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PASTURE ANALYSIS

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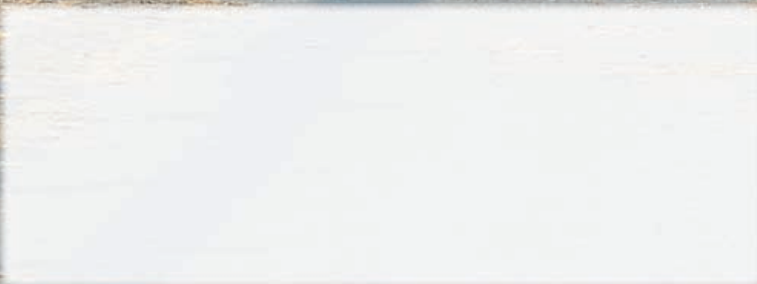
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Advancements in Understanding Airway Diseases

■ Researchers are making strides in understanding airway diseases and what helps (or doesn't help) control them. "Inflammatory airway disease (IAD) is the second most common cause of loss of use in young racing Thoroughbreds," noted Laurent Couetil, DVM, PhD, Dipl. ACVIM, professor of large animal medicine and equine sports medicine director at Purdue University, during a presentation at the 2011 American College of Veterinary Internal Medicine Forum, held June 15-18 in Denver, Colo.

The disease is performance limiting due to excess mucus accumulation in the trachea, which reduces the horse's oxygen availability. In an indoor environment inhaled irritants, allergens, and ammonia fumes from urine breakdown can trigger airway inflammation in horses.

Couetil described a recent study in which a team evaluated 20 healthy Thoroughbreds 16-24 months old with no history of racing or IAD. Within three days of arrival at a race training barn, 55% had some degree of IAD,



STAFF PHOTO

Inhaled irritants, such as dust, can lead to IAD in stalled horses.

and by Day 28, only two remained IAD-free. The researchers found that respirable dust in the horses' breathing zones and ammonia accumulation in the stalls led to inflammatory airway changes. The team placed HEPA filtration units over half the horses' stalls, however they were not effective in removing dust or ammonia.

Couetil discussed a second study that compared the efficacy of two handheld devices (Aerohippus and Equine Haler) used to administer albuterol (an aerosol bronchodilator designed to relax the muscles around the airway, improving lung function) to horses with recurrent airway obstruction (RAO). Couetil explained that aerosolized treatment of RAO minimizes side effects seen with systemic administration of bronchodilators (such as laminitis). There was no significant difference between how the two bronchodilators administered the albuterol, Couetil said; however, response to treatment was more consistent with the Aerohippus. Couetil said owners and veterinarians can achieve effective results when treating RAO-affected horses using either device. He added that an average dose of 560 micrograms of albuterol was required for maximum effect.—Nancy S. Loving, DVM

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Respiratory Disease Surveillance Study

■ Two years of results are in from an ongoing study at the University of California, Davis (UC Davis), that examines the prevalence of respiratory pathogens in U.S.-based horses.

Veterinarians in 23 states collected blood and nasal secretions from equids with infectious upper respiratory signs (i.e., fever, depression, nasal discharge, coughing, or anorexia) and filled out a questionnaire; the samples and questions were then sent to UC Davis.

RESPIRATORY PATHOGEN PREVALENCE

Of the 761 horses with clinical signs from March 2008 to February 2010, 201 horses tested positive for one or more of four common respiratory pathogens: equine herpesvirus, types 1 and 4 (EHV-1 and EHV-4, respectively), equine influenza virus (EIV), and *Streptococcus equi* subsp. *equi* (strangles). EHV-4 had the highest detection rate (82 cases), followed by EIV (60 cases), strangles (49 cases), and EHV-1 (23 cases). The remaining 560 horses did not test positive for any of the aforementioned pathogens.

The team found that confirmed cases were typically age-related: The largest number of EHV-4 cases were observed in horses less than a year of age; EIV in horses 1 to 5 years old; strangles in horses aged 6 to 10 years; and EHV-1 in horses 11 to 20 years of age.

"The results underline the need for continued monitoring, immunization, and also the importance of using and applying basic biosecurity measures," says Nicola Pusterla, DVM, PhD, Dipl. ACVIM, associate professor in the Department of Medicine and Epidemiology at UC Davis and lead author on the study.

"We (also want) to look at the potential impact of less well-characterized respiratory pathogens such as equine rhinitis viruses, adenoviruses, and the gamma-herpesviruses (EHV-2/-5)," said Pusterla.

—Nancy Zacks

For more on the study, see TheHorse.com/18585.

NDM-1: A New Superbug?

■ Move over, MRSA. There's a new "superbug" in town and, although it hasn't yet infected horses, it isn't to be taken lightly.

New Delhi metallo-beta-lactamase-1 (NDM-1) is an enzyme capable of neutralizing antibiotics. Researchers have found this enzyme can affect not only most beta-lactam antibiotics (i.e., penicillin), but also some "big-gun" antibiotics (i.e., imipenem) used to treat drug-resistant infections.

Bacteria that produce NDM-1 include members of the *Enterobacteriaceae* family (such as *E. coli*), and these bacteria are likely resistant to multiple antibiotics, as well.

"(The) bacteria continue to thwart our best efforts to contain them and destroy them with antibiotics," wrote Robert C. Moellering Jr., MD, from Harvard Medical School in Boston, Mass.

Although Moellering said that early experience with NDM-1 has shown the "properties necessary to turn organisms that contain it into superbugs," equine infectious disease authorities aren't yet as concerned.

"I'm not too worried about NDM-1 in horses at the moment because it does not seem to have established a good foothold in the general human population," explained Scott Weese, DVM, DVSc, Dipl. ACVIM, associate professor in the Department of Pathobiology at the University of Guelph's Ontario Veterinary College. "The big concern is that *Enterobacteriaceae* are so broad and common, if it can establish itself in the gut bacterial population of healthy people or animals, it will be hard to get rid of. Whether that will happen or not isn't yet clear."—Stacey Oke, DVM, MSc