



U of M Horse Newsletter

Providing research-based information to Minnesota Horse Owners

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Research Update: Transportation and Health

Changes in the immune system and risk of respiratory disease in response to travel are well documented in horses. However, information on mucosal immune responses and how quickly changes occur is lacking. The goal of this research, conducted at the University of Florida, was to determine the onset of changes and the mucosal immune response to long distance road transportation.

Three cecally cannulated geldings were tied with their heads elevated and transported for 24 consecutive hours. Nasal flush (NPF), whole blood, cecal fluid, saliva and fecal samples were obtained before, during, immediately after, and five days after transportation.

Transportation resulted in bodyweight losses of 77 pounds despite access to hay and water while in transit, and was not regained by five days post transport. Neutrophils (a type of immune cell) were

elevated from hour 6 of transit through 24 hours after transport and had returned to baseline by 72 hours post-transport. A decline in the number and percentage of white blood cells occurred during transport. However, white blood cells continued to increase five days post-transport. White blood cells in nasal flush samples had returned to baseline by 72 hours post transport. Both salivary and nasal flush samples had recovered to pre-transit values 72 hours post-transit. Fecal measurements of immune function were variable and lacked a clear pattern in response to transport.

Together these data indicate that transport can cause immune function changes. The consequences of these changes may be a predisposing factor for respiratory disease.

Summarized by: Devan Catalano, MS, University of Minnesota

Ask the Expert: When to Blanket a Horse

Question: I'm confused about blanketing my horse during the winter. I grew up with horses happily housed outside and un-blanketed during the winter months. The horses had access to shelter. I'm now boarding my horse and everyone at the barn blankets their horse and thinks I'm crazy not too! The horse do have access to shelter while outside. Can you please give me some advise on blanketing during the winter?

Response: Most horses are blanketed for various reasons (i.e. show schedules) or due to personal preference of the owner. However, blanketing a horse is necessary to reduce the effects of cold or inclement weather when: 1. There is no shelter available during turnout periods and the temperatures drop below 5°F, or the wind chill is below 5°F; 2. There is a

chance the horse will become wet (not usually a problem with snow, but a problem with rain, ice, and/or freezing rain during cold weather); 3. The horse has had its winter coat clipped; 4. The horse is very young or very old; 5. The horse has not been acclimated to the cold (i.e. recently relocated from a southern climate); and/or 6. The horse has a body condition score of 3 or less.

A horse will continue to develop a natural winter coat until December 22 (Winter Solstice), as days are becoming shorter. Horses begin to lose their winter coat, and start forming their summer coat, as the days begin to get longer. Blanketing before December 22 will decrease a horse's natural winter coat.

Author: Marcia Hathaway, PhD, University of Minnesota

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Upcoming Events

The University of Minnesota Extension Horse Team is offering three 6-week online certificate courses, including: Growing and Feeding Horse Hay, Basic Horse Nutrition, and Horse Pasture Establishment and Management.

Courses start the week of January 8, 2018. The cost for each course is \$75 and online registration is required by 11:59 pm on Sunday, January 7, 2018.

To earn a certificate, participants must earn ≥70% on three 10-point multiple choice quizzes and participate in three course discussions. Courses are recommended for adult learners, but are open to everyone, and will not result in college credit.

For more information and to register, click [here](#).

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Winter Care of the Horse: Water and Feed Guidelines

Horses, given the opportunity to acclimate to cold temperatures, often prefer and are better off outdoors during the winter months. However, there are certain water and feeding guidelines that should be followed when caring for horses during cold weather.

Water requirements. Most adult horses weighing 1,000 pounds require a minimum of 10 to 12 gallons of water each day for their basic physiological needs. During winter months, water should be kept between 45 to 65°F to maximize consumption. Previous research indicated that ponies increased their water consumption by approximately 40% each day when the water was warmed above freezing during cold weather. Increasing salt intake will also stimulate a horse to drink more; adult horses should consume one to two ounces of salt per day. Waterers should be cleaned regularly, and clean, fresh water should always be available, regardless of temperature. If using a tank heater to warm water, inspect it carefully for worn wires or other damage, and check the water for electrical sensations or shocks.

When horses consume winter feeds, water requirements may increase. Hay and grain typically contain less than 15% moisture, while in contrast, pastures contains around 85% moisture. There are two common complications resulting from inadequate water consumption during cold weather: decreased feed intake and impaction colic. Even if quality feed is offered, horses will consume less if not drinking enough water. If less feed is consumed, horses might not have enough energy to tolerate cold weather. Fecal contents must maintain adequate moisture levels. If fecal material becomes too dry,

intestinal blockage or impaction may occur. A horse will not develop an impaction in one day, but can over several days to several weeks of inadequate water consumption.

Snow or ice is not an adequate water source for horses. There have been a few scientific studies that show some horses who are acclimated to winter weather conditions can meet their water requirements from snow. However, there are serious health risks associated with snow consumption, including the length of adjustment period as horses learn to ingest snow, the actual water content of the snow, and total water intake. Therefore, some wild horses can receive their water needs from snow, but the risk of gastrointestinal tract problems, colic, and reduced feed intake is significant for domestic horses. The Minnesota Pet and Companion Animal Welfare Act states that snow or ice is not an adequate water source for horses.

Winter feeding. Cold temperatures will increase a horse's energy requirement as the need to maintain core body temperature increases. The temperature below which a horse needs additional energy to maintain body warmth is called the lower critical temperature. The lower critical temperature for a horse is estimated to be 41°F with a summer coat and 18°F with a winter coat (upper critical temperature is estimated at 86°F).

However, the lower critical temperature can be affected by individual horse characteristics. A horse with short hair that is exposed to cold, wet weather will have less tolerance to cold weather compared to a horse with a thick hair coat and fat stores who is acclimated to cold weather. Another factor that can influence lower critical temperature

is the size of the animal. Smaller animals have a greater surface area relative to bodyweight and can lose heat more rapidly than a larger animal. More importantly, cold weather can slow growth because calories are diverted from weight gain to temperature maintenance. To minimize a growth slump during cold weather, young horses should be fed additional calories.

Energy needs for a horse at maintenance increase about 1% for each degree below 18°F. For example, if the temperature is 0°F, a 1,000 pound adult horse at maintenance would need approximately 2 additional pounds of forage daily. It is best to provide the extra energy as forage. Some believe that feeding more grain will help keep a horse warmer. However, not as much heat is produced as a by-product of digestion, absorption, and utilization of grain as is produced from the microbial fermentation of forage.

Most data suggest that the need for other nutrients do not change during cold weather. However, consider feeding loose salt instead of block salt, as horses may not want to lick cold salt blocks during winter months.

During winter months, heavy hair coats can often hide weight loss. Regular body condition scoring is recommended to gauge bodyweight and assess horse health. If a horse starts to lose body condition, increases in feed are recommended. Conversely, if a horse starts gaining excessive body condition, reducing the feed is necessary. Sorting horses by age, body condition, and nutrient requirements makes it easier to feed groups of horses appropriately.

For more information on winter care, click [here](#).

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