Paul Slusarewicz of MEP Equine Solutions said he and colleagues identified a universal egg marker present on all parasite eggs that would allow software to detect eggs amidst the rest of the debris in a sample. They also determined that the software can distinguish between different types of parasite eggs. The team is carrying out full validation studies and finalizing the system—Parasight—before it becomes commercially available in late 2016.

A Stall-Side Test for Confirming Infection in Synovial Structures

Confirming joint infection (which comes with a mortality rate of 10-50%) can be costly and time-consuming. Veterinarians have been exploring a speedier approach, looking at serum amyloid A (SAA) levels the body produces in response to pro-inflammatory mediators. Dr. Florent David of the Mid-Atlantic Equine Medical Center recently tested synovial fluid samples from both inflamed, septic (infected) joints and inflamed, non-septic joints using an SAA stall-side test (EquiCheck) and the laboratory ELISA test for comparison. He found that both tests were very reliable for detecting synovial structure infection. David said the stall-side test can help practitioners start treatment while awaiting definitive laboratory results, or it can serve to initiate immediate referral to a facility for treatment.

Researchers Review *Klebsiella Pneumonia*

Klebsiella spp are a common cause of bacterial pneumonia, but cases are not well described in the literature. Dr. Krista Estell of the University of California, Davis, and colleagues conducted a retrospective study of 46 horses diagnosed with *Klebsiella pneumonia* over 20 years. They found that 47% of the isolates were multidrug resistant, but that the antibiotic amikacin was effective in killing the bacteria. The survival rate was 70%, and horses that developed laminitis and/or hemorrhagic nasal discharge were more likely to die. Ultimately, the team determined that veterinarians should consider pneumonia caused by *Klebsiella spp* as a differential diagnosis for horses with

hemorrhagic nasal discharge. Because they observed multidrug resistance, they urged practitioners to determine which medications the bacteria are sensitive to prior to beginning treatment.

EPM-Causing Parasites Ubiquitous in U.S. Horses

Researchers at UC Davis recently looked at the seroprevalence (confirms presence of antibodies) of EPM-causing parasites *Sarcocystis neurona* and *Neospora hughesi* among 5,250 horses in 18 states. Of those, 79% tested positive for *S. neurona*; 34% tested positive for *N. hughesi*; 31% tested positive for both; and 18% tested negative for both. While seroprevalence was slightly less likely among horses in the Western region, distribution was evenly spread across the United States.

Accuracy of Lower Hock Injections

Veterinarians use joint injections to diagnose and/or treat osteoarthritis, but the injection is only effective if accurate. Dr. Kathryn Seabaugh of the University of Georgia recently evaluated practitioners' accuracy when injecting lower hock joints and found that they successfully injected the tarsometatarsal (TMT) joint nearly 100% of the time whereas they hit their target 46% of the time in the distal intertarsal (DIT) joint. As a result, she recommended veterinarians use radiographs to ensure proper needle placement before injecting the DIT joint.

Is Equine Coronavirus Prevalent in Nasal Secretions?

Dr. Nicola Pusterla of the University of California, Davis, and colleagues evaluated whether equine coronavirus (ECoV, a pathogen that causes gastrointestinal illness), which can be detected in infected horses' feces, can colonize horses' respiratory tracts and be isolated from their nasal secretions. They found low detection rates in nasal secretions from horses with fever and signs of respiratory disease. "The testing for ECoV should be restricted to feces from horses with fever, lethargy, anorexia, colic, and diarrhea and not necessarily include horses with upper respiratory tract signs," he said.

Premies' Performance Prognosis

Some premature foals are born with incomplete ossification (cartilage hasn't completely hardened into bone) of their cuboidal bones. Dr. Lillian M.B. Haywood of Rood & Riddle Equine Hospital sought to determine whether these foals could become successful racehorses. Based on her results, foals with a shorter gestation length and incomplete cuboidal bone ossification were less likely to race and earned less than their maternal siblings. However, she said, with proper management and radiographs to monitor ossification, these foals can still have successful athletic careers. **BH**

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