

# AAEP Focus on Horse Health News

## *Highlights of horse health news from the annual convention of the American Association of Equine Practitioners*

**T**he annual convention of the American Association of Equine Practitioners has hundreds of educational presentations, from in-depth lectures to roundtable topics to highlights of news and research. We have gleaned some of the best information for Thoroughbred breeders and owners from the 2007 convention to help you breed, raise, and train healthier horses.

### **HOW IMPORTANT IS THAT AIRWAY EXAM GRADE?**

The airways of many breeds of horses, particularly Thoroughbreds, are evaluated

via an endoscope and graded before a sale. The intent is to identify horses whose airways might have problems that could limit the horses' performance at maximal exercise, so buyers can consider this in their purchasing decisions. A study investigating the exam results and later racing performance of 2,954 Thoroughbred yearlings was presented by Dr. Scott Pierce of Rood & Riddle Equine Hospital near Lexington, in an effort to answer the question of just how significant airway grades are.

The exam takes only one to two minutes, and it evaluates arytenoid cartilage function (these cartilages should be able

to abduct, or move completely out of the airway to allow maximum airflow) on a scale of 1-4. Epiglottises are also evaluated; a short or otherwise abnormal epiglottis can contribute to dorsal displacement of the soft palate, which can also obstruct airflow. Following are the grading scales Pierce used to evaluate all study horses between 1998 and 2001, and the results.

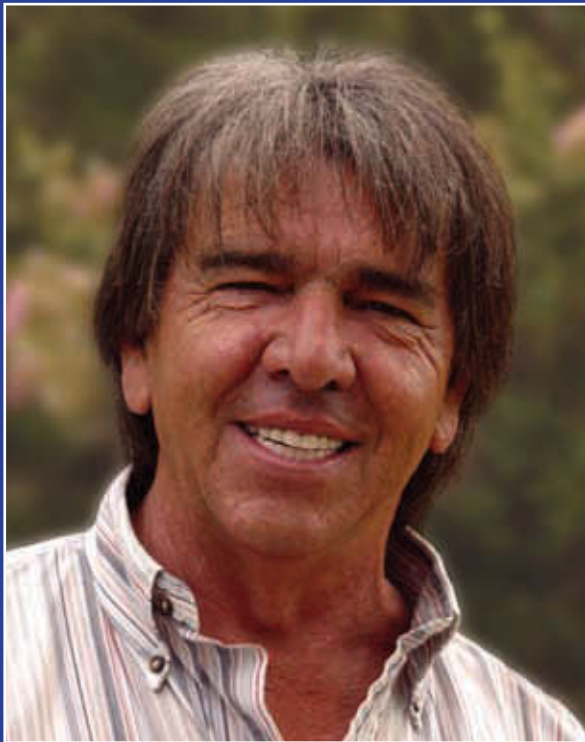
#### **Arytenoid function:**

- Grade 1: Synchronous movement, symmetrical cartilages; maximal abduction easily achieved. 19% of horses (571) were in this category.
- Grade 2a: Mildly asynchronous,



An exam of a Thoroughbred's airway takes only one to two minutes

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mildly asymmetrical, maximal abduction easily achieved (70%, 2,068 horses).

- Grade 2b: Asynchronous, asymmetrical, maximum abduction with difficulty (9%, 260

horses).

- Grade 3: Asynchronous, asymmetrical, limited arytenoid movement. Full abduction is usually not achieved and especially is not maintained (2%, 55 horses).

- Grade 4: No arytenoid movement, no abduction. No horses were grade 4, but Pierce noted that most of these horses would not be offered for sale, as they are usually withdrawn.

### Epiglottis Structure:

- Grade 0: Normal epiglottis with good thickness, length, and definition with normally serrated edges. 81% of horses had normal epiglottises.

- Grade 1: Slightly flaccid, with adequate length and texture, but slightly thinner than normal and without serrated edges (14% of horses).

- Grade 2: Mildly flaccid, with adequate length, thinner than normal, curled edges and no dorsal vasculature (4% of horses).

- Grade 3: More severe, moderately flaccid, very thin, and bent easily (1% of horses).

- Grade 4: Severely flaccid, extremely thin, markedly short, and bent easily (0 horses).

Race records for the 2-, 3-, and 4-year-old years were collected and analyzed in context of the throat exam findings. Pierce reported no difference in the number of starts, earnings per start, or total earnings of horses with grade 1 vs. grade 2a arytenoid function at 2, 3, or 4 years of age. Grade 2b horses had significantly lower total earnings per year at 2 and 4 years of age than grades 1 or 2a, and they had almost significantly lower earnings at grade 3, but a few big winners in this group kept the numbers at this age from being significant. Grade 3 horses had fewer starts and lower earnings than grades 1, 2a, and 2b.

Forty-three percent of horses with grade 3 arytenoid function went unraced, compared to 15% of grade 2b, 16% of grade 2, and 13% of grade 1.

Horses with epiglottis structure grades of 0-2 all performed about the same, while those with grades 3 and 4 had significantly decreased earnings at ages 2 and 4.

“So what do I tell clients?” Pierce asked. “I tell them grades 1 and 2a arytenoids function are no problem. For grade 2b, there’s something there. They don’t perform as good as the 1s and 2as; however, if you think the horse is really special, I would buy him anyway. I can’t condemn all of these horses. Grade 3s are bad.

“For epiglottis structure, grades 0-2 are no problem, but I can’t recommend horses

with higher grades or a really flaccid or short epiglottis,” he concluded.

## RISK FACTORS FOR GASTRIC ULCERS IN THOROUGHBREDS

Up to 86% of Australian Thoroughbred racehorses have been reported to have gastric ulcers. Many factors can contribute to ulcers, and researchers at Murdoch University set out to determine which ones were the most significant for this population. Dr. Guy Lester, associate professor of large animal medicine at Murdoch University, presented the study results at the AAEP Convention.

This extensive study evaluated 191 variables affecting 402 horses with 37 trainers in several locations across Western Australia. Thirty-three percent of the horses were found to have moderate or severe gastric ulceration (defined as a score of 2-3 on an ulcer severity scale of 0-3). Here’s what the researchers found:

### Factors increasing ulcer risk:

- Cribbing/windsucking—this was the most significant risk factor at 7.6 times higher risk. Whether cribbing might be a cause or an effect of ulcers is unclear. Other stereotypic (continuous, repetitive, and serving no purpose) behaviors were also correlated with higher ulcer risk.

- Location of training—training in an urban environment conferred a greater risk of ulceration (3.9 times higher risk), but it was not retained in the final model. This indicated that it was factors common to this training environment rather than simply training in the city.

- Time in training—ulcer risk increased by a factor of 1.1 for every week in work, independent of the total time a horse spent on the property.

- Body condition maintenance—horses that had trouble maintaining weight were 3.4 times more likely to have ulcers. This factor was also correlated to weeks in work.

- Having a radio on in the barn—talk radio was correlated with a 3.6-fold increase in ulcer risk, while music radio increased risk 2.8-fold (this statistic brought chuckles from the audience). Lester noted that radio could be a surrogate factor for a more urban setting (known to increase ulcer risk), and that race radio with constant yelling of race status might, indeed, be more stressful to horses stalled nearby.

### Factors decreasing ulcer risk:

- Training on the property where the horse was housed—3.3 times lower risk.

- Turnout with other horses—3.3 times lower risk.

### Additional observations:

- Ulcer prevalence varied widely by region, but management within those regions likely had more of an impact.

- Some trainers had no horses with ulcers, while others had ulcers in nearly every horse in the barn.

• Horses that were aggressive toward people seemed less likely to have ulcers. “Maybe they know how to manage their stress—they just let it fly,” said Lester with a smile.

• Failing to race to expectation was highly significant, but was not used in the final model. “Trainers are quite perceptive in identifying clinically affected horses and not racing them,” he noted.

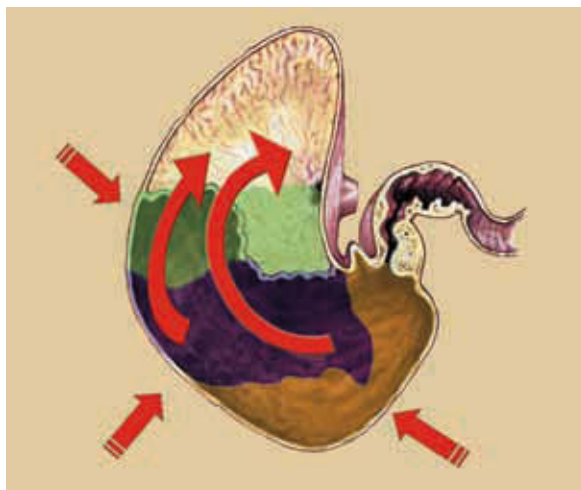
• Diet did not have much of an impact, but feeding practices didn’t vary a great deal.

Gastric ulceration “is a multifactorial disease, and elimination of a single factor may fail to impact disease prevalence,” Lester concluded. “Don’t just go turn the radio off; it’s more complex than that. Variations in the way individuals handle stress and ulceration make it tough to make consistent recommendations.”

### LAMENESS STUDIES

In the Kester News Hour portion of the AAEP Convention, Dr. Scott Palmer discussed several innovative studies centered around lameness. Following are briefs on those studies.

**Stem Cells:** A study published in *Veterinary Surgery* in 2007 evaluated fat (adipose) tissue-derived stem cells (ASC) in an



The red arrows show the proposed way by which exercise in the horse causes a change in pH in the upper portion of the stomach; this increased acidity can lead to gastric ulcers

attempt to discover whether these stem cells are as effective as those harvested from bone marrow (MSC). “(Adipose-derived stem cells) are capable of adipogenic (fat-producing) and osteogenic (bone-producing) differentiation, and their expansion characteristics are similar to those of other species,” Palmer reported. “But osteogenic induction of ASC is slower than that of MSC.”

A second study published in the *Jour-*

*nal of Orthopedic Research* found that arthroscopic scores for MSC-implanted cartilage defects were significantly better than controls at 30 days post-treatment, but they were no better in the long term (at eight months).

“This field is relatively young, but holds promise,” Palmer summarized. “It’s important to balance our expectations with the scientific knowledge we have available. Our clinical expectations have outpaced our scientific knowledge at this point.” He also noted that stem cells derived from skin tissue might hold promise for equine use.

**Coffin Joint Medication Success:** An *Equine Veterinary Journal* study found that polysulfated glycosaminoglycan (PSGAG, i.e., Adequan) injected into the coffin joint

for treatment of arthritis had a 76% success rate one year after treatment based on owner surveys, compared to a 46% success rate for methylprednisolone acetate (MPA, i.e., Depo-Medrol).

“But in this study it’s not possible to make a direct comparison between these two medications because if horses didn’t resolve with MPA treatment, they were later treated with the Adequan,” cautioned Palmer. The exercise recommendations for

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the two treatments were also different, introducing still another variable. Additional findings were that dressage horses enjoyed better results than jumpers, and, in general, horses did better if they were older than 10 years, had lameness of less than three months' duration, or had unilateral lameness (in one front or hind foot only).

**Interleukin-1 Receptor Antagonist Protein:** This relatively new treatment did well in a study of arthritis published in the *American Journal of Veterinary Research*. Treated horses showed a significant im-

provement in clinical lameness and a decrease in synovial membrane hyperplasia (thickening of the joint lining due to inflammation) compared with controls. They also had no adverse side effects and showed a trend toward decreased cartilage fibrillation (softening and grooving of joint surface cartilage).

**Interpreting Joint Fluids:** When is a horse's joint infected? Usually a veterinarian looks for levels of total protein, neutrophil (a type of white blood cell) percentage, and total nucleated leukocyte (white blood cell) count in the joint fluid to be increased with infection, but a *Veterinary Surgery* study found that injection of plain old saline or amikacin antibiotic both

resulted in temporary increases in all of these values, despite sepsis (infection) not actually being present.

"Reactive synovitis from injections can confuse interpretation of synovial values," explained Palmer. "Some horses had increases in synovial fluid values that might be interpreted as sepsis even though it wasn't present. But the potential for sepsis shouldn't be ignored; veterinarians must be careful to interpret synovial values in the context of culture and sensitivity test results, and the degree of lameness. Horses that have a mild reactive synovitis are generally sound, while horses with infection are usually quite lame."

**Nutraceuticals for Lameness:** Palmer reported on several nutraceutical studies, including an equine study of avocado and soybean extract (published in the *American Journal of Veterinary Research*) found that it didn't improve lameness caused by experimentally induced arthritis, but it did significantly reduce synovial hemorrhage (bleeding) and the severity of the articular cartilage erosion. "It doesn't provide a lot of analgesia, but it certainly can have a disease-modifying role in management of these diseases," he noted.

Racing surface researchers, veterinarians, and others are always on the lookout for ways to minimize catastrophic injuries (severe injuries necessitating humane euthanasia) on racetracks. Palmer discussed a study published in *Clinical Techniques in Equine Practice* regarding track factors that might influence injuries. Turf tracks had one-third the risk of breakdowns of dirt tracks with fast conditions, and muddy dirt tracks had a significantly lower rate of breakdown compared to fast tracks. The injury rate per 1,000 starters was found to be 3.5-7.3, and the rate of catastrophic injuries was found to be 0.99-1.85 (or approximately one in 1,000 starts). The metacarpophalangeal joint (fetlock) was injured in 12.3% of catastrophic injuries.

"Transitions may be a factor; when a track is dry or under a lot of rain, it's stable, but when the rain first soaks the track or as the track dries, inconsistencies can increase the risk of injury," commented Palmer.

**General Anesthesia Risks:** "Nobody likes to talk about it, but there are fatalities related to general anesthesia," said Palmer. A study published in *Veterinary Anaesthesia and Analgesia* found that 0.12% of 961 horses (21 horses) undergoing procedures under general anesthesia died due to factors directly related to anesthesia, including cardiac arrest, fractures during recovery, or neuropathy/myopathy. That rate went up to 42 (0.24%) when horses were euthanized or dying within seven days after anesthesia were included. This rate is lower than previously reported rates, noted Palmer.

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**Cribbing and other stereotypic behaviors are correlated with higher ulcer risk**

in combination with reduced anesthetic time, emergencies of shorter duration between diagnosis and surgery, and adequate preoperative examination appear to minimize the risks associated with general anesthesia in horses," noted the authors.

#### **MEDICINE/INFECTIOUS DISEASE**

Also in the Kester News Hour portion of the AAEP Convention were topics related to infectious diseases and internal medicine presented by Dr. Bonnie Rush.

**Methicillin-Resistant Staphylococcus Aureus:** "MRSA often manifests as flesh-eating disease or septicemia (infection of the blood), and it caused 90,000 cases of invasive infection and 18,650 human deaths in the United States in 2007," reported Rush. "Its death rate exceeds that of HIV. In the past year it's become more community-associated than hospital-associated, with community-associated outbreaks causing 32 infections and 6.2 deaths per year. About 0.8-3% of the general population carries it in their nasal passages without showing disease. Based on one study, the disease has an 83% survival rate in horses, but the length of the hospital stay and costs are extensive."

Zoonotic MRSA infection—which jumps from humans to animals or vice versa—was first reported by the University of Guelph in 2004. Horse-to-human transmission occurs readily (dogs can carry it, too), and a study published in the *Canadian Veterinary Journal* found that 2% of horses admitted to veterinary hospitals carry the bug. Penicillin and sulfa antibiotic use are risk factors for horses, as is admission to a neonatal intensive care unit and previous colonization of the horse on the horse's farm. Surgery reduced the risk, possibly due to the fact that most surgical

cases are elective and most cases get fewer antibiotics beforehand than internal medicine cases.

Attendees got quite a shock from Rush's report of the results of a study conducted on veterinarians attending last year's AAEP convention. Nasal swabs were collected at an exhibit booth on 257 veterinarians from 12 countries and cultured. "Recall that the general population's carrier rate is 0.8-3%, but 10.1% of us are carrying MRSA and 62% of the carriers were ambulatory practice veterinarians," she stated. "The most common strain was USA500/CRSA5, which is normally uncommon in humans (but common in horses). Hand washing between cases and farms reduces the likelihood that someone will carry MRSA, so this is the recommendation for prevention at day cares, hospitals—everywhere."

**Do Foals Get Rhodococcus From Their Dams?:** Rush discussed an *American Journal of Veterinary Research* study of 171 mare-foal pairs, 53 of which (31%) included a foal affected with *Rhodococcus equi* pneumonia, that attempted to answer the question of whether foals get *R. equi* from their dams. Researchers found virulent *R. equi* at least once in every mare during the study period, and fecal concentrations of the bacterium were not significantly different between dams of sick and healthy foals. Thus foals might, indeed, get *R. equi* from their dams, but the ones that get sick don't appear to get any more of a challenge from their dams than those that don't.

**Treating *R. equi* Infection With Gallium Maltolate:** Luckily, one substance might help combat foal susceptibility to *R. equi*—gallium maltolate. Rush explained that it is an iron mimic that exploits the iron dependency of the *R. equi* bacterium to kill it. It's highly bioavailable and has minimal side effects in humans, and pro-

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phylactic (protective) administration reduces the severity of *R. equi* infection in mice. Side effects were minimal or nonexistent in an *AJVR* study.

Treatments for *R. equi* include immunostimulation and prophylaxis with gallium malto-late to kill the bacteria, she explained. "It will be interesting to see which strategy is more effective," she commented.

**Cisplatin for Skin Cancer:** Skin tumors are often aggravating to veterinarians and owners due to their tendency to recur. But

a study published in the *Journal of the American Veterinary Medical Association* found that when cisplatin (in sesame oil emulsion) is injected into a solid tumor, the cure rate at two years after treatment was 93%, which Rush described as "astounding." One factor contributing to failure of the first treatment included large tumor size and residual tumor cells left in the area after debulking (removing) the lesion.

Rush also noted that a presentation to be given later at the convention would discuss the use of biodegradable cisplatin beads, which result in an 83% success rate at two years. "There's obviously at least two good ways of doing this, and I think it's really an

exciting way to treat these lesions," Rush commented.

**Cervical Vertebral Myelopathy:** "Most horses with CVM (narrowing of the spinal canal and compression of the spinal cord) are thought to be 3 years old or less, but a study published in the *Journal of Veterinary Internal Medicine* on 22 horses found a mean (average) age of 8.4 years," said Rush. Males were most often affected, and Warmbloods, Quarter Horses, and Tennessee Walking Horses were overrepresented.

"In older horses with spinal ataxia (incoordination), the neck may be the problem due to bony restructuring or degenerative disease," she noted. **U**

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