U of M Horse Newsletter

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Research Update - Social Separation & Training

The intensity with which a horse responds to separation from its group and subsequently to being alone is relevant for both horse and handler safety. Identification of training methods that may reduce responses to separation would be useful in practice. The objective of this research, conducted at the Swedish University of Agricultural Science, was to investigate whether the initial presence of a familiar companion horse modifies responses to separation from the group, lowers stress levels (as measured by heart rate) and increases training efficiency. Researchers hypothesized that habituation to separation proceeds more quickly if the horse is first trained with a companion, and heart rate is lower when the horse is subsequently trained alone, compared to control horses trained individually from the start.

Young mares, kept in groups of 4, were exposed to social separation: 2 horses of the group were trained singly and the remaining 2 horses were trained first with a companion and then alone. The training comprised of three steps whereby distance from the group was gradually increased. The final learning criterion was met when a horse fed calmly alone inside a test arena. Horses that were trained in a pair had to succeed in the final learning criterion (feding calmly alone inside a test arena) together before they repeated the steps alone. Feeding behavior and heart rate were recorded.

There were no significant differences between singly trained mare and mares trained in pairs, indicating that the initial pair-training did not reduce stress responses in pair trained horses. However, heart rate was significantly lower when horses were trained in pairs compared to when the same horses were subsequently trained alone.

It may not be efficient to habituate naïve young horses to social separation initially with a partner as these horses appear to have to relearn being in the test situation alone when switching to the individual training method.

Summarized by Krishona Martinson, PhD, Univ. of Minn.

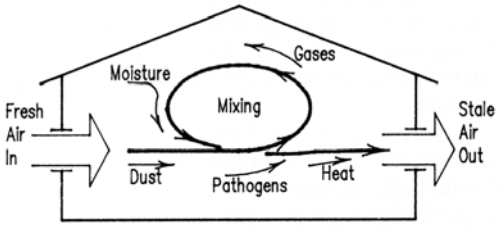
Ventilation Systems for Horse Barns - Part I

This is the first in a three part series discussing ventilation systems for horse barns.

Ventilation or air exchange is needed in horse barns or buildings to control and remove moisture, prevent condensation on surfaces and maintain acceptable air quality by removing carbon dioxide, ammonia, hydrogen sulfide, dust, airborne pathogens and fumes during cold weather and to remove heat and hold down excessively high temperatures preventing heat stress in warm/hot conditions.

This exchange of air or ventilation can be accomplished with a natural (non-mechanical) system that is driven by buoyancy (hot air rises) and wind forces or by a mechanical ventilation system that uses electrical exhaust fans along with planned designed inlet openings.

By: Larry Jacobson, PhD and Chuck Clanton, PhD, Univ. of Minn.



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Upcoming Events

Research Collaborators Needed!

Is your laminitic horse/pony confined to a drylot? Is the drylot weedy? If you answered "yes" to these questions, please contact Krishona at 612-625-6776 or krishona@umn.edu

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Neurologic disease in horses: Part II

By: Carrie Finno, DVM, PhD, Univ. of Minn.

Equine Protozoal Myeloencepahalitis (EPM) is one of the 4 major causes of spinal ataxia in the horse.

EPM is caused by protozoan parasites. There are two types of protozoa that can cause EPM in the horse, *Sarcocystis neurona* and *Neospora hughesi.* EPM is most commonly caused by *S. neurona* (>90% of cases). The definitive host for *S. neurona* is the opossum and horses become infected from ingesting feed that has been contaminated with feces from opossums. The chances of your horse becoming infected with EPM due to *S. neurona* depend on a variety of factors:

- Geographic region of the country: in areas with more opossums, your horse has a greater chance of becoming infected
- Immune system of your horse: immune-compromised horses may be more susceptible to acquiring EPM

Additionally, your horse's age and breed (Thoroughbred and Warmbloods are more likely than Quarter horses) may play a role in determining his susceptibility.

Clinical signs of EPM vary widely. Most horses with EPM show signs very similar to horses with sensory ataxia. Horses with EPM may demonstrate asymmetric abnormalities. For example, the right hind leg may be more severely affected that the left hind leg. This asymmetry is uncommon for other diseases and therefore, this finding may help the veterinarian prioritize diagnostic testing.

There are many tests available to try and diagnose EPM but none of them are perfect. The reason for this is that these tests rely upon antibodies to *S. neurona* or *N. hughesi.* None of the available tests actually test for the parasite. Therefore, a "positive" blood test in your horse means either your horse is infected with EPM or your horse was exposed to EPM at some point in their life and now has antibodies.

How do veterinarians tell the difference? The only way to reliably know for sure is to use those same antibody tests in the cerebrospinal fluid (CSF). The CSF is the fluid that surrounds the spinal cord and brain. This fluid is separated from blood by a blood-brain barrier. The purpose of the barrier is to not allow large proteins and other substances into the CSF, thereby protecting the brain and spinal cord from potential toxins. Antibodies are too big to fit across an intact blood-brain barrier. Therefore, if a horse was simply exposed to either *S. neurona* or *N. hughesi*, they shouldn't have any antibodies in the CSF. If, however, the horse is infected with EPM, the parasites live in the brain and spinal cord and therefore, the horse will produce antibodies in these tissues, which will leak out into the CSF and test positive.

Therefore, the next step in testing for EPM is to have a spinal tap performed on the horse. This procedure is generally done under standing sedation and a small amount of fluid is collected the region surrounding the lumbosacral spinal cord.

One caveat to the lumbosacral CSF tap is that there may be some blood that leaks into the needle site as the veterinarian is collecting the CSF. To obtain CSF from an adult horse, the needle is inserted about 4 to 5 inches into the muscle, which may result in some blood contamination. Once CSF is collected, a veterinarian can determine how many red blood cells are present in the sample and if it is necessary to be concerned about a "false positive " due to blood contamination.

An alternative to the lumbosacral tap and possible blood contamination is to have an atlanto-occipital tap performed on the horse. This collection procedure involves injectable anesthesia as it cannot be done safely in a standing horse. The CSF is collected from the site behind the ears, which is only 1.5 to 2 inches into the muscle and thereby minimizes blood contamination. This collection site is not routinely used because it requires anesthesia and carries more risk to the horse.

Since EPM testing is not always straightforward, many owners may elect to try a course of treatment for EPM based on a positive blood test. The problem with this approach is that the course of treatment is very expensive (averages $800/month and at least 2-3 months of treatment should be provided) and, the horse can "relapses" after discontinuation of the drug. The importance of obtaining an accurate diagnosis as cannot be overemphasized. Owners will end up saving money in the long-run if they follow the recommended diagnostic course from the start.

Trauma to the neck or another region of the spine may result in a sensory ataxia with or without weakness that resembles EPM and other neurologic diseases. Cervical x-rays and/or a myelogram may be needed to confirm a neck fracture. In foals, fractures of the thoracic spine may occur and these may be detected on a physical examination and confirmed with x-rays. Many cases of trauma that do not displace the position of the vertebrae may be treated successfully with anti-inflammatories, rest and time.

This concludes our discussion on neurologic disease in horses.