

Brought to you by the UK Equine Initiative and Gluck Equine Research Center

Rabies Vaccination: A Basic of Equine Care

According to a recent report issued by the Kentucky State Veterinarian's office, the number of reported cases of rabies rose from 45 in 2008 to 46 in 2009. However, the number of cases has doubled in the last five years.

Although only two of the confirmed 2009 cases of rabies were horses,

veterinarians warn that even counties not reporting cases of rabies could be home to rabid animals that pose a danger to all domestic animals.

"The important thing everybody needs to understand is that just because there's not a reported case in the county doesn't mean there is not potential for rabies in literally every county in Kentucky," said Craig Carter, DVM, PhD, director of the Livestock Disease Diagnostic Center (LDDC).

Carter said although the LDDC does not conduct rabies testing, it will harvest samples and



The AAEP now lists rabies vaccination as part of the core vaccine requirements for horses.

months to appear.

Initial signs and symptoms of the disease include fever, aggression, and personality changes that eventually progress into a hypersensitivity to light and sound followed by drooling, paralysis, and respiratory failure.

The only way to definitively diagnose rabies is from a post-mortem sample of brain tissue. Wild animals suspected of having rabies are tested upon capture, while domestic animals are placed in quarantine and tested after natural death or

forward them to the state veterinarian laboratory in Frankfort.

Rabies is a viral disease that affects the nervous system and is almost always fatal. It can be transmitted through the saliva or bite of an infected animal. While in most cases symptoms appear soon after exposure, the virus can sometimes take

necessary euthanasia.

Vaccines are available for dogs, cats, ferrets,

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and horses. The American Association of Equine Practitioners (AAEP) now lists rabies vaccination as part of the core vaccine requirements for horses. The first vaccination is given in a three-part series, depending on the horse's age and history, and that is followed by annual boosters. Companion animals are required by law to be vaccinated, and many only need boosters every three years.

"There is no prudent reason not to vaccinate our dogs, cats, and ferrets for a disease with the public health significance of rabies and a nearly 100% case fatality rate," said John Poe, DVM, and state public health veterinarian, in a statement to Kentucky veterinarians.

While rabies is most common in wild animals such as skunks and bats, domestic animals (including horses) are susceptible if bitten. It can be transmitted to humans if they are exposed to the saliva, discharge from the eyes and nose of an infected animal, or an infected wound. When handling potentially infected animals, exposed skin should be covered and animal control or the local veterinarian should be notified.

If bitten by a rabid animal you should wash the wound thoroughly and notify a doctor or go to the emergency room immediately. Avoid contact with wild animals, particularly those exhibiting unusual behavior.

For more information about rabies statistics and to see the map of confirmed cases in Kentucky, visit <http://chfs.ky.gov/dph/epi/rabies.htm>. 

Natalie Voss is a UK equine communications intern and undergraduate student in equine science.

COLIC IN HORSES

Among the species of domestic livestock, the horse is the animal that most commonly suffers from colic. Colic is a general term indicating abdominal pain. The anatomy of the horse's digestive tract, how the tract works, and the management practices imposed by man seem to contribute to colic's occurrence. Colic might not be caused solely by diseases of the intestinal tract. In fact, infections elsewhere in the body, as in the urogenital or respiratory tracts, as well as pregnancy, might cause the horse to present with clinical signs of colic. A survey in 1986 by the Morris Animal Foundation reported that colic was the leading cause of death in horses and the No. 1 health concern of horse owners.

The amount of money spent on the disease is impossible to assess, because not only are there treatment costs, time lost is also involved. In 1983 the equine insurance industry paid \$16 million for claims directly attributable to colic. Therefore, horse owners need to know the causes, clinical signs, diagnostic and treatment procedures and preventive measures to reduce colic's incidence.

Causes

There are main types of colic, and there are a number of possible causes. Factors such as sudden changes in the weather and feeding (frequency, quantity or quality of feed), and overexertion or chilling may lead to colic. Spasmodic colic is



A horse with mild colic will paw the ground with his front feet, appear restless, lie down and roll frequently, and look at his abdomen.

characterized by severe contractions of the intestines. Intestinal obstruction or a twisted intestine creates a very severe condition resulting in extreme pain. The veterinarian should diagnose the possibility of an obstruction or twisted intestine as early as possible, because it is potentially life-threatening and requires surgery.

The most common cause of colic is internal parasites:

- Migrating strongyle larvae damage blood vessels in the intestines, decreasing blood supply, which leads to necrosis (tissue death), decreased motility, and pain.
- Large numbers of roundworms can cause impaction or obstruction of the intestines.
- Administering dewormer (anthelmintics), particularly to horses overloaded with internal parasites, can cause colic.
- Clinical signs do not always result from a

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disease of the digestive tract. They also can arise from infections elsewhere in the body, from infectious diseases like rabies, pleurisy (inflammation of the thin, transparent membrane covering the lungs and lining the chest cavity), and dermatitis, and habits:

- Conditions affecting the locomotor system, like laminitis and other forms of lameness, can lead to signs of colic. Certain conditions might lead to an intestinal obstruction, which will cause colic symptoms.
- Horses with certain oral vices (bolting, cribbing) are also prone to colic.

Diet can cause colic symptoms:

- Horses kept in sandy paddocks or overgrazed pastures are predisposed to suffer from “sand” colic. In this situation, ingested sand obstructs the intestine.
- Spoiled silage and enteritis can also obstruct the large intestine.
- An obstruction may also occur if the horse ingests a foreign object.
- Sudden changes in feed, (either type or quantity), or moldy feed can cause colic due to improper fermentation in the gut or an obstruction.
- A diet predominantly made up of concentrate can lead to colic if an adequate supply of long-stem roughage is not provided.
- Lack of water can also lead to clinical signs of colic and might even cause an impaction. Remember to avoid allowing a “hot” horse after

WEED OF THE MONTH

Common name: Common dandelion

Scientific name: *Taraxacum officinale* Weber

Life Cycle: Perennial

Origin: Europe

Poisonous: No

Dandelion is widespread across North America and is a commonly occurring plant in all types of pastures and turf. This is one of the most well-known weeds because of its bright yellow flowers and round, gray-to-white seed heads that are borne on a hollow stalk. Leaves of mature plants form a basal (arising from the base of a stem) rosette and the margins are deeply lobed and lack hairs. Some leaves might have a few hairs on the midrib (central vein of a leaf) or the underside of the leaf. Rosettes remain green throughout the year.

A deep, fleshy taproot (a primary root that grows vertically downward), often branching, contains buds near the soil surface and is one mechanism of reproduction. The other method of reproduction is by yellowish-brown achenes attached to a feathery pappus, which aids in windblown distribution over sizable distances. The leaves, taproot, and the flower stalk exude a milky liquid when cut.

These weeds are relatively easy to control with several herbicides; however, mowing is generally ineffective. Hoeing or digging the taproot is successful if at least half the root is removed. This should be done before the seed heads form. Consult your local Cooperative Extension Service personnel for information on herbicidal control in your area. [UK](#)

William W. Witt, PhD, a researcher in Plant and Soil Sciences, provided this information.



Common dandelion

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heavy exercise to drink heavily or eat, as doing so can not only lead to colic, but to other serious sequelae of colic, such as laminitis.

Clinical Signs

A horse with mild colic will paw the ground with his front feet, appear restless, lie down and roll frequently, and look at his abdomen. A horse with more severe colic will roll more vigorously and may become cast and lie on his back to relieve intestinal pressure. A horse with very severe colic will throw himself to the ground and roll violently. Such a horse can be dangerous to work with until he is properly sedated. Pulse and respiratory rates rise, while temperature typically remains within a normal range. The absence of abdominal sounds is characteristic of a horse with colic.

Diagnosis

Your veterinarian should conduct a thorough examination to determine the colic's severity and plan treatment as soon as possible after the clinical signs start. Until your veterinarian arrives, walk the horse to help relieve anxiety and prevent rolling, which can lead to injury. Walking might also help the horse restore normal intestinal activity and allow him to defecate and/or relieve the buildup of pressure in the intestines. If 30 minutes pass and the clinical signs either are unrelenting or increasing in severity, it's imperative that you have a veterinarian's assistance.

First observe the horse in its stall or paddock.

Note the following:

- general condition and behavior (calm, restless, alert, dull, apathetic)
- frequency of abdominal pain (none, intermittent, or continuous)
- frequency of abdominal sounds (normal, increased, decreased, or absent)
- abdominal size (normal, reduced, distended)
- nature of peripheral pulse (that palpable in the extremities, e.g., legs, neck, head; normal or weak)
- packed cell volume
- capillary refill time (the length of time it takes for gums to return to normal color after pressure is applied, an indicator of the quality of blood circulation through this area)
- other signs (sweating, wounds, etc.)
- water intake
- presence of and consistency and regularity of feces

Further examination of the colic patient includes a measure of pulse and respiratory rates (normal resting pulse rate is 36 beats/minute and respiration rate is 8-16 breaths/minute), rectal palpation, and passing a stomach tube. Based on what he or she finds during an ultrasound of the abdomen, the veterinarian might choose to pass a stomach tube to release fluids or gas from the stomach (ingesta only goes one way in the horse and releasing this pressure can not only serve as a treatment for the horse's discomfort, it can help the veterinarian assess the colic's severity, along with a rectal exam, the diagnostic ultrasound mentioned, and

sometimes even an abdominal tap.).

After these observations, the veterinarian can suggest a treatment, depending on the type of colic. For example, veterinarians can treat a mild, intermittent colic conservatively, while a horse with a twisted intestine (torsion) requires surgery.

Treatment

After an initial exam to determine the type and severity of the colic, a veterinarian might involve using analgesics (pain relievers). Often he or she gives the horse mineral oil (about 1 gallon) through the nasogastric tube to lubricate the tract and to act as a laxative to help fecal matter move through the tract.

Evaluate the horse in the period following the initial treatment. Because of the possibility that the intestines might have an obstruction, check the horse at frequent intervals (hourly or more frequently, in some cases) following the initial treatment. If it doesn't appear that the horse's clinical signs have been alleviated, the veterinarian should consider that the horse has an intestinal obstruction, and surgery might be necessary. Have your truck and trailer (or a transportation arrangement) ready for such a scenario. In this case, you will want to call ahead to the referral hospital so the veterinarians are expecting your horse. When making the decision to go to a referral hospital, it is important to understand that the costs of hospitalization and surgery may be significant. Being prepared to deal with the financial aspects ahead of time is important. Also, in

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situations where the animal has insurance (major medical or mortality), it will be important to contact the insurance adjuster and bring appropriate contact information with you to the hospital.

Prevention

Avoiding colic involves many parameters. Most important is proper management. Avoiding situations which predispose the horse to colic will undoubtedly reduce the incidence of colic.

Here are some practical steps to reduce chances of colic:

1. Do not overgraze pastures and paddocks (horse will be less likely to ingest sand).
2. Provide a clean, and abundant fresh water at all times.
3. Feed on a regular schedule from day to day.
4. Do not feed moldy or spoiled grain or hay.
5. Provide adequate long-stem roughage in the horse's diet.
6. Keep stalls and paddock areas free from foreign objects that the horse might ingest.
7. Put all horses on a regular, properly designed deworming program. This step is imperative.

In general, good, practical horse management, along with common sense, can help the horse owner avoid situations which could predispose horses to colic. If signs of colic do arise, contact your veterinarian. **UK**

This fact sheet was prepared by the equine section, Department of Animal Sciences via Cooperative Extension Service, University of Kentucky, College of Agriculture.

UK FACULTY MEMBER TO PARTICIPATE IN MULTISTATE RESEARCH PROJECT

Jill Stowe, PhD, assistant director in the University of Kentucky Department of Agricultural Economics, will participate in a USDA education project, along with Cooperative Extension agents (<http://www.csrees.usda.gov/Extension>) and university faculty across the region.

The five-year project, titled "Environmental Impacts of Equine Operations," will focus on three areas: horse and pasture interaction; nutrient management and manure management; and water, soil, and air quality in horse operations.

The regional project was proposed by Michael Westendorf, PhD, associate extension specialist for the Department of Animal Sciences, of Rutgers, The State University of New Jersey. Westendorf proposed the project to the USDA after noticing the knowledge gaps in those areas. Little is known about the environmental impact of equine operations, so project participants will conduct research to fill in some of those gaps. Using extension and research channels, extension agents will then disseminate findings.

According to Stowe, information will be distributed through short courses, fact sheets, or online seminars toward the end of the five-year project. Research is still in the planning stages, but it will

begin soon.

The effects of manure and fertilizer runoff on soil and groundwater seem like obvious choices to study, Stowe said, but even nutrition (horse's diets) and medications can impact the environment in a large-scale farm or sporting event area. Previous research suggests the excess nitrogen and phosphorus in feed, which pass through horse manure and urine, can affect marine life in

both freshwater and saltwater environment; moreover, antibiotics and other medications given to horses might also cause problems for life in the soil and water.

Extension agents involved in the project will represent Connecticut, Louisiana, Maryland, Pennsylvania, and Vermont Cooperative Extension. Aside from Stowe and Westendorf, other university faculty members

involved are from Rutgers, South Dakota State University, the University of Minnesota, North Carolina State University, Michigan State University, and Auburn University.

Stowe became interested in the project because of her interest in the economic implications of altering an equine operation to become more environmentally friendly. Having an agricultural economist on board was not originally part of the plan, Stowe said, but she believes it is important to making the project a success.

"Many of the best management practices prescribed by university experts have implica-



Dr. Jill Stowe

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tions both for the safety of the horse and for the well-being of the environment," Stowe said. "An economist can evaluate these benefits in human welfare terms, and also look at different policies and policy implications in terms of regulations or incentives or benefits transfers, and what affect those have on farm profits and efficiency."

It is anticipated that the environmental impact of equine operations is rather small relative to other livestock production operations, but still, Stowe believes, it is important for the industry to know how management practices affect the environment, in addition to understanding the benefits of improving those practices.

"It never hurts to be proactive," she said. **UK**

Natalie Voss is a UK equine communications intern and undergraduate student in equine science.

UK RESEARCHERS TO RECEIVE GRANTS FROM KENTUCKY HORSE RACING COMMISSION

Kentucky horse racing officials agreed Jan. 5, 2010, to fund six new research grants to be conducted at the University of Kentucky.

The projects approved unanimously by the Kentucky Horse Racing Commission target a variety of areas of interest to horse racing in Kentucky and elsewhere. The grants include:

- "Comparison of in vitro antiviral activity of herpesvirus DNA polymerase inhibitors against neuropathogenic and non-neuropathogenic strains of equine herpesvirus-1," awarded to Udeni Balasuriya, BVSC, MS, PhD, at UK's Gluck Equine Research Center. Others involved in the project (all at the Gluck Center) include: Frank Cook, PhD, research assistant professor; Peter Timoney, MVB, PhD, FRCVS, Frederick Van Lennep Chair in Equine Veterinary Science; Thomas Tobin, MVB, MSc, PhD, MRCVS, Dipl. ABT; Pamela Henney, research specialist; and Kathryn Smith, graduate student.
- "Safety and anti-inflammatory efficacy of glucocorticoids for intra-articular therapy in racehorses," awarded to James MacLeod, DVM, PhD, John S. and Elizabeth A. Knight Chair, professor of veterinary science at the Gluck Center. Others involved in the project (all at the Gluck Center) include: Wenying Zhu, PhD, and Jennifer Janes, DVM, PhD.
- "Changes in gastrointestinal flora in response

to antibiotic therapy and dietary intervention," awarded to Laurie Lawrence, PhD, Department of Animal and Food Science. Also involved in the project is Michael Flythe (U.S. Department of Agriculture).

- "Methods to suppress estrus in race mares," awarded to Edward Squires, MS, PhD, Hon. Dipl. ACT, executive director of the Gluck Equine Research Foundation and director of advancement and industry relations. Also involved in the project is Mats Troedsson, DVM, PhD, Dipl. ACT, chair of UK's Department of Veterinary Science and the Gluck Center.
- "Deuterated internal standards for equine therapeutic medication regulation," awarded to Thomas Tobin. Others involved in the project include: Julio Gutierrez, post doctorate fellow at the Gluck Center; Charlie Hughes, research specialist at the Gluck Center; Rodney Eisenberg (FrontierBioPharm); and Brent Mayer (Neogen Corp.).
- "Seroprevalence of *Lawsonia intracellularis* in central Kentucky Thoroughbred weanlings," awarded to David Horohov, PhD, William Robert Mills Chair in Equine Immunology at the Gluck Center. Others involved in the project include Allen Page, DVM, PhD, and Barry Meade, DVM. **UK**

Alexandra Harper is a UK equine communications intern and undergraduate majoring in communications.

IMMUNOLOGY OF FOALS: ENVIRONMENTAL EFFECTS ON IMMUNE MATURATION

Newborn foals can be susceptible to many viral and bacterial infections. One example is the unique susceptibility of young foals to *Rhodococcus equi*, a common cause of bronchopneumonia (see Figure 1).

Foals' increased susceptibility appears to be due to their immune systems not being as developed as those of adult horses. While maternal antibodies obtained through colostrum provide some degree of protection, immunity against intracellular pathogens, such as viruses and bacteria (*R. equi*, for example), is dependent upon the generation of cell-mediated immune (CMI) responses. It is this component of the immune system that appears to be most deficient in foals and leads to their infection susceptibility.

The focus of the immunology research program at the Gluck Equine Research Center is to understand the underlying mechanism responsible for this deficiency, in order to develop therapeutic strategies that might increase a foal's resistance to *R. equi* and other infectious disease-causing pathogens.

Vaccines are typically used to protect horses from infectious diseases, but there are a number of difficulties associated with vaccinating young animals, due to their undeveloped immune systems. Newborn foals often produce sufficient antibodies, but they have a limited CMI response

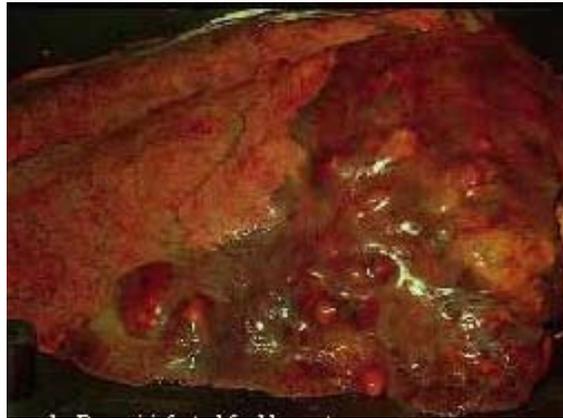


Figure 1: A lung collected from a *Rhodococcus equi* infected foal.

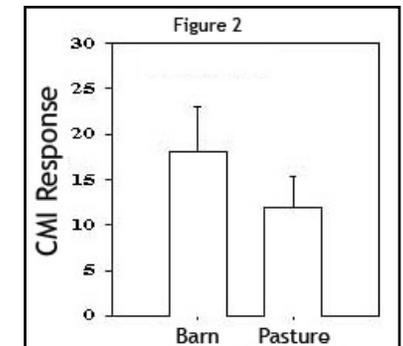
to vaccines. Such biasing toward an antibody response fails to provide protection against viral and bacterial infections, such as *R. equi*. Horses must develop potent CMI responses to have complete immunity against these pathogens. The factors in newborn foals that are responsible for this are not known, but could include maternal environment during pregnancy.

Mares produce factors during pregnancy that inhibit CMI responses, possibly as a means of preventing fetal rejection. These maternal influences might persist in the neonate, leading to delayed CMI responses.

The process whereby the immune response of the neonate eventually matures, leading to increased resistance to viruses and bacteria, remains unclear. Current opinion is that encounters with microbial products in the environment might be required for immune system maturation of

newborn foals. The Gluck Center's immunology group recently presented a paper at the Conference of Research Workers in Animal Disease, describing how foals that spent four hours a day in the barn had elevated CMI responses compared to foals kept in pastures only (Figure 2).

While the precise mechanism involved in increased CMI responses is unknown, it likely involves stimulation of the immune system by microbial products present in the barn environment. Current research efforts are directed toward understanding this process of the foal's immune system maturation. [UK](#)



David W. Horohov, PhD, is the William Robert Mills Chair in Equine Immunology at the Gluck Center.

NEONATAL ISOERYTHROLYSIS

Neonatal isoerythrolysis (NI) is caused by an incompatibility of blood types between a mare and her foal. If a foal inherits from its sire a red cell factor (antigen) that the mare lacks, the mare might develop antibodies to that antigen. There is no harm to the foal in utero, as there is no comingling of the mare's blood with that of the fetus. However, the antibodies will be present in the mare's colostrum and will be ingested by the newborn foal.

After the foal nurses and receives colostrums the antibodies will transfer across the foal's intestinal mucosa and enter its bloodstream. The antibodies will attach to the foal's red blood cells and cause their destruction, resulting in a jaundiced foal and, in severe cases, death, unless quickly diagnosed and treated.

How mares become sensitized to red cell antigens they don't possess is a mystery, but transplacental hemorrhage or exposure to the foal's red cells during parturition have been suggested as possible mechanisms. A mare's first foal is seldom affected, but subsequent foals carrying the offending antigen will be at risk.

Horses have complicated blood types, consisting of 30 or more factors (antigens) that are grouped into systems (A, C, D, K, P, Q, and U). Factors within each system are designated with small letters. The factors most commonly associated with NI are Aa and Qa. Mares that are

negative for these factors are the ones most at risk for developing anti-red cell antibodies.

Approximately 19% of Thoroughbred mares are negative for the Aa or Qa antigens, and 17% of Standardbred mares are negative for Aa (Qa being extremely rare in Standardbreds). The relative frequency of these antigens in a breed determines the risk of a mating producing an NI foal. For example, only 3% of Thoroughbred mares might be negative for Aa, but since most Thoroughbred stallions are positive for Aa, the risk is greater that an incompatibility will occur.

Managing mares at risk for producing an NI foal consists of screening the mares for anti-red cell antibodies within the last 30 days of pregnancy or after udder development has begun. Sera from mares are tested against a panel of known blood types to determine the specificity and concentration of any antibodies that are present. While it has been standard practice to withhold foals only from mares with a titer of 1:16 or greater, some practitioners believe that any positive result, regardless of strength or specificity, is sufficient cause to withhold the foal from nursing. This is because in some cases a low pre-partum titer to a red cell antigen can increase significantly just prior to foaling.

If an anti-red cell antibody is found in the mare, the foal should not be allowed to nurse and should be given banked colostrums that was tested safe; the dam's colostrum should be stripped out over a 24-hour period before allowing the foal to nurse normally.

In a mare with a history of producing an NI foal, either all subsequent foals should be withheld from nursing for 24 hours, as explained above, or the mare should be bred only to stallions that do not possess the red cell antigen to which she is sensitized.

Since DNA typing has widely replaced blood typing for identification and parentage purposes in the last 15 years, the number of laboratories offering blood typing and antibody screening services has diminished. Some large veterinary clinics offer NI testing and red cell typing for the most common antigens involved in incompatibilities. The University of Kentucky Animal Genetic Testing and Research Laboratory is the last major facility offering full blood typing and screening services (<http://www.ca.uky.edu/gluck/ServEPVL.asp>). 

Kathryn Graves, PhD, is the director of the Animal Genetic Testing and Research Laboratory at the Gluck Equine Research Center.

Reprinted from the Equine Disease Quarterly, January 2010, University of Kentucky, College of Agriculture, Department of Veterinary Science.

NEW EQUINE INFLUENZA PCR ASSAY NOW AVAILABLE IN KENTUCKY

The Livestock Disease Diagnostic Center (LDDC) at the University of Kentucky now offers a molecular diagnostic assay to detect the H3N8 equine influenza virus (also known as type 2 equine influenza virus) in clinical specimens. Currently only the H3N8 subtype is associated with equine influenza virus outbreaks around the world.

This new assay is the most sensitive method to detect this respiratory viral pathogen. The assay is based on real-time RT-PCR (reverse transcription-polymerase chain reaction) technology, which is highly sensitive and specific for the detection of H3N8 influenza virus. The assay was recently developed and validated at UK's Maxwell H. Gluck Equine Research Center and published in the *Journal of Clinical Microbiology*.

"(Real-time RT-PCR) is a laboratory technique based on polymerase chain reaction to detect viral nucleic acids (specifically viruses with RNA genomes like equine influenza) in clinical specimens. Use of real-time RT-PCR assays has significantly improved the diagnosis of infectious diseases," said Udeni Balasuriya, PhD, of the Gluck Center.

Equine influenza is an acute, highly contagious viral respiratory disease of equids (horses, donkeys, mules, and zebras) caused by infection with

type A influenza virus. Equine H3N8 influenza virus spreads rapidly in susceptible horses and can result in high morbidity (illness) within 24-48 hours after the horse is exposed. A provisional diagnosis of equine influenza must be confirmed by laboratory testing. Furthermore, the need to achieve a rapid diagnosis to implement effective quarantine and movement restrictions is important to prevent spread of equine influenza.

The diagnosis of equine influenza was traditionally attempted by virus isolation from clinical samples in chicken eggs or by detection of viral antigen by immunoassays. The recommended specimen type is the nasal swab submerged in a viral transport medium that is then packed in ice. There are special equine nasal swab sampling kits available from the Gluck Center (see contacts below).

The cost of the new equine influenza test per animal is \$35 for in-state and \$52.50 for out-of-state submissions. Tests will be set up Monday through Friday.

For more information contact molecular biologist Steve Sells (Stephen.sells@uky.edu) or Craig Carter DVM, PhD (craig.carter@uky.edu) at the LDDC, or Balasuriya (ubalasuriya@uky.edu) at the Gluck Center. [UK](#)

Alexandra Harper is a UK equine communications intern and undergraduate majoring in communications.

UPCOMING EVENTS

Jan. 28, 4 p.m., [Horse Behavior](#), Sue McDonnell, PhD, University of Pennsylvania School of Veterinary Medicine. This is part of the Department of Veterinary Science Equine Diagnostic and Research Seminar series. Location: Kentucky Horse Park, South Theater

Jan. 31, 8:30 a.m., Third Annual Breeders' Seminar, hosted by the Kentucky Quarter Horse Association and the UK Equine Initiative. Crowne Plaza Hotel, Louisville Airport, 830 Phillips Lane, Louisville, Ky.

Feb. 25, 4 p.m., Ernie Bailey, PhD, from UK's Gluck Equine Research Center will speak about [genetic diseases in horses](#). This is part of the Department of Veterinary Science Equine Diagnostic and Research Seminar series. Location: Kentucky Horse Park, South Theater

March 25, 4 p.m., Molly E. McCue, DVM, MS, PhD, Dipl. ACVIM, from the University of Minnesota, will speak about [Polysaccharide Storage Myopathy](#). Location: Kentucky Horse Park, South Theater

UK Equine Initiative and/or Gluck Center faculty and/or staff are participating in all of these events.



**HORSES ARE BUILT TO COMPETE
WITH OTHER HORSES.
NOT PARASITES.**



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