


# Quarterly

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C O M M E N T A R Y

After several years of apparent freedom, outbreaks of Contagious Equine Metritis (CEM) have been reported in several countries with a case in an imported stallion identified in the United States. Having successfully controlled the disease by implementation of the Codes of Practice following the outbreaks which occurred during the late 1970s, it is worth contemplating possible reasons for its re-emergence.

Undoubtedly a reservoir of infection has been maintained among various breeds in Europe and Scandinavia. Although the higher echelon of Thoroughbred mares and stallions has been regularly tested as recommended in the Codes, particularly in Europe, mares and stallions at the lower end have not been subjected to such detailed scrutiny.

With the passage of time, a generation of horse breeders and veterinarians has emerged worldwide who have little or no familiarity of the disease, nor an appreciation of the technical complexities involved with swabbing mares and stallions and treating those identified as positive. A review of recent and old publications describing these techniques would be advantageous. This is particularly important following a recent change in the USDA requirements for the importation of horses from CEM countries. Mares are no longer required to undergo clitoral sinusectomy. A series of swabs from the clitoral fossa and sinuses is required prior to treatment. Stallions must still cover two test mares prior to treatment but the duration of the testing and treatment period has been reduced.

Reports of outbreaks from the United Kingdom and Japan and the case in the United States of a stallion while still in quarantine, emphasize the role of the "carrier" stallion and the "high risk" mare as a source for initiating outbreaks. The "high

risk" mare is defined as one with a known history of the disease, that has been treated and requires a series of negative swabs prior to being covered.

This issue includes a questionnaire which we urge you to complete and return. Its purpose is to determine the future design and method of presentation of the *Quarterly*; we would like to know if our readers are more interested in receiving printed information or accessing that same information via the Internet.

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University of Kentucky  
College of Agriculture  
Department of  
Veterinary Science

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INTERNATIONAL

## Third Quarter 1996

The International Collating Centre, Newmarket, and other sources confirmed the following disease outbreaks.

Cases of EHV-1 abortion were confirmed among unvaccinated Thoroughbred mares in Australia and among non-Thoroughbreds in Italy. Equine-2 influenza was diagnosed among several breeds of horses in France, non-Thoroughbreds in Sweden, and Thoroughbred racehorses in the United Kingdom.

More cases of strangles were diagnosed in Hong Kong and Singapore among animals recently imported from Australia and New Zealand. Cases were also reported in Holland, Ireland, Italy, Sweden and the United Kingdom. *Salmonella typhimurium* was isolated from horses on several premises in Ireland. Contagious Equine Metritis (CEM) was confirmed among horses in Japan, the United Kingdom and the United States. Further isolations of African Horse Sickness virus were

reported from South Africa involving eight of nine provinces with the exception of Western Cape Province. Cases of dourine affecting donkeys and non-registered horses were reported in the Eastern Cape Province during the first six months of the year.

Venezuelan Equine Encephalitis (VEE) was isolated from horses in Mexico during July as reported in the last issue of the *Quarterly*, with the last positive case diagnosed on July 14. Approximately 60,000 horses in areas surrounding the outbreak were vaccinated during August and September. During the early part of October, Eastern Equine Encephalitis (EEE) was diagnosed among horses in the state of Tamaulipas, Mexico, which borders the United States. Nearly 100 horses died and an extensive program of vaccination was undertaken. No human cases were reported.

## More CEM

This is an update on an earlier report of CEM occurring among horses in the United Kingdom during 1996: additional cases have been confirmed.

Prior to the end of the 1996 breeding season CEM was diagnosed on four separate premises in the United Kingdom. Forty-nine primarily Thoroughbred cases involving the streptomycin resistant strain of *Taylorella equigenitalis* occurred on three premises, although all were linked by animal movement with transmission following covering. In addition to mares and stallions, several teasers were found to be positive. The fourth outbreak involved an Arabian stallion imported from Eastern Europe which infected eight mares with the streptomycin sensitive strain.

Japan reported *T. equigenitalis* isolated from 24 mares on 23 premises. Twenty-one mares acquired infection from a single stallion which had covered a mare that tested positive in 1994, had been treated, swabbed and considered free of CEM. Of the mares which tested positive, half showed clinical signs, mostly mild, with only four showing typical signs. However, positive mares had a conception rate of only 50%.

Recently a 5-year old Fiord stallion imported to Kentucky from Norway during the summer was determined to be a "carrier." The stallion was found to be positive while in quarantine based on the isolation of *T. equigenitalis* from two test mares

it covered as part of the importation procedures required by the USDA and the Kentucky Department of Agriculture.

Reports of CEM from several countries highlight the need to re-emphasize the procedures for diagnosing and treating the disease. This is particularly relevant with the increased movement of Thoroughbred stallions between north and south hemispheres performing dual season covering. Attention should not just focus on Thoroughbred horses, however, but include the multitude of other breeds that are currently involved in international trade.

In the United States, stallions should be swabbed and cultured for CEM at the commencement of the breeding season and mares arriving from countries which have reported the disease should be similarly checked. Regarding treatment of positive cases, it is imperative that the penis of the stallion be cleaned and scrubbed when fully erect and the clitoral sinuses of mares, particularly the central sinus, be thoroughly exposed and cleansed prior to treatment.

### CONTACT:

Dr. David G. Powell, (606) 257-2756  
Maxwell H. Gluck Equine Research Center

### Equine Disease Quarterly



#### Editors

Roberta Dwyer  
Lenn Harrison  
David Powell

#### Staff

Deborah Witham  
Diane Haughey  
Linda Millercox

Correspondence should be addressed to the editors, Department of Veterinary Science, Gluck Equine Research Center, University of Kentucky, Lexington, KY 40546-0099. Telephone (606) 257-4757. Fax (606) 257-8542.

#### Internet address:

gopher.ca.uky.edu  
or  
<http://www.uky.edu/Agriculture/VetScience/gluck1.htm>

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N A T I O N A L

## Health Survey

Your input is requested regarding priorities for equine health monitoring. The National Animal Health Monitoring System (NAHMS), a nonregulatory agency within the United States Department of Agriculture, is planning to conduct the first NAHMS equine study in 1998. The NAHMS program is designed to help meet animal health information needs of US agriculture. NAHMS studies focus on nationally relevant issues for the animal industry.

We are very interested in having those of you allied with the horse industry help us determine where the information gaps are for equine health information, and thus, what are good candidates for the study focus. To facilitate gathering input

from the many diverse segments of the horse industry, an 800 telephone number and internet access are available to gather responses.

Telephone callers and visitors to the world wide web site will be asked to answer a series of questions regarding their priorities for the national study. There is no cost to respondents and input will be invaluable in setting the focus for NAHMS Equine '98.

To give your input, call 1-800-545-8732 from any touchtone telephone in the US or lock into the internet address ([http://www.aphis.usda.gov/equine\\_survey/](http://www.aphis.usda.gov/equine_survey/)) between January 1, 1997 and March 15, 1997. You will be asked to answer a short survey designed to collect your input. Thank you for helping to make the NAHMS Equine '98 study a success!

**CONTACT:**  
Dr. Josie Traub-Dargatz, (970) 221-4535  
Colorado State University Teaching Hospital, Fort Collins, CO;  
or  
Dr. Nora Wineland, (970) 490-7800  
Centers for Epidemiology and Animal Health, Fort Collins, CO

## Melatonin — The Hormone of Darkness

During the past year melatonin has received enormous attention from the news media because of the possible role of this hormone in controlling normal sleep rhythms, as a treatment for jet-lag, and as a means to slow the aging process. The list of possible roles and potential uses of melatonin does not stop there, but at this time much of our understanding of melatonin in most biological processes is very limited.

However, one exception is the role of melatonin in timing the onset and cessation of the breeding season in mammals. In this process, melatonin is not a timekeeper or clock but acts to synchronize inherent rhythms to the correct time of year. Secretion of melatonin is confined to the nighttime hours and for this reason it is referred to as the hormone of darkness. Information regarding the time of year is therefore measured by the length of the night and the duration of increased melatonin secretion.

Although domesticated by man, the horse has

retained a seasonal pattern of reproductive activity confined to the spring and summer months. The importance of daylength in controlling the timing of the breeding season was recognized nearly 50 years ago, and today many broodmare farms employ artificial lighting, beginning in early December, as a practical method to advance the onset of the breeding season.

While most mares cease reproductive activity during the winter months, California veterinary researchers reported almost a decade ago that during the winter a small proportion of mares continue to exhibit estrous cycles. However, mares that display activity in one winter may become reproductively inactive the succeeding winter, suggesting it is not an all-or-none phenomenon. It is also of interest that while reproductive rhythm may be disturbed in some mares, other seasonal rhythms are not. It would appear the occurrence of estrous cycles during the winter stems not from a failure to recognize the change in daylength, but rather from misinterpretation of the signal provided by melatonin.

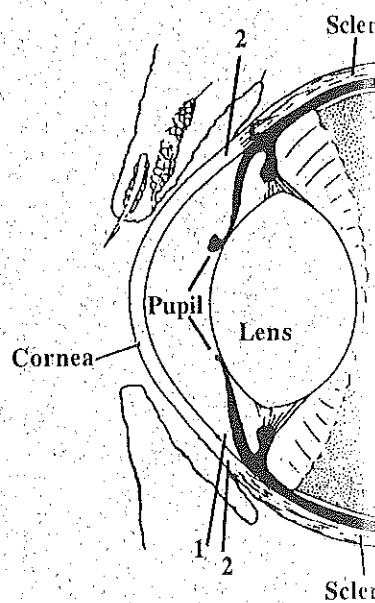
Since melatonin synchronizes the annual rhythm of reproductive activity, it may provide a convenient alternative to lighting programs. The concept of using melatonin as "time in a bottle" for application to the horse breeding industry is hampered by the lack of a method to reduce melatonin secretion to simulate the long days and short nights of the summer months. An alternative approach might be to alter the response of the reproductive system to melatonin. The strategy would be to induce refractoriness to melatonin such that the animal no longer shows a response to the hormone.

Research in France has demonstrated that administration of melatonin for six months, beginning in the summer, resulted in an earlier onset of the breeding season in the subsequent year, despite the fact that mares did not receive supplemental lighting. The apparent escape of the reproductive system to constant exposure to melatonin is referred to as refractoriness.

Treatment with melatonin may offer many advantages to conventional lighting programs because of the ease of administration and cost. If incorporated into a biodegradable matrix it may be possible to reduce administration of melatonin to 2-3 month intervals, thereby providing enormous flexibility in the management of the broodmare.

Additional applications for melatonin include the suppression of estrous cycles and, conceivably,

Figure 1



Adapted from Anatomy of Domestic Animals, 5th edition, Pasquini & Spurgeon

timing the occurrence of parturition so that foals are born predominantly during the daytime rather than at night. Future research may show "time in a bottle" to be a realistic tool for the equine practitioner.

**CONTACT:**  
Dr. Barry Fitzgerald, (606) 257-3757  
Maxwell H. Gluck Equine Research Center

K E N T U C K Y

## Ophthalmic Disease Outbreak

From July 10 to August 1, 1996 approximately 65 nursing foals and 2 yearlings developed uni- or bi-lateral corneal edema with multiple cases on individual central Kentucky farms.

There was acute onset of corneal opacity, usually with a rim of edema in the dorsal portion of the eye, although total opacity was also observed; some eyes had superficial corneal ulceration (**Figure 1**). Other clinical signs included supraorbital swelling (swelling over the upper eyelid), hypopion (accumulation of inflammatory cells in anterior eye chamber, #1 on figure), corneal limbal neovascularization (growth of new blood vessels at the edge of the cornea and sclera, #2 on figure) and a watery ocular discharge; signs of eye pain and photophobia were absent in the majority of cases.

Foals did not exhibit systemic signs of fever, nasal

discharge; cough, diarrhea, etc. All reported cases were on Standardbred farms, although this should not be construed as being a breed-specific disease. There was no history of pesticides, herbicides or other chemicals used on the farms or on animals.

Cases were treated symptomatically and responded to medications (ophthalmic antibiotics, atropine, topical and systemic nonsteroidal anti-inflammatory drugs) within a week, although at least one case has recurred. This foal had unilateral involvement which resolved, then developed corneal opacity in the opposite eye three days later. No visual compromise has been reported from

Equine Disease Quarterly

# Survey

Help us to ensure we are providing you with useful information by answering the following questions about this publication. Responses posted within the United States do not require a stamp. Those posted outside the United States will require a stamp to cover the cost of mailing. We thank you for your cooperation and interest.

1. How useful are the articles which appear in the Quarterly?

Extremely useful  Occasionally useful  Not at all useful

2. Is the language in which the articles are written too technical?

Yes  No

3. Are there any areas that you would like to see covered which are not at present?

Yes  No

If Yes, what are they? \_\_\_\_\_

4. Do you presently access the Quarterly via the Internet?

Yes  No

If No, do you think that you will within the next two years? \_\_\_\_\_

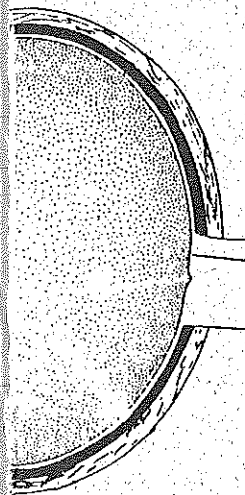
5. Country of residence  USA  Canada  Other

(If other please specify) \_\_\_\_\_

6. Occupation  Veterinarian  Horse owner  Other

(If other please specify) \_\_\_\_\_

Optic disc



cases, although one foal developed a deep central corneal ulcer which took several weeks to resolve.

Samples were taken from dams and their affected foals on three Standardbred farms. Aerobic bacterial cultures were negative on conjunctival swabs from foals; however, most had already been treated with at least one dose of ophthalmic antibiotic ointment. One mare had a >1:100,000 titer to *Leptospira*, although the foal was negative. Acute and convalescent blood samples had no significant titer increase to influenza, equine viral arteritis or

equine herpesvirus-1 and 4. Virus isolation on conjunctival and nasopharyngeal swabs was positive for a slow growing herpesvirus on all foals. Typing of this virus isolate is currently in progress.

Veterinarians who have experienced similar "outbreaks" of eye disease in nursing foals are encouraged to contact Dr. Dwyer.

**CONTACT:**

Dr. Roberta M. Dwyer, (606) 257-4285

rmdwyer1@ukcc.uky.edu

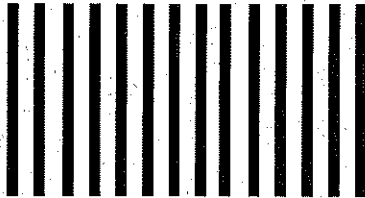
Maxwell H. Gluck Equine Research Center;

or

Dr. Mary Lynne Vickers, (606) 253-0571

Livestock Disease Diagnostic Center

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Gluck Equine Research Center, 0099  
500 South Limestone  
Lexington, KY 40508-9963



## Cardiovascular Disease

Diagnosis of conditions referable to the cardiovascular system was made in 191 horses necropsied at the Livestock Disease Diagnostic Center between January 1, 1993 and December 31, 1995. During this period 4,757 equine necropsies were performed with cardiovascular disease representing 4% of the equine cases. All ages of horses were represented with 79% of the cardiovascular cases being Thoroughbreds, while 73% of the total equine necropsy cases were Thoroughbreds.

Two conditions were by far the most common, representing 63% of all cardiovascular cases. These were rupture of the uterine or ovarian artery (101 cases) and cranial mesenteric arteritis (20 cases). Ninety cases of rupture of the uterine or ovarian artery were Thoroughbreds, 5 Standardbreds and the remainder single cases representing several breeds. Rupture of an artery resulted in fatal hemorrhage and, as in other similar reports, was a condition of older mares, with an average age of 18 years (range 7-26 years). Most cases occurred around the time of parturition; the mare typically exhibited acute death or signs of colic or shock. Necropsy examination usually revealed free blood in the abdominal cavity and a large hematoma within the broad ligament and uterine wall.

Cranial mesenteric arteritis, also called verminous arteritis, is a condition resulting from damage to the cranial mesenteric artery caused by *Strongylus vulgaris* larvae. Larvae penetrate the intestine and migrate to the cranial mesenteric artery where they cause damage and inflammation which can

result in occlusive thrombotic lesions. Of the 20 cases, most were in adult animals average 8 years (range 4 months - 26 years); however, only 4 cases were in Thoroughbreds. This probably represents area management practices rather than breed resistance.

Other diseases affecting the heart included inflammatory conditions in which the cause was usually unknown. In this group were 11 cases of endocarditis, 10 myocarditis, 2 epicarditis, and 5 pericarditis. These diagnoses were based on microscopic demonstration of inflammatory cells in an area of the heart. The cause of these conditions is usually believed to be an infectious agent.

Other cardiac conditions included 13 cases of congestive heart failure, 6 of endocardiosis, 2 of cardiomyopathy, and congenital malformations. Congenital malformations of the heart were rare with 5 Thoroughbred foals diagnosed with this condition over the 3 year period. Within this group

were 4 cases of ventricular septal defect and 1 with both patent ductus arteriosus and patent foramen ovale. There were 5 cases of non-specific vasculitis, 5 rupture of the vena cava and 3 of an umbilical blood vessel. Three cases of rupture of the vena cava were foals occurring at the time of parturition, with the tear in the vena cava just caudal to the liver or at the diaphragm. Interestingly, all 3 were reported to be "red bag" (premature placental separation) deliveries. The cases of umbilical vessel rupture also occurred at the time of foaling and were the result of trauma, the foal dying from intra-abdominal hemorrhage.

Cardiovascular neoplasia was rare with 3 cases diagnosed. All were hemangiosarcomas and in adult horses. Sites included liver, spleen, lung and nasal sinus.

**CONTACT:**

Dr. Neil Williams, (606) 253-0571  
Livestock Disease Diagnostic Center

**Newsletter**  
**Department of Veterinary Science**  
**Gluck Equine Research Center**  
**University of Kentucky**  
**Lexington, KY 40546-0099**

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