**The Equine Sports Medicine Center**

Purdue’s Equine Sports Medicine Center is dedicated to the education and support of Indiana horsemen and veterinarians through the study of the equine athlete. The Center offers comprehensive evaluations designed to diagnose and treat the causes of poor performance, to provide performance and fitness assessments, and to improve the rehabilitation of athletic horses. Other integral goals of the Center are to pioneer leading-edge research in the area of equine sports medicine, to provide the highest level of training to future equine veterinarians, and to offer quality continuing education to Indiana veterinarians and horsemen. For more information visit our website: [www.vet.purdue.edu/horses](http://www.vet.purdue.edu/horses)

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**Dangers Associated with Flooded Pastures**

Carrie Bray, DVM Student (Class of 2009)

In recent years, there have been multiple incidences of major floods in the Midwest as a result of hurricanes and large storms. These floods pose a major risk to humans and animals alike. Horses in pastures or barns that are flooded are at risk of injury or disease from many different sources.

Mud is a serious hazard for stranded horses. They can become trapped and fracture a limb or seriously injure themselves while struggling to free themselves from the deep mud. While struggling, horses commonly sustain eye injuries as a result of trauma from stalls or fencing.

Standing in water contaminated with chemicals, sewage, and minerals for long periods of time can weaken the skin’s barrier capacity on the legs and allow entry of bacteria or fungi. These infections can cause lameness or loss of use of the limb, and may be life-threatening. Common hoof problems associated with standing water include thrush or sloughing of the frog. White line disease (separation of the laminae), laminitis, or foot abscesses may be found after the hoof has dried.

Bacterial contamination of the water can cause diseases such as Leptospirosis, colitis, tetanus, botulism, pneumonia (either by bacteria or aspiration), and anthrax. Abortions can be caused by stress or infections. Mosquito born diseases such as West Nile Virus and Eastern and Western Encephalitis are a problem due to large amounts of standing water, where mosquitoes like to replicate. Equine Infectious Anemia is a disease transmitted by biting flies and can be increased in a flood situation. Potomac Horse Fever is also a concern, as it is carried by aquatic insects.

Water also saturates the feed, which becomes moldy and may be toxic to the animals. Ruined pastures can cause a “green drought” where there is little grass to eat. This may cause horses to eat poisonous plants that they would normally avoid. They will need supplementary feeding in the form of dry hay or pelleted feed.

One can never be completely prepared for a disaster, but there are a few measures you can take to ensure that your horses will be safer in the event of a flood. Having proper identification is very important, whether in the form of a tag, tattoo, brand or microchip. Vaccinations should be current, not only for mosquito borne diseases, but for other viral and bacterial diseases that can be spread by comingling with neighboring herds. These include Potomac Horse Fever, West Nile Virus, Eastern and Western Equine Encephalitis, Tetanus, Influenza, Equine Viral Rhinopneumonitis, and Streptococcus equi (Strangles). If available, moving animals to higher ground before a large storm will help prevent problems. Being prepared is the first step to getting you and your horses through a disaster. Concerned owners should consult their local veterinarian for further information on preventative measures that can be taken.
The He-Said: She-Said about NSAIDs

It is easy to give drugs that are easy to get, but before we reach for the next dose it may be beneficial to know what exactly we are giving and how to use it safely.

What are NSAIDs, and how do they work?

An NSAID is a Non Steroidal Anti-Inflammatory Drug. For human use these drugs include products such as Advil® and Tylenol®. For horses these drugs include familiar products such as Phenylbutazone (Bute), Banamine®, Equioxx®, and others. These drugs are used very frequently in horses for management of painful disorders. Pain is a complex mechanism which is expressed by the body during illness or injury. Pain can be blocked in many ways by the use of such drugs as opioids, steroids and NSAIDs. These drugs all work on different aspects of the pain mechanism. The way NSAIDs work to eliminate pain is at the level of an enzyme called cyclooxygenase (COX). This enzyme is important for the formation of prostaglandins, which are compounds in the body that help pain receptors acknowledge a painful stimulus associated with an inflammatory response. By blocking the synthesis of these compounds pain can be decreased. However, it is important to remember that COX is not just important for pain. There are sub-categories of COX: COX-1 and COX-2. We can think of COX-1 as a protective enzyme in part for the control of bleeding, protecting the lining of the stomach and intestines, as well as protecting the kidneys from damage of low blood pressure. COX-2 can be thought of as the COX enzyme associated with pain and inflammation. However, it has been found that although these are their primary roles each enzyme is acting in both protective and inflammatory mechanisms, ie. there is overlap between these two enzyme systems. Most NSAIDs inherently block both COX enzymes, both protective and inflammatory, which is why there are side effects and consequences to overdose or abuse of these drugs.

What are the Side effects?

Most horse owners using NSAIDs to treat their horse’s pain are aware that there are side effects that can occur. As discussed previously COX has beneficial effects in the body, by blocking the action of this enzyme we are also blocking part of the body’s ability to control bleeding, protect the stomach and intestinal lining, and protect the kidneys in the event of low blood pressure. These blocked mechanisms can cause the horse to suffer from oral ulcers, gastric ulcers, inflammation of the colon (colitis), anemia, bleeding into the gastrointestinal system, kidney damage, and liver damage. These can be very serious and occasionally deadly side effects.

How can you safely administer NSAIDS to your horse?

NSAIDs are effective drugs for use in controlling pain and with judicious use they are quite safe. When administering NSAIDs at home horse owners should always follow the recommendation of a veterinarian. Because of the availability of NSAIDs it is easy to forget that these drugs can be dangerous if given improperly. The horse should always be well hydrated before administering an NSAID, as well as have access to water. This helps to ensure that the kidneys will have enough blood flow to decrease the chance of damage due to low blood volume from dehydration. NSAIDs should not be given long term without the direct order of a veterinarian. In general they should be given at the lowest effective dose, for a short period of time. Before starting long term therapy with NSAIDs blood work should be done to evaluate the status of the liver and the kidneys. If a horse is treated with NSAIDs for prolonged periods, discontinuing the drug when the horse isn’t showing, competing, or on the trail will be beneficial. Be sure the horse has a normal appetite while on these drugs as well as normal urine and manure output. Changes in these every day activities may indicate that the horse is suffering from side effects. Colic or diarrhea in a horse receiving NSAID therapy is an indication for calling a veterinarian for recommendations and treatment. It is also important to remember even horses given drugs such as Equioxx® (firocoxib) that are primarily COX-2 inhibitors, are still at risk for side effects (although less so than other drugs) because of the overlap in protective roles COX-2 plays.

Veterinarians and horse owners alike want what is best for the horse, controlling pain is important for the well being of the animal; however, side effects of these medications should always be considered. Realizing these drugs are capable of causing more harm than good if dosing recommendations are not followed is the key to safe administration.
Visually Judging Hay Quality

Justin Bricker, DVM Student (Class of 2009)

Many people use a visual inspection to get a good idea of the quality of hay they have. There are many different things that one needs to pay attention to when visually inspecting the quality of hay. The first thing you need to check is the type of hay, for example alfalfa, grass, etc. This can tell a lot about the nutritional value of the hay. Legumes (alfalfa, clovers, lespedeza etc) have rounded or pinnate leaves and are higher in protein and minerals than grasses (orchardgrass, bromegrass, timothy, tall fescue etc) which have long, narrow leaves. Some other things that need to be observed are the color, leafiness, presence of mold and/or dust, odor, and presence of weeds.

You should also know what type of hay to feed to what kind of horse. A gelding that gets ridden a few times a year does not need to eat top quality hay. He simply needs a high enough quality hay to maintain his body condition. A horse that is in heavy training will need higher quality hay as this horse’s nutritional requirements are higher than a horse that is in little or no training. As the level of work a horse is asked to do increases, the quality of hay that horse is eating should also increase. Correctly feeding your horse the hay it needs according to its activity level could save you a lot of money. One point to remember is to avoid hay containing endophyte-contaminated tall fescue when feeding pregnant mares, especially when they are in the last 90 days of their gestation.

Good quality hay will be green in color. Some reasons that the hay loses its color could be that it got rained on or it is older. The loss of the green color from age does affect its nutriti- ment makeup as Vitamin A and other vitamins will be lacking.

Leafiness of the hay can sometimes help to distinguish if the hay had been rained on before it was baled. Hay that has been rained on and also hay that is too dry and brittle will have less leaf material and is a poorer quality hay. The type of hay on hand must also be considered when assessing the leafiness. Usually the more leafy material that is there, the more the horses eating the hay will like it and the higher is the nutritional value.

Moldy or dusty hay is not acceptable for horses, espe- cially horses that have chronic obstructive pulmonary disease (heaves). The mold and dust in the hay can be assessed by simply taking a flake, preferably from the middle of the bale, and pulling it apart. If it stays together or there are very wet areas that can be black or white then there is mold present. If dust falls out or is seen then the hay is dusty. Most horses will eat dusty hay but it can cause problems with the digestive and respiratory system. If all the hay that is available is dusty then you can shake it out, wet the hay down, and then feed it outside to cut down on the dust.

The smell of the hay can tell a lot about it. The hay should smell like it has been freshly cut. If there is an odd smell to the hay you should assess it for the presence of mold or possibly weeds. Weedy hay can cause more problems than one would expect. If the weeds in the hay are toxic or have thorns there could be some tragic consequences to feeding it. If the weeds in the hay are not toxic but the horses simply won’t eat them then you have a lot of wastage. You paid for a full bale of hay so you expect the whole bale to be eaten. No one should pay for weeds.

The next time you buy hay, just remember some of these simple points and you will hopefully be happy with the quality of hay you are purchasing.

ERU (continued from pg. 4)

The insidious form consists of a low grade inflammation that never fully recedes and will progress to chronic signs. Horses presenting with this form may have little or no discomfort and it may not even be recognized as a problem until cataract formation or the eye becomes blind.

Prompt treatment is the most efficient method to managing ERU and treatment plans need to be formed with two objectives. The first objective is aimed at treating the inciting cause if it is identified. The second objective is therapy aimed at reducing pain and inflammation, as well as preventing further damage to the ocular structures. Treat- ments typically consist of topical anti-inflammatories containing methylprednisolone, topical steroids, and orcol. Systemic therapy may also be necessary in the presence of severe disease. It is important to keep in mind that systemic anti-inflammatories are not able to reduce episcleral inflammation and may cause serious side effects. Methylprednisolone, at a dose of 4–6 mg/kg, may be used to reduce episcleral inflammation. If the horse is being treated with methylprednisolone, topical steroid therapy can be reduced to the minimum necessary. However, systemic steroid therapy should be used with caution when treating juvenile horses as it can cause serious side effects.

In the presence of severe episcleral or scleral thickening, treatment may need to be continued for up to 2 weeks. It is important to maintain anti-inflammatory therapy when vision returns to normal. If the horse is not making substantial progress, a change in therapy is indicated.

The use of topical anti-inflammatory therapy should be continued for up to 2 weeks. This is important to prevent the recurrence of ulcers. Topical anti-inflammatory therapy should be used in conjunction with a topical steroid. Topical therapy is usually adequate to control inflammation if the horse is maintaining a normal level of activity. If the horse is not making substantial progress, a change in therapy is indicated.

In the presence of severe episcleral or scleral thickening, treatment may need to be continued for up to 2 weeks. It is important to maintain anti-inflammatory therapy when vision returns to normal. If the horse is not making substantial progress, a change in therapy is indicated.

Communicating for a Healthier Horse

Aimee Hossler, DVM Student (Class of 2009)

Communicating with clients is a topic that has been on the forefront of veterinary medicine in recent years. However, it takes two to communicate, and clients can also learn how to better communicate with their veterinarian. The following are a few tips that can help you get the most out of your horse’s veterinary exam.

Prior to the Exam—“Be prepared!”

Know the history

A clear, sequential history can be very beneficial to deter- mining the cause of problems with your horse’s health. Before your vet arrives, take a few moments to write down when the problem first started and any chronological changes since the onset of the problem. Try to remember the last time your horse was completely normal and track forward from there. This is also a good time to recall any other pertinent information about your horse’s health, such as any known drug reactions, which your vet should know prior to the start of the exam.

During the Exam—“Don’t be afraid to ask”

Ask questions

Veterinarians will generally try to keep you involved in the exam, but occasionally tasks become routine or we get too focused, that we forget to explain what we are doing. If you ever feel that we are evaluating, it will help you to better assess your horse’s health then the findings with you. If you are aware of what we are evaluating, it will help you to better assess your horse’s health in the future. Also remember that questions do not have to end when the exam does. If you think of more questions after your vet leaves, write them down, and when you call your vet, you will be able to get all of your questions answered at one time.

Ask for clarification

Throughout veterinary school, we are basically taught a second language…medical terminology. (Did you know that micturition is another term for urination?) However, once we are out in practice, we have to translate the medical terminology into more familiar words, and occasionally things get lost in translation. So, if we use a term or concept that you are not familiar with, just ask us to clarify it further.

About the options

In veterinary medicine, there are often a few options when it comes to treatment. As the client, you are in charge of your horse’s future; and as the veterinarian, we try to provide you with medical information about your horse to make informed decisions. If you are unfamiliar with the options, ask your vet to explain each and give pros and cons of each one. Then you may just need someone to think about your decision, so ask us for it. We will try our best to create health plans and treatment protocols that work for you and your horse.
10 Steps to Prepare Your Barn and Horse for Winter

Carrie Spencer, DVM Student (Class of 2009)

Fall is a season of beauty and light breezes making it difficult to think about snow falling and wind chills dropping. Anticipating the cold season and preparing in advance will make the transition into the winter season easier and safer for you and your horses.

Here are 10 steps to smoothly transition your barn and horse from fall to winter:

1. Organize the clutter.
   - Clean your tack room and grooming supplies
   - Straighten pen and barn areas
   - Put stock and light weight sheets in storage
   - Remove items that will freeze or get damaged by cold
   - Put stall fans, light bulbs, and dust light fixtures in storage

2. Inventory medicine and cleaning/grooming supplies
   - Make sure that you have sufficient amount of medications and supplies
   - Test the efficacy of your cleaning supplies
   - Replace or purchase medications and supplies

3. Prepare stalls for increase usage.
   - Install mats or bedding that will alleviate the build up of excessive ammonia from urine
   - Put heat lamp, fans, and other temperature increasing equipment
   - Replace or repair barn fans

4. Assess the ventilation in the barn.
   - Dispose of oil hay and bedding, sweep hay loft floors and dust light fixtures
   - Fix any vent covers that are not working

5. Check all hardware (latches, hinges, etc.).
   - Test all electrical outlets
   - Inspect all trim and doors
   - Replace missing or broken hardware
   - Replace all fuses

   - Seal major air leaks in stalls by repairing/replacing boards and/or window shutters
   - Inspect fire extinguishers and replace batteries in storage
   - Put stall fans and light weight sheets in storage
   - Replace water hose with one that does not freeze
   - Replace interior water buckets to prevent freezing

7. Evaluate water supply.
   - Insulate exposed water pipes with spray foam
   - Replace water hose with one that does not freeze
   - Insulate interior water buckets to prevent freezing
   - Make sure that water is accessible and safe
   - Replace new locks and doorknobs

8. Stock feed, bedding and hay.
   - Put additional bedding in storage
   - Make sure that hay is clean and dry
   - Put all feed in storage

   - Protect your horses from wind, rain and snow by providing appropriate horse clothing and a well built shelter
   - Ensure that the shelter is large enough to house the horses and the entrance is big enough to prevent bullies in the herd from cornering the other horses

10. Equine Recurrent Uveitis
    
    Equine Recurrent Uveitis (ERU) is a commonly diagnosed ocular disease in the horse. ERU is also known as iridocyclitis, periodic ophthalmia and moon blindness (due to the belief that the disease appearance coincided with the lunar cycle).

    Viruses, parasites, direct trauma, hereditary predisposition and bacteria have all been proposed as causes of ERU; however, the exact disease mechanism is not yet fully understood. We do know that an autoimmune response is somehow triggered and most of the damage seems is a result of the body’s self destructive reaction to the inciting cause. For example, an infectious agent may infect the eye and become incorporated into ocular tissues such as the pupil. After the original insult, an influx of inflammatory cells will lead to deposition of antigen-antibody complexes into the tissues and continue to cause an inflammatory response. Inflammatory cells release substances called cytokines that are meant to help control the infection, but can also be harmful to healthy tissues. With repeated episodes, this can result in scarring and vision loss. The primary sign associated with acute ERU is pain, squinting, constricted pupils, photophobia and tearing. Eventually, blindness may result due to cataract formation, severe ocular inflammation (chorioretinitis), or retinal detachment.

    There are two recognized clinical syndromes of ERU, known as classic and insidious. The most commonly seen is the classical form, where there are inflammatory episodes which are followed by periods of remission. One important aspect of this varying period is often followed by more severe episodes of inflammatory phases and will ultimately result in cataract development and vision loss.

    References:
    
    

Potomac Horse Fever: An Update

Nathan Ahlemeyer, DVM Student (Class of 2009)

Potomac horse fever is a bacterial disease that is caused by Neorickettsia risticii (formerly Ehrlichia risticii). This disease has been recognized as a cause of various diseases including: equine monocytic ehrlichiosis, equine ehrlichial colitis, and acute equine diarrhea syndrome to name a few. The disease was first recognized in the late 1970’s in the Potomac River Valley of Maryland and has since been identified in most of the contiguous United States, parts of eastern Canada, Europe, and South America.

Transmission of Potomac horse fever is complex and allows the horse to possibly become infected in a variety of ways. Neorickettsia risticii is known to infect trematodes (also called flukes), which are flatworm parasites. The bacteria are able to persist through each of the fluke’s four life stages (egg, cercariae, metacercaria, and adult trematode). These flukes are parasites of bats, birds, and amphibians in North America. It is believed that these animals are not only the definitive hosts of the fluke parasites, but also act as a natural reservoir for Neorickettsia risticii. When infected eggs are excreted in the feces of the aforementioned hosts they contaminate the environment. These eggs may then infect freshwater snails, which is the first intermediate host of the fluke. Once inside the snail the fluke matures into a larva and is released in the water. This larva is then able to infect certain aquatic insects such as mayflies and caddisflies. The larvae are able to mature and persist into the aquatic insects. These aquatic insects, still infected with the fluke, are then consumed by bats and birds. This completes the life cycle of the fluke. The horse may become infected by consuming eggs in bat or bird feces, it may consume free flukes in contaminated water, or it might ingest fluke-infected insects. At this time the only confirmed route of transmission has been by the ingestion of fluke-infected aquatic insects. Due to this fact horses are at an increased risk of contracting Potomac horse fever in wet environments, during the summer and early fall when there are large hatchings of aquatic insects. Potomac horse fever is not believed to be directly contagious from horse to horse.

Horses with Potomac horse fever typically lose their appetite and become depressed suddenly and develop a high fever (up to 107°F). Diarrhea may begin around 48 hours after the onset of clinical signs, and will range from “cow pie” stools to very profuse, watery diarrhea. The diarrhea is typically accompanied by mild colic. Severe diarrhea will lead to dehydration, protein loss, laminitis, and possibly death. One of the most severe sequelae of Potomac horse fever is laminitis also known as founder. Laminitis will typically persist past the resolution of other clinical signs. Treatment of Potomac horse fever includes antibiotic and supportive therapy. The case fatality rate for Potomac horse fever ranges from 5-30%, with most deaths being associated with toxemia or severe laminitis.

The prevention of Potomac horse fever may be difficult, especially in areas where the disease is present on a recurrent basis. Vaccines that are currently on the market are inactivated, and horses develop only short-lived immunity to Neorickettsia risticii. This is in contrast to the immunity acquired through natural infection, which may last greater than two years. Vaccination is recommended however, as it will typically decrease the severity of disease even if it does not completely prevent infection. Vaccination should be performed twice initially, four weeks apart, and then a booster vaccine should be given approximately every six months. Current vaccines are safe to use in pregnant mares, and should be given 4-6 weeks prior to foaling. Foals should then receive their first Potomac horse fever vaccine at approximately 4-6 months of age. Other prevention methods involve minimizing contact and ingestion of aquatic insects, as this is the typical route of natural infection. This would involve keeping horses away from rivers, ponds and other bodies of water during the late summer and early fall. Water troughs and feed buckets should also be cleaned frequently to ensure that they are free of any type of aquatic insects that may be ingested by the horse.

References:
