Health Problems of Young Horses in Training

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Young horses in training are vulnerable to a wide variety of problems--everything from respiratory disease to training injuries. These horses are often taken off the farm where they grew up, transported to training facilities where they experience a new environment, and exposed to other horses from various places. This commingling of youngsters means they face diseases or strains of diseases they have not encountered before. Stress can hinder the immune system and make them more vulnerable to these infectious/ contagious diseases. Training for athletic performance can sometimes overstress immature bones, joints, tendons, and ligaments.

In this article we'll take a look at problems faced by young horses when they enter training, and we'll present information that could help your young horses stay healthier during this process.

Respiratory Diseases

Probably the diseases most common to young horses in training involve the respiratory system. Young horses have not encountered as many pathogens in their environment as older horses, so when they are taken from home pastures and exposed to other horses, they are vulnerable.

M.C. Baker, DVM, an equine practitioner in Weatherford, Texas, often sees respiratory problems in 2-year-olds in training. "Often we see pharyngeal folliculitis--blisters in the back of the throat," he says. "This is generally associated with some kind of infection in the guttural pouch (the horse has one on each side of the oral cavity), often caused by *Streptococcus*. It may be either *S. equi* or *S. zooepidemicus*.

"This seems to be the most common respiratory condition in young horses," he continues. "The blisters are lymphatic tissue, similar to tonsils in a human. It's mainly just a troublesome irritation. If it's due to *Strep* infection that's contaminated the guttural pouch, the horse has chronic drainage from the pouch, which, in turn, causes chronic irritation in the back part of the throat. This results in prominent blisters and may develop into tracheitis (inflammation of the trachea) or bronchitis. The horse coughs and has a nasal discharge."

This discharge is what horsemen often call the "snots" in young horses.

"A lot of these horses don't cough unless they exercise," Baker explains. "Then the guttural pouch starts to drain. Often a horse is set up for this condition by (rhinopneumonitis or EHV-1) or flu virus. The virus hinders the immune system, erodes the mucous membranes, and allows environmental bacteria (such as *Streptococcus*) to invade."

Diagnosis involves taking blood and performing a blood count along with observing clinical signs.

"We also use a video endoscope to examine the guttural pouch as well as the trachea to see if there is any material coming up out of the trachea--pus or phlegm," Baker says. "When there's a lot of inflammation in the back part of the throat, it changes the integrity of the soft palate as well as the laryngeal area, just like a person with a really sore throat. It's harder for the horse to swallow, so more debris accumulates back there." The reason horses cough is to clear the debris.

A tracheal wash can help the veterinarian diagnose the problem. This involves flushing sterile water into the trachea and recovering the water with debris washed from the throat. A sample is cultured to determine the causative bacteria and what antibiotic works against it most effectively.

"Even though we have vaccines for flu and rhino, and for *Strep*, these vaccines may not hold, depending on how virulent the bacteria or the particular virus is and the amount of exposure the horse has," says Baker. "These young horses are exposed to a lot of things, just like young kids going to kindergarten. They always come home with the snots."

The California Horse Racing Board's equine medical director Rick Arthur, DVM, says a major risk today is equine herpesvirus.

"At least 50% of horses have latent infection with herpes, whether or not they show signs," explains Arthur. "There's also significant risk for influenza, which is a much more aggressive viral infection than rhinopneumonitis. Flu spreads very quickly, just like it does in people, and it can be difficult to control."

Fortunately, vaccines for influenza are much more effective than vaccines for equine herpesvirus.

"The new intranasal (flu) vaccines work very well; it's a big advantage to have horses vaccinated," says Arthur. "This doesn't mean they won't get influenza, but it definitely does inhibit spread of the disease. And if horses do get sick with flu, it tends to be a much less serious infection. They get over it faster and don't get as sick."

Most training facilities do a good job with sanitation, but many infections are spread via sharing of tack, bits, buckets, watering systems, etc., says Baker.

"These horses are coming from all over the country," he explains. "The strain your horse is vaccinated for may not be the same strain being brought in. The young horse is continually exposed to a lot of different strains."

"The horses also contend with bedding dust, irritants, and molds in the hay and environment," Baker says. "These are all irritating to the respiratory system."

Some facilities keep barns closed up tight, and the lack of ventilation can result in higher levels of ammonia, which might be irritating to the respiratory system and predispose a horse to infection. Anytime the tissues of the respiratory system are irritated, it is easier for pathogens to cause disease.

Vaccinations

Because these horses will be exposed to so many things when they are shipped off for training, they should have a good vaccination program in place before leaving home. "If you're sending a horse off to a training facility, you certainly don't want him to miss training days being sick," says Baker. "It's costly to miss days, and the horse also gets behind in his training schedule. Young horses (that have been primed with their initial vaccines) need to be vaccinated for flu and rhino at least three times, 60 days apart, before they go to the trainer and are subjected to these diseases."

Arthur says with most vaccines it takes at least two vaccinations to start building immunity, after which a horse should be boosted at regular intervals. "In my practice, in horses in intense training, we vaccinated them as often as every 60 to 90 days for influenza," says Arthur, who works with Thoroughbreds. "Most well-run barns pay close attention to vaccination schedules and try to give flu vaccinations at least four times a year and equine herpesvirus twice a year."

Baker advises giving the *Strep* vaccine frequently. "It's not a very protective vaccine, because it doesn't cause a good antigen response," he explains. "But it may give the horse more immunity."

GLOSSARY

The newer vaccines are not as dangerous as the older strangles vaccines; horses don't have as many reactions,

Antigen A substance capable of inducing a specific immune response in the body, by binding to a specific antibody; can be a property of bacteria, viruses, other foreign proteins, or even host tissue cells.

Equine viral arteritis A contagious viral disease that causes fever, ocular and respiratory signs, fluid distension or swelling of the limbs, and abortion (see page 53).

Exertional rhabdomyolysis (tying-up) A syndrome characterized by muscle damage that has many different causes. Typical signs include stiffness, sweating, and reluctance to move.

Guttural pouch An internal sac that represents an outgrowth of the eustachian tube, the short canal that connects the middle ear with the back of the throat and that acts to equalize pressure within the ear. The *Streptococcus* bacterium causing strangles can harbor in the guttural pouch and cause a horse to shed the disease.

Latent infection The dormant stage of certain infections during which the infectious agent is present, but it is not actively replicating and cannot be detected by usual means.

Omeprazole A proton pump inhibitor that works by binding to an enzyme that causes gastric ulcers.

Osteochondritis dissecans (OCD) Cartilage disorder characterized by the presence of large flaps of cartilage or loose cartilaginous bodies within a joint.

Ranitidine (Zantac) and cimetidine (Tagamet) Anti-ulcer medications designed to inhibit ulcer-causing secretion of basal and nocturnal gastric acid.

Tracheitis An inflammation of the trachea.

says Baker. The same is true with flu and rhino.

Newer vaccines don't cause abscesses and muscle swellings that were experienced with the use of earlier vaccines, according to Baker.

Many horse owners stopped using the early strangles vaccines because of frequency of reactions, some of which were serious. "The nasal *Strep* vaccine now gives better protection, and there's also a nasal flu vaccine that works at the mucous membrane level, giving better protection than intramuscular vaccines," says Baker. Newer intramuscular flu vaccines have performed very well in challenge studies.

It's best to not vaccinate the day before a big event or workout. Although it's rare, some horses can have a mild fever for a day or two following vaccination.

A vaccination program should include Eastern and Western equine encephalitis (EEE, WEE), West Nile virus, and rabies, depending on your horse's risk. In some areas horses need vaccinations against EVA (equine viral arteritis), which can cause respiratory problems in young horses (and abortion in mares--see page 53 for more on EVA). The vaccination guidelines created by the American Association of Equine Practitioners can be useful (www.aaep.org/pdfs/AAEP_vacc_guide.pdf), but consult your veterinarian to determine the significance of the diseases in your particular area.

"Model your vaccination program for the exposure you expect your horse to have," says Baker. If the horse is going to a large training barn where there will be horses from all over the country, this might be different than if you're sending the horse to a small trainer with few horses, or if you are training the horse yourself. The horse should have all vaccinations in place before you take him to his first off-site training barn or competition.

Deborah Mood, DVM, who has many clients at Philadelphia Park racetrack, says, "Our biggest concerns here are flu and rhino, but we also give a rabies shot." Even though rabies is fairly rare in horses, vaccination can protect the horse and, thus, reduces the risk of rabies exposure for the people around him.

"For the most part, we don't vaccinate for strangles, but the horse will likely get West Nile and Potomac horse fever vaccines, and in our particular area botulism is a concern, so we may vaccinate for that as well," says Mood. "We like to have these done before the horses come to us, but if it hasn't been done or we don't know it's been done, we go ahead and vaccinate them."

Ask your veterinarian each year about the risks certain diseases pose in your area, and together decide which vaccines your horses should receive.

Gastric Ulcers

Studies have shown ulcers afflict more than 90% of racehorses and more than 60% of horses in other performance careers. Stress is the biggest cause.

"What veterinarians define as stress in animals is different from what we consider as stress," explains Mood. "People think in terms of mental stress, whereas with a horse, it's more environmental stress. A change in environment, in weather, in feeding schedule, or feed--these are all stresses for horses."

Horses are designed to walk and eat, walk and eat. They are healthiest when they can roam at will and graze more or less continually. Unfortunately, we confine them, give them a tub of grain twice a day and hay cubes, and create an exercise/training routine that creates a very unnatural environment that can lead to ulcers.

Arthur says any high-intensity exercise program puts horses at risk for ulcers. "From the studies we did at Santa Anita (racetrack) in the early 1990s, we know more than 80% of the horses have some degree of gastric irritation or ulceration," he says. "Good management protocols and being able to evaluate the horses are important to make sure they are actually withstanding the rigors of training."

Many people try to feed differently to head off ulcers, but it's hard to manage ulcers with feed, says Arthur. "A research project a few years ago had a hypothesis that horses get ulcers because of the high grain content of diet rather than the stress of racing; they proposed to train horses on hay while getting them fit." But, he says, without concentrate feeds, horses don't have enough energy for that type of work.

Some people try buffers and other medications to protect the stomach from gastric juices, but many popular products don't work very well, he says. "Omeprazole (Gastrogard as an ulcer treatment or Ulcergard as a lower-dose preventive method; both are FDA-approved medications manufactured by Merial for treating and preventing ulcers in horses, respectively) is much more effective than buffers," he says.

"There are people selling products they claim are as good, and they're cheaper, so people buy them," says Arthur. "Most claims for these products are anecdotal; very few (clinical) trials have been done. Even if you use the other anti-ulcer medications like ranitidine and cimetidine, you'd be better off just using a lower dose of omeprazole. The top trainers use it; they are doing what's best for the horse."

Rick Mitchell, DVM, of Newtown, Conn., has been the team veterinarian for the U.S. Olympic jumper squad. He says a quarter of a tube of Gastrogard per day is probably not curative if the horse already has ulcers, but it works well as a preventive measure. "If a horse has active ulcers, it needs the whole tube of omeprazole every day for 28 days," he says. "After that you can back off to a quarter tube per day."

He encourages trainers to have horses scoped to see if they actually have ulcers, rather than indiscriminately using the medication. Looking at the stomach also gives the veterinarian a better idea of how serious the ulcers are. If ulcers are severe, it might take longer than 28 days to cure the lesions, Mitchell says.

High-carbohydrate diets can lead to ulcers, so horses on high-fat diets (using less grain for energy) might have less risk, but owners should not rely on fat supplementation as a preventive measure or cure for ulcers, says Mitchell.

"In an ideal situation, you may be able to stop using Ulcergard once you get ulcers healed, if you can give the horse proper diet and management, but this is not easy with a racehorse or performance horse in an artificial environment," he says. "We've seen horses that continued to have ulcers--even though they were on a full dose of Gastrogard--living in that environment. The only way to get rid of the ulcers was to turn them out to pasture. Once they healed, they were able to return to competition, and keep the ulcers under control with a preventative dose of Gastrogard."

Training Injuries

Injuries--everything from strained muscles to chip fractures--are common in young horses being worked hard, and the type of injury might vary with the type of work the horse is doing. It takes a lot of careful conditioning to develop the horse's potential while maintaining soundness.

"You have to remember that bone is dynamic tissue and changes with exercise, just like muscle," says Arthur.

Most skeletal problems and injuries we see in young horses are because bone, as well as muscle, must undergo stress remodeling to become stronger.

Arthur explains that you have to stress muscle before you can build it up. "The same is true for bone," he says. "It must remodel to rebuild. If you do a cross section on a horse's cannon before he goes into training, it's almost perfectly round. By the time he's racing, it's shaped more like an egg; most of the bone has become thicker on the front inside of the cannon. But before all that new bone is put down, there has to be some demineralization of that bone tissue. The big challenge is balancing that process so the exercise load and the bone remodeling go at hopefully close to the same reasonable pace."

Bucked shins occur if breakdown and remodeling occurs faster than a young horse can handle. "When I first started practicing, it was very unusual for a horse not to have bucked shins," says Arthur. "Training today has progressed to where very few horses have bucked shins; trainers do a better job of balancing this in young horses. It's not just pedal to the metal and wait for the horse to have bucked shins, then firing them and going on from there." (In the past, pin firing, or firing, was used to treat horses with bucked shins. Today it is seldom used as many veterinarians and horse owners consider it to be inhumane.)

Hocks are another young horse problem area. Baker says most hock problems tend to become chronic. "It's often a degenerative joint disease in the lower hock joints," Baker explains. "Even as early as yearlings, we see some degenerative arthritis in the bottom hock joints in some young horses. These (problems) should be searched out before the horse even goes into training so the trainer can be aware there's a potential problem. In stifles it's the same thing-- especially in reiners and cutters. There's a high probability of having an injury there. If you start out with subchondral (beneath the cartilage) bone cysts in the joint, or OCD (osteochondritis dissecans), you can expect to have lameness issues before the horse gets very far along in training."

Some horses have problems with suspensory and check ligaments in the forelegs when worked hard during training. "Those are generally caused by trauma, assuming that conformation is adequate for proper support," says Baker. "In the hind legs, you may have high suspensory injuries on the back side of the hock at the upper part of the cannon bone. Those seem to develop as the horse gets farther along in training,"

If the horse is racing, you often are looking at a whole different class of injuries, such as bowed tendons, ankle and knee chip fractures, cannon fractures, etc.

Conformation plays a big role in determining whether a horse will develop problems, and which problems he will develop. Splints, for instance, are most common in young horses that have offset cannon bones (bench knees), putting more stress on the inside splint bone. "A horse that's toed out may also get a splints if he interferes, with the foot hitting the splint bone on the opposite leg," says Baker.

"One thing we see in cutters and reiners are back problems such as lumbar muscle strains," Baker continues. "I think this is seen most often in young horses that have the ability to stop hard and back up and turn around. To treat those, you have to break the cycle of pain and tension by relieving the pressure and giving the horse a little rest. There are various ways, such as using anti-inflammatories, muscle injections, acupuncture, muscle relaxants, etc., to relieve the acute nature of this pain."

Some young horses also suffer from tying-up (exertional rhabdomyolysis) when they start intensive

training for athletic performance, especially if they are not as fit as you think they are, says Mood. "Just like any athlete, they go through some muscle soreness," she notes. "And these young horses are still growing, so they get aches and pains associated with bone and muscle development." She reminds the reader that each young horse's training program must be individualized.

Attitude and Injury

Horses must be trained mentally and physically to handle new situations that could cause and stress and injury. "We monitor all racing fatalities in California," explains Arthur. "One of the interesting statistics (and a parallel to what we see in people) is that 2-year-olds have fewer racing/training fatalities than older horses, but have more fatal accidents. They flip over, run into the fence, and do the dumb things inexperienced horses are prone to do. It's like in the human population with teenage drivers and fatal accidents; accidents are the number one cause of teenage deaths.

"Young horses have to learn their job," he explains. "It's very easy for them to get out of sorts and into trouble."

In disciplines besides racing, if a young horse is not yet settled into what he's doing, he's more likely to overdo himself, strain muscles and joints, or injure himself doing something goofy.

"This is all part of training," notes Arthur. "Each horse is an individual and must be handled and trained as an individual. This is why some trainers are more successful than others."

Good trainers have time and patience to be in tune with each horse. This is often key to keeping a young horse happy and healthy in his work. "You can't rush the training," says Mood. "You have to let the horse tell you how much he can handle." You walk a fine line with each young horse, trying to build them up and push for maximum athletic ability without causing damage along the way. If you don't give them the time they need for accomplishing this, you'll end up with layoffs due to injury or illness.

"They may be very talented, but if their heads aren't on right and their minds can't handle what you're doing because they are only half-broke or not prepared for the new environment, they may not get over this," says Mood. "They crumble under pressure. It's like any young athlete, like a kid headed for the major leagues. They really have to be prepared for this (athletic career) with good mentoring and a strong support system behind them."

Take-Home Message

Young horses need everything working right, both physically and mentally. to be successful in their athletic careers. Monitor your young horse's health along with your vet to ensure the animal has the best chance of growing up healthy and sound.

EQUINE HERPESVIRUS-1

Equine herpesvirus-1 (EHV-1) has received a lot of attention in the past few years as outbreaks of the neurologic form have surfaced, causing illness and death. It's unclear whether the mutation of the virus associated with the neurologic form is new, or we're just better at diagnosing it. Many horses carry herpes latently in their bodies, meaning they don't show signs of illness.

Kevin Hankins, DVM, a field veterinarian for Fort Dodge Animal Health (which has a vaccine for equine herpesvirus), says most horses are exposed to herpes by 30 days of age. "The horse population is like the human population; we all have a form of herpes, sometimes expressed as cold sores, shingles, etc.," he says. "Anyone who had chicken pox as a child might get shingles later in life."

Often the only clinical sign of EHV-1 will be a transient fever. A person taking a horse's temperature daily can catch onset of the disease quicker. If the horse has a fever, your vet can run tests to see if it's herpes or some other type of infection.

Horses in athletic careers and young horses in training are more stressed than horses at pasture, are exposed to more new horses, and are therefore at higher risk to contract EHV-1.

Stressed horses might shed the virus without any apparent signs, or they might develop the disease.

The neurologic form sometimes starts with respiratory signs, mild fever, and cough. "It's hard to distinguish this form of the virus from rhino, influenza, or other upper respiratory infections, or from EVA (equine viral arteritis), which is also a big concern now," says M.C. Baker, DVM, a private practitioner in Weatherford, Texas. "The only way you can distinguish the EHV-1 virus from some of the other viral and bacterial conditions is with culturing and paired serum samples. There are at least a dozen other diseases that can look very similar, not only in respiratory signs, but also the neurological signs."

To identify the neurologic form, the vet must differentiate between equine protozoal myeloencephalitis (EPM), West Nile virus, Eastern, Western, and Venezuelan equine encephalitis, head trauma, middle ear infections, severe liver damage, bacterial encephalitis, and other things that also create central nervous system signs and incoordination.

"Some of these can cause bladder paralysis and tail paralysis, which can also be caused by EHV-1 virus," says Baker. "You can rule out a lot of these things without lab tests, but in other instances you need to do the tests."

You should isolate a sick or feverish horse until you have a diagnosis, since herpesvirus is very contagious. "A lot of horses are probably exposed to it and develop the respiratory form or (pregnant mares) abort, but they don't all end up showing neurological signs," says Baker. "

Minimize risks by taking your own water buckets when your horse travels away from home and minimizing exposure to other horses.

Rick Arthur, DVM, says there's been some discussion regarding whether neurologic EHV-1 can be transmitted via airborne particles. "It probably can be, in some instances, but it's primarily transmitted by direct contact (nose to nose)."

If your horse is in a stall next to another horse, or standing in line by another horse, close contact could put your horse at risk. "If a groom at a racetrack takes a snot rag and wipes one horse's nose, then another's, this can readily expose the next horse," says Arthur. Good hygiene can help prevent spread of this disease.

Roger Clymans, VMD, who works with many horses at Philadelphia Park racetrack, says if temperatures are taken in the morning and evening, you can get a clue that something is wrong before the horse gets very sick. "Taking temperature is quick and easy," says Clymans. "You can put the thermometer in while the horse is being tacked up. Monitoring temperature can prevent sending a horse out for training exercise or heading off for a race (or show) if he's starting to get sick."

Taking a horse's temperature is much better than noticing after the fact that the horse has a poor workout and is breathing hard--and later in the afternoon discovering that his temperature is 104¢ªF.

There is no vaccine proven effective against the neurologic form of equine herpesvirus. You should have the horse vaccinated against the other forms of EHV to take advantage of any cross immunity.

This problem is similar to influenza. You can vaccinate against one type of flu and develop immunity for that strain, but the horse can get another strain.

However, keeping the horse vaccinated against the other forms of herpesvirus might help, says Baker.

"The vaccines currently on the market are labeled for the respiratory and abortion forms," explains Hankins. "There are no vaccines labeled for prevention of neurological herpes."

Research is under way to try to develop better vaccines, but in the meantime veterinarians recommend

routine vaccination with other EHV-1 products to keep the immune system strong. This might also reduce viral shedding in infected horses and decrease the degree of viremia (period in which the virus is present in the blood, characterized by fever).

"This disease will become more common wherever there are a lot of horses congregated, such as racetracks, big shows, futurities, etc.," says Baker.

Horses that have been exposed to EHV-1 at a show or sale might spread it to susceptible horses at home; in turn, those exposed horses that have never left the property could infect your horse. So your horse doesn't necessarily have to come into direct contact with the traveling horse.

"This disease has been around a long time and merely raises its ugly head now and then," adds Baker. "There are probably carriers that keep it going. Many viruses are chronically carried in the lymphatic system of horses. When the horse is under severe enough stress (such as a young horse in training), these viruses can show up--and this is how a new outbreak can get started."--*Heather Smith Thomas*