Respiratory Health - Managing the Racehorse's Environment

By Heather Smith Thomas

If a horse can't breathe optimally, he can't run as fast or as far. Respiratory health is important for any racehorse, so preventing/minimizing respiratory disease is crucial. This means keeping the horse's environment as dust-free/allergen-free as possible, while also trying to prevent contagious diseases that can affect the respiratory system.

Amy Johnson, DVM, DACVIM (Large Animal Internal Medicine, New Bolton Center in Pennsylvania) says there are several types of respiratory disease. Infectious diseases include viral pneumonia and bacterial pneumonia (infection in the lungs). Non-infectious respiratory disease includes inflammatory airway problems like heaves. We also differentiate between upper respiratory versus lower airway disease (lungs).

VIRAL DISEASES – Some of the most common infectious respiratory diseases are influenza and rhinopneumonitis. "Vaccination is important in prevention. We have good vaccines for influenza and for EHV-1 and EHV-4. All horses should be up to date on these vaccinations, especially if they come into contact with other horses," says Johnson.

There are other viruses for which we don't have very good vaccines. Prevention for those entails minimizing exposure to other horses, which can be difficult when horses are at the track. "It helps, however, if horses don't have nose-to-nose contact with strange horses, and never share water sources," she says.

"In general, respiratory viruses are spread via nasal secretions and transmitted by sneezing, coughing and direct contact--or contact with objects recently touched by an infected horse," she explains. Sometimes human handlers inadvertently serve as the fomite (transmitting object) if a horse coughs on or rubs his nose on a person who then touches another horse.

BACTERIAL DISEASES – Some bacterial infections end up in the lungs and cause a pneumonia that was often termed "shipping fever", since it is common in animals that undergo the stress of a long haul. Strangles, however, is a bacterial infection that causes upper respiratory disease.

"Whether to vaccinate for strangles is controversial, because the vaccine itself can create problems. The occasional side effects of the vaccination can be serious. In rare instances we've seen vaccine-induced cases of strangles, where the horse gets a strangles-type syndrome but it's actually the vaccine organism rather than the natural pathogen," says Johnson.

"The other concern with strangles vaccine is immune-mediated diseases, the worst being purpura hemorrhagica. This usually occurs in horses that already have a high antibody titer against strangles and the vaccine acts as a second exposure that triggers the reaction. The best situation, if a horse has been well vaccinated for strangles or has already had the disease, is to check titer level before re-vaccinating. This entails a blood test to see how high the antibody level is." This vaccine should be discussed with a veterinarian, for that particular horse—to know whether or not it should be vaccinated.

BIOSECURITY - “On a farm, it helps to keep the traveling horses apart from the rest of the home population for 2 weeks after they return, to make sure they are not incubating a virus that might appear 5 to 7 days later,” says Johnson. The horse may seem fine upon arrival, then start showing signs of respiratory disease a week later. Unless he was kept separate he may have infected the at-home horses he came into contact with.

The traveling horse should be kept in another barn or pen, if possible, or at least in a stall at the other end of the barn, or in a pen where he doesn’t have nose-to-nose contact over the fence with other horses for a while. It’s difficult to maintain biosecurity at a racetrack, however.

SHIPPING HORSES – “When hauling, the aspect of traveling that seems to predispose horses to ‘shipping fever’ or bacterial pneumonias is having their head tied up to where they can’t lower the head to clear the secretions and inhaled particles out of the airways. To cough effectively and get rid of these, a horse must be able to put his head down,” says Johnson.

“Researchers have replicated shipping fever simply by tying horses’ heads up in their stalls. It doesn’t require a trailer or traveling. If the head is tied up for a certain period of time the horse can get pneumonia just from not being able to lower the head and clear out the mucous secretions,” she explains.

There is often dust in a trailer or horse van, especially if the horse is fed hay while traveling. If he must be fed during the trip, it’s often best to feed pelleted hay (less dusty) or soak the hay (fed in a hay net) so it won’t be dusty.

Hauling can be stressful, and stress alone can compromise the immune system and make a horse more susceptible to respiratory disease. “When feasible, it helps to give horses a break after a few hours of traveling, and take them out of the trailer. If you can let them graze a little, this not only helps relax them but also gets their head down, to get rid of build-up of respiratory secretions and foreign particles. This may not be possible, however, depending on the trip and where they are going,” says Johnson.

MONITOR – Keep close track of horses’ health, especially after they have been somewhere else —to a race, training facility or another track. “It’s important to detect diseases early—to prevent spread to other horses, and to initiate treatment if necessary,” she says. The earlier you can treat disease, the better response and quicker recovery.

“Take temperatures twice a day. It’s important to know what the horse’s normal temperature is (since some individuals’ resting normal temperature is about 99 degrees, compared to another individual that might have a normal temperature of 100.5), and then be able to detect any rise in temperature. If temperature is a couple degrees above his normal, consult with a veterinarian,” says Johnson.

“If it seems to be a viral infection it might not need treatment except supportive care and non-steroidal anti-inflammatory medication to make the horse feel better and keep eating and drinking. A bacterial infection, however, could be the beginning of a pleuropneumonia or ‘shipping fever’ and if treatment with antibiotics is started early you could hopefully keep it from developing into a severe pneumonia. By contrast if it slips under the radar for a period of time before treatment is begun, the pneumonia may be worse, and harder to treat,” she explains.

PREVENTION – Horses that are minimally stressed and well hydrated, with access to adequate nutrition, are less likely to get sick than a horse that is dehydrated or malnourished or severely stressed. "Whatever you can do to keep your horses as healthy as possible will be a great help. Hydration is one of the most important things for horses that are traveling, because most of them have adequate nutrition," says Johnson.

If weather is hot, dehydration on a long trip can be a factor in risk for respiratory disease. "The mucous secretions become thicker so they are not cleared from the airways as easily. This also predisposes the horse to infections," she says.

HEAVES – Some horses are prone to non-infectious respiratory disease that closes off the airways and impairs breathing. These conditions are most common in horses that are sensitive to dusty hay or straw—particularly airborne particles like endotoxin (part of the cell wall of gram-negative bacteria which frequently exist in hay and straw) in the dust. Symptoms are similar to those of a person with asthma.

"Horses that are prone to these inflammatory airway diseases (recurrent airway obstruction, or heaves) need careful management to minimize the amount of dust inhaled. This is probably accomplished most easily by soaking their hay. Many of these horses have to be on soaked hay, or no hay--fed chopped forage products or a total pelleted ration. This can be especially important when feeding in a trailer or van, where dust from the feed may be blowing around and readily inhaled," says Johnson.

"At the track, if possible have the horse in the best-ventilated section of the barn and use dust-free bedding like shavings. Even if that stall is bedded in shavings, if the stalls next to it are bedded with straw there's not much you can do to keep the horse from breathing dust," she says.

Virginia Buechner-Maxwell, DVM, MS, Diplomate ACVIM, Professor of Large Animal Internal Medicine, Virginia-Maryland Regional College of Veterinary Medicine (Blacksburg, Virginia) says equine heaves is usually seen in middle-aged or older horses. "Horses with heaves experience airway inflammation and broncho-constriction due to an allergy-like reaction to some factor in the environment. In this way, heaves is similar to human asthma, which is a disease caused by an allergy to certain antigens or irritants in a person's environment," she says.

"Most commonly, heavey horses react to factors in the barn environment. Some common causes of heaves include exposure to hay that contains the common mold *Aspergillus fumigatus*. In other cases, pollens seem to initiate the heaves event."

The causative agent is horse-specific. Though there are tests available to assist in defining the allergens that cause reactions, use of tests in horses has not been proven to be consistently beneficial, according to Buechner-Maxwell. "In most cases, the best way to determine what causes a heaves response is trial and error, and to carefully observe what precedes the onset of an event," she explains.

"While heaves is not a curable disease, we can learn how to manage the horse in a way as to minimize exposure to the factors that provoke the disease," she says. The best way to try to control the problem in a certain horse is to identify the things in that horse's environment that exacerbate heaves, and avoid those.

"It is also important to learn the early signs associated with exacerbation of the disease, and react quickly with a change in environment, along with administration of medication when

needed. When affected horses are untreated, persistent inflammation in their lungs primes them to be more reactive to other elements that are found in the barn and pasture environment," she says.

"There may be some primary factors that initiate the heaves event and once the lunge become inflamed, they become more sensitive and reactive, allowing secondary elements to exacerbate the problem; the horse becomes more compromised." For example, a horse might be allergic to a particular mold in hay, and develops an acute episode of heaves. Once the lung is inflamed from that trigger, other things exacerbate it.

"In all cases, the first step is to break the cycle and get a horse into full remission. Horses can appear to be normal but still have smoldering airway inflammation. Residual airway inflammation makes the horse more prone to recurring episodes of heaves because the underlying problem (airway inflammation) has not been resolved. Full remission means the horse is clinically normal and the airway inflammation has resolved. This is the goal of treatment, and maintaining remission is the goal of long-term treatment. If these goals can be attained, many horses with heaves can live long, productive lives and continue an athletic career," Buechner-Maxwell says.

Regarding medications, the two main categories are corticosteroids (that reduce swelling and inflammation) and bronchodilators. "When horses are in remission, and not showing clinical signs, you can often get away with a much lower dose of corticosteroids to control heaves, as opposed to when they are in crisis and having trouble breathing. When they are in crisis, you have to start with higher doses and then wean them down. The goal is to get to the lowest possible dose, and lowest frequency (such as every-other-day treatment), that will still keep the horse comfortable."

Bronchodilators also help, since the inflammation response causes the airways to constrict. "These drugs open the airways, but won't fix the problem. The inflammation is still there; bronchodilators simply relieve symptoms by allowing the horse to breathe more easily. Bronchodilators commonly used are clenbuterol and ipratropium bromide. The latter is similar to atropine, so it could create serious problems if given systemically. Atropine will cause the horse's gut to shut down, and ipratropium would probably do the same. The way we deliver it is through an inhaler or nebulizer and most of it will concentrate in the lung rather than getting into the gut," she explains.

"One of the newer things developed for horses is a nebulizer that is easy to use. There are several available that are handy for putting medication directly into the lungs. If you don't want to run the risk of using systemic corticosteroids, for instance, this is a good way to manage some of the clinical problems with heaves. It is a lot safer. You can use medications that will then concentrate in the lungs rather than giving them orally and having them go through the whole body."

"Sometimes when you get the horse all the way back to normal, and eliminate the primary factors that initiated the reaction, then the horse will tolerate other elements in the environment much better." But as long as the lungs are still irritated, there may be multiple things that can exacerbate an episode of heaves.

Wetting hay may reduce exposure to aerosolized mold spores. Sprinkling may temporarily settle the dust, but thorough soaking may be necessary to eliminate dust and air-

borne particles. “Soaking hay reduce the nutrient value of the hay. A new method for minimizing mold is steaming hay. The nice thing about using a steamer is that you can pick the kind of hay you want for your horses, and just steam it for the heavey horse. You don’t have to try to find different hay for that horse. Heat from the steam also kills a lot of microbes. Steaming gets the core temperature up to 212 degrees. This seems to eliminate or greatly reduce the microbes. You are not just wetting the hay, but also reducing the load of molds and fungi such as aspergillus,” Buechner-Maxwell says.