

# Quarterly

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University of  
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## Commentary



## International



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In general, bad news travels quickly and is often distorted and exaggerated whereas good news travels slowly and oftentimes is unreported. The equine industry is no exception. Outbreaks of equine disease fall into the bad news category and their reporting, whether factual or otherwise, can have serious implications for the movement of horses at a national and international level.

The purpose of the *Equine Disease Quarterly* is to provide accurate information highlighting an increase or decrease in the incidence of a particular equine disease or syndrome. It will also document the emergence of new or unfamiliar conditions.

Particular attention will be given to disease incidence as it relates to the equine population of the state of Kentucky, utilizing the extensive resources of the University of Kentucky's Maxwell H. Gluck Equine Research Center and the Livestock Disease Diagnostic Center as well as the Animal Health Division of the Kentucky State Department of Agriculture.

Information will also be published on outbreaks of equine disease occurring elsewhere in the United States and other parts of the world. By providing up-to-date, factual information decisions about disease, control and prevention can be implemented in a logical and economical manner.

This first issue will be distributed to more than 2,000 individuals, but we will be pleased to mail future issues to additional readers on request. Funding of the *Quarterly* has been provided for the next three years by Lloyd's of London Underwriters and Brokers and their Kentucky agents. We look forward to your constructive comments enabling us to enhance the quality of our publication.

### Second Quarter '92

Information received from the International Collating Center, Newmarket, England confirmed the following disease outbreaks:

**Equine influenza subtype 2** was reported from France, Sweden, Switzerland and the United Kingdom. **Contagious equine metritis** was reported from the Netherlands and Japan. Outbreaks of **strangles** caused by *Streptococcus equi* and abortion due to **equine herpes virus type 1** were reported from 8 countries.

### Equine Fatigue Syndrome

A letter in the *Veterinary Record* of July 18, 1992 from equine veterinarian Sydney Ricketts and his colleagues in Newmarket, England presents observations which suggest an association between enterovirus infection and horses with lethargy and low exercise tolerance. They describe 32 horses aged 2 to 24 years with a history of lethargy lasting from 4 weeks to 2 years.

Hematological samples revealed a leucopenia and/or a reversed neutrophil/lymphocyte ratio in most cases. Serum samples from a high proportion of affected horses contained detectable enterovirus protein 1 (VP1), whereas 11 animals without evidence of the syndrome gave negative results. Investigations undertaken at St. Mary's Medical School in London confirmed the presence of RNA which was indistinguishable from that of human enterovirus in the blood of 9 cases. Attempts are underway to grow and characterize this possible etiological agent.



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## New Mosquito in Florida Could Become Vector of EEE

The first isolation of Eastern equine encephalitis (EEE) virus from a species of mosquito, *Aedes albopictus* was reported by biologists from the Centers for Disease Control, Fort Collins, Colorado in the July 24, 1992 issue of *Science* magazine.

*A. albopictus* was probably first introduced into Texas from Asia during the mid-1980s with the importation of used tire casings. Between 1986 and 1991 *A. albopictus* extended its range from 1 to 61 of the 67 Florida counties.

In June 1991, 14 isolates of EEE were obtained from pools of approximately 10,000 *A. albopictus* trapped at a used tire dump in Polk County, Florida. The analysis of blood meals from these mosquitoes confirmed that they had fed on cattle, deer, humans, raccoons, birds, and rabbits.

During the spring of 1991 heavy rainfalls in northern Florida resulted in large populations of *Culiseta melanura* as well as floodwater mosquito species which serve as vectors of EEE. Consequently, 70 equine cases of the disease were reported in Florida by early July, the most ever reported in a season by that time.

The widespread distribution of *A. albopictus* in Florida and other areas of the United States raises concern that it may become a vector of EEE virus. Its opportunistic feeding habits make it well suited for this role and may increase the risk of EEE virus transmission to humans and equines in endemic areas.

The situation has been further exacerbated in southern Florida following the catastrophic consequences of Hurricane Andrew, which created an ideal environment for the multiplication of a variety of mosquito species.

## Disease Outbreak at Three Northeast Racetracks

During the month of July 1992 a number of Thoroughbred horses stabled at three racetracks (Rockingham Park, NH; Suffolk Downs, MA; and Foxboro, MA) developed a variety of clinical signs. The most frequently reported clinical signs included fever, up to 104°F lasting for approximately 24 hours, edema of at least one limb persisting on average for 5 days, increased digital pulses, and injected mucous membranes. The onset was sudden but the vast majority of horses recovered within several days.

By August 11 it was estimated that 225 out of a population of 2,400 horses had been affected, the last reported case occurring on August 10. A quarantine on the movement of horses at the three racetracks was imposed during mid-July with the restrictions being eased at the beginning of August.

Laboratory samples submitted to the National Veterinary Services Laboratory, Ames, Iowa; the Foreign Animal Disease Diagnostic Laboratory, Plum Island, New York; the Maxwell H. Gluck Equine Research Center, Lexington, Kentucky; and the Veterinary Diagnostic Laboratory, Cornell University, Ithaca, New York, have not provided a diagnosis to date.

All samples were negative for equine viral arteritis (EVA), equine infectious anemia (EIA), equine herpes virus (EHV-1), Getah virus, African horse sickness virus, and equine influenza. State, USDA veterinarians and faculty from Tufts University have undertaken a detailed epidemiological investigation of the outbreak. There has been no evidence of secondary cases among horses not associated with the three racetracks.

An embargo on the movement of horses from the six New England states was imposed by numerous states outside the area from mid-July onwards, but these have been gradually eased or lifted since the beginning of September.

Canada suspended the 30-day temporary health certificate for horses originating from the United States on July 22. All horses entering Canada must be inspected and certify they have not been in contact with horses at the three racetracks since June 15. Horses may continue to be exported from the United States to the 12 countries of the European Community providing there is certification that they have not been in contact with horses at the three racetracks within the previous 60 days and have not been in any of the six New England states during the past 30 days.



### EQUINE DISEASE QUARTERLY

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## Rabies—A Continued Threat From Wildlife

Although rabies is not a disease often associated with horses, cases have occurred during recent years in Kentucky and throughout North and South America. The disease is transmitted when an animal shedding virus in its saliva bites another, or when its saliva contacts the abraded skin or mucous membranes of another animal or human. Rabies is a 100% fatal disease in humans and domestic animals.

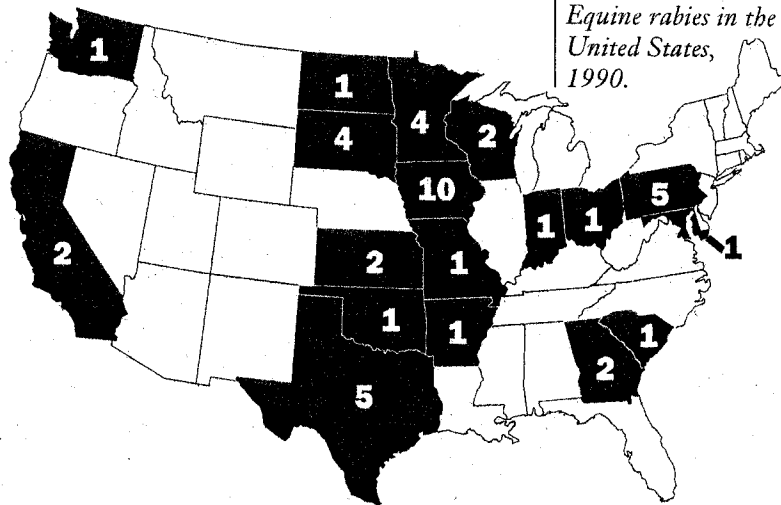
Figures from the Centers for Disease Control in Atlanta, Georgia confirmed 45 equine cases in the United States during 1990 (Figure 1). Although there has not been a reported case of rabies transmitted from horse to humans, the risks associated with being in contact with a rabid animal are significant, emphasizing the importance of vaccination and prevention.

During 1991 there were 50 cases of animal rabies diagnosed in 33 Kentucky counties, as reported by the Kentucky Cabinet for Human Resources, Division of Epidemiology. The majority of cases (31) were in skunks, as illustrated in Figure 2, which gives the geographic distribution of cases within the state. As of August, no rabid horses have been diagnosed in Kentucky during 1992. One horse was diagnosed positive in 1991; 0 in 1990; 4 in 1989; and 2 in 1988.

Horses are most likely to become infected by a bite from a rabid animal such as a skunk or raccoon, even though many times a bite wound cannot be detected. Rabies in foxes and bats also occurs in the United States and poses a risk to horses. Current testing procedures on brain tissue can pinpoint the origin of the virus to the wildlife source, whether it be skunk, raccoon, bat, or fox.

The clinical signs exhibited by horses with rabies are variable and include behavior change (especially aggressiveness), recumbency, incoordination, muscle tremors, paralysis, convulsions, increased sensitivity to light, sound, and touch (hyperesthesia), depression, and salivation. Once clinical signs develop, death usually results within 10 days.

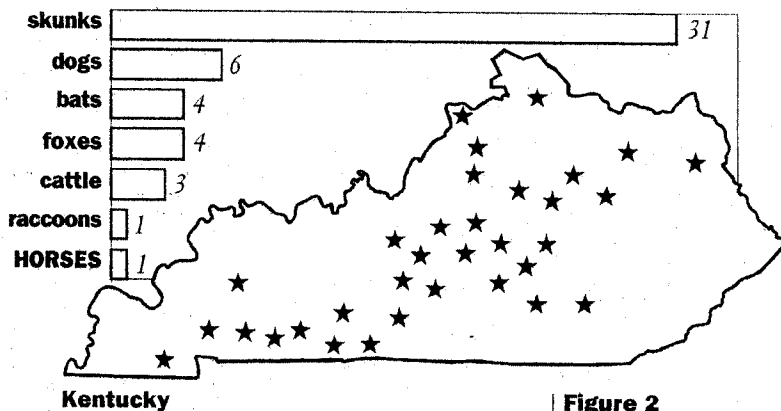
There is presently no way to confirm a diagnosis of rabies in a live animal. A fluorescent antibody test on brain tissue taken at necropsy is the common method of diagnosis. Positive results are reported to public health officials who ensure that all exposed individuals receive proper immunizations.



**Figure 1**  
Equine rabies in the United States, 1990.

Effective killed vaccines are available for use in horses, cattle, and sheep as well as dogs and cats. Farm managers should establish with their veterinarian a routine yearly rabies vaccination program for all horses, commencing with foals over 3 months of age. Farm dogs and cats can be vaccinated with 3-year rabies vaccines. Wild animals, especially foxes, raccoons and skunks, should not be adopted as pets. These animals can harbor the virus for months without showing clinical signs.

Contact: Dr. Roberta Dwyer, Maxwell H. Gluck Equine Research Center, (606) 257-4285.



**Figure 2**  
Distribution by county of cases of animal rabies, 1991.



## Leptospira-Induced Abortion

All equine abortion cases received at the Livestock Disease Diagnostic Center from July 1, 1988 through June 30, 1992 were tested for leptospirosis. During the 1989 foaling season 15 of 594 cases were diagnosed positive. Two cases occurred on one farm with the remainder as single cases on individual farms.

Of 726 cases submitted in the 1990 foaling season, 32 were confirmed as leptospirosis. One farm had three cases, five farms had two cases, and 19 farms had a single case. During the 1991 foaling season, of 776 submissions 12 cases were diagnosed on 12 separate farms.

Most recently, of 756 cases examined during the 1992 foaling season 19 were confirmed as leptospirosis. Twelve of 14 farms had a single case, one farm had two cases, and one farm had five cases. The farm with multiple cases experienced a single case of leptospirosis during the 1991 season.

Over the last four years, 2,852 equine abortions were examined and 78 (2.7%) were diagnosed as leptospirosis. Fifty-one of the 78 cases occurred during November and December, as illustrated in Figure 3. The age of the infected fetuses ranged from 6 to 11 months except for 1 of 107 days. The distribution of cases by breed was 56 Thoroughbred, 17 Standardbred, and 5 other breeds.

Contact: Drs. James Donahue, Kockanda Poonacha, or Barbara Smith, Livestock Disease Diagnostic Center, (606) 253-0571.

## Rotavirus—Foals Remain at Risk

Rotavirus continues to be a problem causing diarrhea in foals in areas of intensive breeding throughout the world. Outbreaks of foal diarrhea are expensive not only in the cost of medication and increased labor to care for sick foals, but also because there is always the threat of mortality, especially in foals under two weeks of age.

Of foals necropsied and tested for rotavirus at the Livestock Disease Diagnostic Laboratory during the 1992 foaling season, four died from rotavirus enteritis. Twelve foals testing positive died from other primary diseases, such as pneumonia, septicemia, severe liver disease, or perforated gastric ulcers.

Rotavirus is the cause of more than 90% of farm outbreaks of foal diarrhea in Central Kentucky. Most cases are mild with foals not nursing, being depressed, and having varying severities of diarrhea for 24-48 hours. Because the virus is so contagious, an outbreak can easily spread to many foals within days.

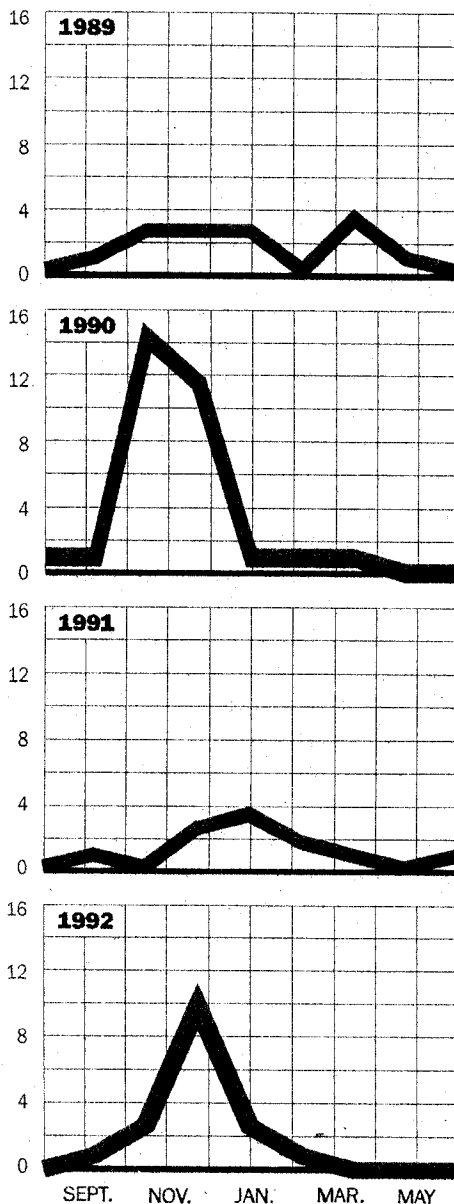
Rapid diagnosis of rotavirus in fecal samples is accomplished through latex agglutination tests available at most veterinary laboratories. Even though serum neutralization (SN) tests have been developed for detection of rotavirus antibodies, experimental and field studies have shown that individual titers of mares or foals are not a reliable means of diagnosis.

Although human rotavirus accounts for 5-10 million deaths annually worldwide, an effective vaccine is not available. Swine and bovine rotavirus vaccines have been developed and although anecdotal reports claim that use of the bovine vaccine in foals prevents diarrhea, no controlled studies have been done to substantiate this. A vaccine specifically for horses is not available, however a preliminary vaccine trial was undertaken at the University of Kentucky during the current foaling season.

For now, effective farm management techniques and thorough disinfection with a phenolic disinfectant such as Tek-Trol® (Bio-Tek Industries, Inc., Atlanta, GA) or 1 Stroke Environ® (Calgon Vestal Laboratories, St. Louis, MO) have proven effective in preventing and controlling diarrhea outbreaks, as well as other contagious diseases.

Contact: Dr. Roberta Dwyer, Maxwell H. Gluck Equine Research Center, (606) 257-4285.

**Figure 3**  
Confirmed cases of leptospira-induced abortion by month.



## EIA in Western Kentucky

During 1991, 63,650 equine blood samples were tested for Equine infectious anemia (EIA) in the state of Kentucky. The majority, 47,282 (private tests), were submitted by horse owners to comply with the state's EIA regulations. These stipulate that horses offered for public sale shall be negative to the AGID (Coggins) test within the previous 6 months. Horses and other equidae moving within the state to fairgrounds, livestock showgrounds, boarding stables, trail rides, and races must also be negative for the Coggins test within the previous 12 months.

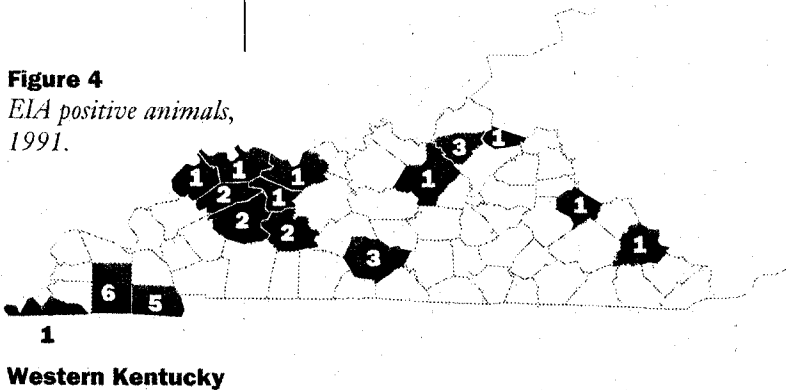
The remaining 16,368 samples (market tests) were obtained from horses going through markets and stockyards as part of the Kentucky State Department of Agriculture's ongoing surveillance program. A total of 32 positives occurred during 1991, split equally between private and market samples. Figure 4 shows the distribution by county of positive samples, and indicates the high prevalence in the western part of the state, particularly Graves and Calloway counties.

For the first 6 months of 1992, 34,291 samples were tested (26,256 private tests; 7,776 market tests; and 259 as a result of tracing incontact horses associated with positive cases). A total of 25 positives were identified, 12 from private tests, 6 by market tests, and 7 as a result of tracing. Their distribution by county is indicated in Figure 5, the majority (14) being identified in Graves, Calloway, and Marshall counties.

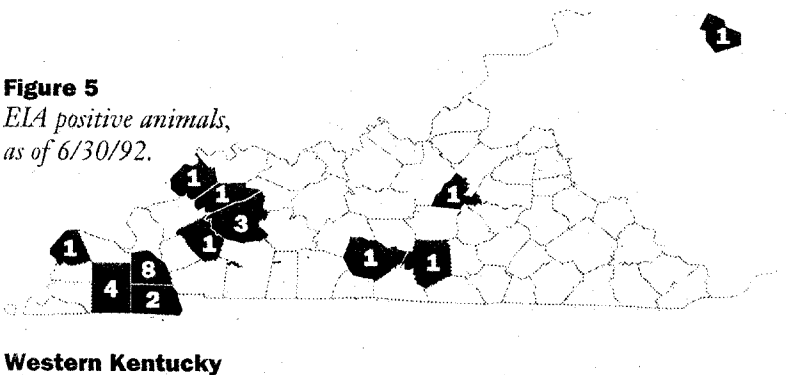
There appear to have been two separate foci of EIA infection in southwestern Kentucky. One involved a group of neighborhood pleasure horses which possibly became infected in the summer of 1991. The second involved a group of horses used for trail riding which had been at pasture in northern Tennessee during the summer of 1991. All of the positive animals identified during the early part of 1992 were slaughtered or euthanized except for a mule which is quarantined prior to slaughter.

Contact: Rusty Ford, Division of Animal Health, Kentucky State Department of Agriculture, Frankfort, (502) 564-3956.

**Figure 4**  
EIA positive animals,  
1991.



**Figure 5**  
EIA positive animals,  
as of 6/30/92.



### Increase in EHV-1 Abortions

During the 1992 foaling season 30 cases of equine herpes virus abortion (rhinopneumonitis, EHV-1) were confirmed among mares on farms in central Kentucky by the Livestock Disease Diagnostic Center. Multiple cases occurred on four farms, one with 8 cases, a second with 3, and two farms each with 2 cases.

Analysis of the DNA of the 1992 isolates indicates that they were almost equally distributed between B and non-B fingerprint types. All the reported cases occurred among Thoroughbred mares, and with the exception of 3 cases there was a history of repeated vaccination during the aborted pregnancy.

The number of confirmed cases of EHV-1 abortion among Thoroughbred mares in the central Kentucky area between 1960 and 1992 has ranged from a high of 81 in 1963 to a low of 13 in 1991. The trend in recent years, as illustrated in Figure 6, has shown a significant reduction in the prevalence of EHV-1 abortion. There has also been a reduction in the number of abortion 'storms' despite an increase in the mare population. This significant trend was associated with an increase in the standards of farm man-

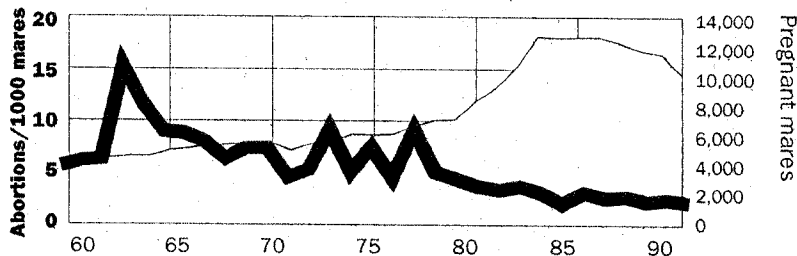
agement and the widespread introduction of vaccination programs, particularly during the early 1980s.

However, as illustrated by the figures for 1992, vaccination alone does not provide a guarantee against the occurrence of multiple abortions. Data derived over the last five years indicate that of 104 mares which aborted due to EHV-1 approximately 50% had received the inactivated vaccine Pneumabort® K (Fort Dodge Laboratories, IA), 30% the live vaccine Rhinomune® (SmithKline Beecham, Lincoln, NE), with the remaining 20% indicating no recent history or insufficient information on vaccination history.

The data on vaccination history of mares which aborted should be interpreted with caution as it is not known what proportion of the vaccinated population received either the inactivated or the live vaccine.

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**Figure 6**  
*EHV-1 abortion and the population of pregnant mares in Kentucky, 1960-1990.*



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