Equine Disease Quarterly

JULY 1996
Volume 4
Number 4

FUNDED BY LLOYD'S OF LONDON UNDERWRITERS AND BROKERS AND THEIR KENTUCKY AGENTS

IN THIS ISSUE

University of Kentucky
College of Agriculture
Department of Veterinary Science

COMMENTARY

Strangles was one of the first equine diseases to be described by the early writers of veterinary science. They commented on its contagious nature and propensity to affect young as distinct from old horses. The primary source of infection was considered drinking buckets contaminated with nasal secretions from diseased horses. Subsequently strangles was a frequent diagnosis among the legions of horses involved in military campaigns throughout the world. Adverse climatic conditions, long train journeys, fatigue, changes of stabling and recent illnesses were identified as factors contributing to the massive epidemics that resulted.

As reported in this number of the *Quarterly*, not a great deal has changed over the centuries. Strangles is still widely reported in North America and all other areas with major populations of horses. A primary factor contributing to the spread of the disease is the movement of horses, particularly those that have recovered but no longer show clinical signs, although shedding the organism via nasal secretions. As the international movement of horses continues to escalate, strangles ranks high on the list of diseases likely to be transmitted.

Prevention through identification and isolation of infected horses, hygiene and disinfection must play their part. Testing of horses being moved within and between countries utilizing rapid but accurate diagnostic procedures is an additional requisite. Most important is the need for a safe and efficacious vaccine.

In the last number of the *Quarterly*, it was erroneously stated that Glanders is recognized in Australia. An Australian reader noted the only known occurrence of the disease in that country was in 1891 among imported circus horses held in quarantine. We apologize for this error.

INTERNATIONAL

First Quarter 1996

The International Collating Center, Newmarket, confirmed the following disease outbreaks.

Because of unusually high rainfall resulting in an increase in insect populations, South Africa reported an increase in the number of cases of African Horse Sickness in its northern provinces. Several different serotypes were isolated including serotypes 1, 2, 4, 6 and 9. EHV-1 abortions among mares were reported from France, Ireland, Italy, Netherlands, Sweden, Switzerland and the United Kingdom. The paralytic form of EHV-1 was also reported on several premises in the United Kingdom. Evidence of equine viral arteritis (EVA) infection was reported from South Africa on one premise, considered to have originated with a "shedder" Lippizaner stallion imported in 1989.

Equine-2 influenza was reported in various breeds from France, Sweden and among polo ponies in the United Arab Emirates. *Salmonella typhimurium* was reported to have caused foal mortality on two farms in South Africa and was isolated from horses in Ireland and New Zealand.

Cases of strangles were widespread reported from Australia, Hong Kong, Italy, New Zealand, Sweden, Switzerland and the United Kingdom. The single case in Hong Kong was diagnosed among horses in quarantine, recently imported from Australia and New Zealand.

In the United States equine arteritis virus was isolated from a 12-year old Thoroughbred stallion in Kentucky. A semen sample proved positive after two mares covered by the stallion in 1995 seroconverted to the virus. Infection was not associated with clinical disease.

A higher than usual number of abortions caused by EHV-1 were diagnosed in Kentucky during the foaling season. Several farms experienced multiple abortions among the 38 cases confirmed to the end of May.

CEM in the UK

The following was provided by Dr. Charles J. Frank, veterinary advisor to the Thoroughbred Breeders Association in the United Kingdom.

After a lapse of six years, the bacteria causing Contagious Equine Metritis (CEM) was isolated from a pregnant Thoroughbred mare in Scotland during March of this year. The streptomycin-resistant strain of *Taylorella equigenitalis* was isolated from a routine clitoral swab as recommended under the Codes of Practice published annually by the Horserace Betting Levy Board in the United Kingdom. Following the identification of the organism, the stallion which covered the mare and other stallions and mares which were resident on the stud farm in Shropshire were checked for the presence of CEM. Two stallions, the teaser and several mares covered by the stallions during 1995 or the early part of this year were found to be positive.

During April a maiden mare covered by a stallion on a farm in Leicestershire proved to be positive. The source of infection was considered to be the stallion which had just previously covered a mare from the farm in Shropshire.

Mares, stallions and teasers on both farms were examined as recommended in the Codes of Practice and all positive animals treated. No further cases have been identified since the end of April. Clinical signs have not been observed among mares from which the organism was isolated. In the laboratory the bacteria has proved difficult to culture and investigations are underway to determine whether it differs from previously isolated strains.

Equine Rabies in Canada

In Canada, rabies diagnostic testing is done by two laboratories in the Food Production and Inspection Branch of Agriculture and Agri-Food Canada. The Animal Diseases Research Institute (ADRI) in Nepean, Ontario, is responsible for areas of eastern Canada including Ontario, Quebec, New Brunswick, Nova Scotia, Prince Edward Island, Newfoundland and eastern Northwest Territories (NWT). The ADRI in Lethbridge, Alberta, serves Manitoba, Saskatchewan, Alberta, British Columbia, Yukon and western NWT.

The use of monoclonal antibodies has demonstrated that there are a number of antigenic variants of the rabies virus in Canada. In Saskatchewan and Manitoba, the striped skunk is the main vector for the "western skunk" strain. In Ontario and Quebec, both the red fox and the striped skunk are the primary hosts for the "Canadian arctic" strain found in this region. More than one rabies virus variant is associated with bats, which is found across Canada from British Columbia to the Atlantic provinces.

In Quebec and Ontario the number of horses diagnosed with rabies has decreased in the years from 1990 to 1995, as shown in **Table 1**. This follows the trend in the total number of rabid animals in this region; 1995 had the lowest number of positive specimens since 1961. The disappearance of rabies from large areas of Southern Ontario is attributed to fox immunization campaigns conducted with a live attenuated oral vaccine by the Ontario Ministry of Natural Resources. The single case of equine rabies in Quebec in 1994 yielded a virus variant similar to isolates from little brown bats.

Two horses from the Atlantic region were diagnosed as rabid in 1992. Circumstances did not allow for virus isolation and monoclonal antibody typing but it is suspected that these horses were infected from bats. In the past 12 years, all other cases of rabies in Nova Scotia, New Brunswick and Prince Edward Island have proven to be of bat origin.

Table 1. Equine Rabies in Canada

	Saskatchewan	Manitoba	Ontario	Quebec	Nova Scotia & New Brunswick	Total
1990	2	1	21	6	—	30
1991	—	—	8	7	—	15
1992	—	1	13	4	2	20
1993	3	3	9	—	—	15
1994	—	2	2	1	—	5
1995	1	—	5	—	—	6

Equine Disease Quarterly

Editors
Roberta Dwyer
Lenn Harrison
David Powell

Staff
Deborah Witham
Diane Haughey

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

Printed on recycled paper

The University of Kentucky is an Equal Opportunity Organization.

No cases of equine rabies in the 1990-1995 period were submitted from the provinces of British Columbia, Alberta, Prince Edward Island, Newfoundland, Yukon Territory or the Northwest Territories.

CONTACT:
J. Kush[1], S. Prins[1] and A. Wandeler[2], Animal Diseases Research Institute, Agriculture and Agri-Food Canada.
[1] P.O. Box 540, Lethbridge, Alberta, Canada T1J 324; (403) 382-5500.
[2] 3851 Fallowfield Road, P.O. Box 11300, Station H, Nepean, Ontario, Canada K2H 8P9; (613) 998-9320.

N A T I O N A L

Controlling Strangles

Outbreaks of strangles were diagnosed during the spring of 1996 on farms in Kentucky and elsewhere in the United States. The source of infection was often a mare recently introduced from another location.

The consequences of strangles during the breeding season include the direct debilitating effects of the disease, quarantine of affected premises, delays in breeding schedules, and the risk of severe disease in susceptible foals. Outbreaks that continue into the summer compromise preparation of animals for sale in the fall and the economic effects may be significant.

The causative organism *Streptococcus equi* is an obligate parasite of equids and survives only briefly in the environment. Transfer from horse to horse usually involves direct face-to-face contact or exposure of horses to contaminated feed, water, hands, veterinary instruments, grooming tools and twitches. A stall or van recently used to house or transport a horse that is shedding *S. equi* may also be a source of infection. However, because the organism dies quickly in the environment, the usual source of infection is an infected horse.

The contagious nature of strangles requires that measures to control spread be rigorous. Infected animals must be identified and isolated quickly to minimize contagion, morbidity and disease severity. Features of the disease and causative organism of value in control include:

- A mean incubation period of 10 to 12 days following exposure to an infected horse.
- Onset of fever 2 to 9 days **before** nasal shedding is detectable.
- Nasal shedding of *S. equi* for 2 to 3 weeks after onset of clinical signs.
- Nasal shedding beyond 3 weeks in only a **small** percentage (≤ 2) of affected horses.
- Easy overnight presumptive detection of *S. equi* by culture of nasal swabs, washes or abscesses on Columbia CNA blood agar. A PCR method recently developed at the Gluck Equine Research Center allows detection of *S. equi* DNA in 6 hours.
- Infection of individual horses in a group is not simultaneous; *i.e.*, some horses do not become infected until a variable number of days after the initial case.
- Antibiotic therapy is often ineffective in eliminating *S. equi* and so there is a high probability of relapse following cessation of therapy.
- Protective immune responses are poor in antibiotic treated horses.

The Strangles Control Plan (see chart), is designed to minimize morbidity, severity, and reduce the numbers and virulence of *S. equi*. If implemented, the duration of an outbreak is shortened.

In the absence of control measures a strangles epizootic will ultimately affect all susceptible horses, be of extended duration, and be associated with a significant risk of purpura hemorrhagica and metastatic abscesses.

Vaccines consisting of bacterins or M-protein-rich extracts, although immunologically potent, do not stimulate a satisfactory level of resistance. The level of immunity stimulated by vaccines is lower than that produced during recovery from strangles because of failure to stimulate mucosal antibodies. Vaccines are effective in stimulating colostral IgA responses in pregnant mares when administered a month or so before foaling. Foals acquire protective M-protein specific mucosal IgA that will protect them for three to four months. Foals younger than four months make poor responses to M-protein and vaccination at this age is not recommended.

Vaccination during an outbreak is of no value to horses already infected. In the case of non-infected animals, the results of one study of weanling foals has shown the clinical attack rate was reduced by 50% during the weeks immediately following the last vaccination.

CONTACT:
Dr. John Timoney, (606) 257-4172
Maxwell H. Gluck Equine Research Center

Strangles C

- Newly introduced animals should be is of strangles or other diseases.
- Affected or presumptively infected ho
- Rectal temperatures of in-contact hor recorded for 2 to 3 weeks.
- Horses showing temperature elevations separated pending their inclusion with the
- Nasal swabs or washes from affected 3 occasions at 4 to 7 day intervals fo cessation of nasal shedding and clearan
- Only severely affected animals shoul penicillin G administered intramuscularly. antibiotic therapy and develop strong pr

continued

ntrol Plan

lated for 2 weeks and observed for signs

ses should be immediately quarantined.

es should be measured twice daily and

of 1.5°F or greater should be immediately affected group.

orses in isolation should be cultured on owing abscess drainage to determine e of infection.

l be treated with an antibiotic such as Most cases recover uneventfully without otective immune responses.

Disinfection of Equine Facilities

Strangles, influenza, salmonellosis, rotavirus...infectious disease outbreaks are costly when considering the value of the horse, lost performance time, missed breeding dates, veterinary treatment and control measures. Proper disinfection of facilities is paramount in disease prevention.

An appropriate disinfectant should destroy the organisms on the surfaces where they are located. The chemicals effectively used in human hospitals to disinfect linoleum, stainless steel, plastic and glass are vastly different from those used in barns and on horse equipment. Farms have a variety of porous and nonporous surfaces so the disinfectant must be effective in the presence of organic matter in which the majority of pathogens are found. *Streptococcus equi, S. zooepidemicus,* influenza and herpesvirus are present in nasal discharges; *Salmonella, E. coli, Actinobacillus* and rotavirus are found in feces. Steam is an effective disinfectant, killing both viruses and bacteria particularly when utilized with a detergent to remove organic debris.

Literally hundreds of disinfectants are on the market for veterinary and medical use. **Table 2** outlines the basic classes of disinfectants and their germicidal activities against common equine pathogens. Because of their effectiveness in the presence of organic matter, phenolics are recommended for use in horse facilities. Bleach and quaternary ammonium compounds are inactivated by organic matter; iodophores and chlorhexidine are most appropriately used for hand washing; and formaldehyde, although highly germicidal, is too dangerous for routine use.

It is necessary to carefully **read the product label** to identify the active ingredients. Phenolics can be recognized by the "-phenol" or "-phenate" at the end of the chemical name. Quaternary ammonium compounds are identified by "-ammonium chloride" in the active ingredients. Iodophores contain iodine or povidone iodine.

Many different phenolic compounds are commercially available. Tek-Trol® (Bio-Tek Industries Inc., Atlanta) and 1 Stroke Environ® (Calgon-Vestal Laboratories, St. Louis) are approved for use in equine quarantine facilities. Both contain over 20% of available active ingredients. When the labor intensive process of cleaning and disinfecting stalls is undertaken, the most effective germicidal compounds should be used.

The most important, and the most overlooked, step in disinfecting a stall is thorough washing of

Table 2. Germicidal Activity of Common Disinfectants

	Rotavirus	Influenza, herpesvirus, adenovirus (enveloped viruses)	Gram-positive bacteria	Gram-negative bacteria	Bacterial spores	Positive features	Negative features
Phenolics	+	+	+	+	—	Not readily inactivated in organic matter	Irritant, corrosive
Hypochlorites (bleach)	—	+	+	+	+	Economical; commonly used as sanitizers	Inactivated in organic matter
Quaternary ammonium compounds (QACs)	—	+	+	—	—	Economical; commonly used as sanitizers	Inactivated in organic matter
Iodophores	+[1]	+	+	+	+	Skin antiseptic	May cause skin irritation
Chlorhexidine	—	—	+	+	—	Skin antiseptic	Inactivated in organic matter
Formaldehyde fumigation (18 hour)	+	+	+	+	+	Highly germicidal	Extremely toxic and usually used only on poultry or swine farms

[1] *10% povidone iodine.*

continued

surfaces with an anionic detergent using a steam cleaner to remove as much soil and organic matter as possible. Cationic and nonionic detergents interfere with the actions of phenols. Even the best disinfectants do not work effectively when poured directly on organic debris. Surfaces must be cleaned, rinsed and allowed to dry. The disinfectant should be sprayed on, allowed to dry and repeated. Contact time with the surface is important to ensure effective germicidal activity. Rinsing off disinfectants is not advisable except when used on feed and water containers.

Besides disinfection of facilities and equipment, isolation of sick animals and use of protective clothing is an absolute necessity. Separate grooming and stall cleaning equipment should be used for sick animals. However, if this is not possible, these items require cleaning and soaking in disinfectant solution for a minimum of 10 minutes. Clothing and towels used on horses should be soaked for 10 minutes in disinfectant solution prior to laundering. Footbaths at the entry to barns and stalls need to be replenished with fresh disinfectant at least twice daily, more with heavy use. Here's a good rule of thumb: if it isn't edible and doesn't move, disinfect it!

Regular hand washing is essential after working with sick animals. Povidone iodine or chlorhexidine hand washing products are best, but alternatively germicidal soaps can be used. In instances where water is not available, waterless hand foams containing >62% ethyl alcohol are germicidal and can be purchased through human medical supply stores. These products are rubbed onto the skin and evaporate within one minute with no sticky residue.

CONTACT:
Dr. Roberta M. Dwyer, (606) 257-4285
rmdwye1@ukcc.uky.edu, Maxwell H. Gluck Equine Research Center

Seeking Information

The John A. Morris Memorial Library opened as part of the Gluck Equine Research Center in 1988. It operates primarily as an electronic information center. How the Morris Library provides services for faculty, staff, students and its other patrons—including the horse industry and veterinarians—reflects the electronic nature of information provided and changing trends in information access.

Traditional library services such as reference questions, current awareness, and literature searches are still offered by the Morris Library. Reference books can still provide the best answer to the patron's question. However, since the late 1980s and continuing into today's information explosion, the most prevalent means of accessing information is electronic. Requests now frequently arrive via electronic pathways such as e-mail and the World Wide Web. The Morris Library offers its users a number of databases and a variety of ways to access them.

The emergence of CD-ROM affected libraries in terms of the primary users of the databases. Previously, the librarian usually served as the intermediary in the literature search process. The availability of CD-ROM shifted focus to the end user. Currently, though many librarians still serve as intermediaries in literature searching on CD, the primary users of the databases are the individual library patrons. Citations and abstracts can be downloaded or printed without any extra charges being incurred.

The Morris Library currently subscribes to 3 bibliographic databases on CD-ROM:

- *Agricola - produced by the National Agriculture Library*
- *Medline - produced by the National Library of Medicine*
- *Sport Discus - from the Sport Information Resource Centre.*

In the 1980s, bibliographic utilities such as OCLC (Online Computer Library Center), which many libraries use for the purposes of cooperative cataloging and resource sharing, began marketing access to databases. One of the current OCLC reference services is FirstSearch, which provides access to OCLC's primary database of library holdings around the world as well as access to 50 other corporate and government databases.

In many research libraries, local systems offer the capability of loading bibliographic databases other than the library's own public catalog. The University of Kentucky currently loads several databases (including a subset of Medline) on its local system. Having the databases on a central library system

continued

makes them available to a broad user population and eliminates the problem of CD-ROM's being limited to stand-alone stations. Because not all libraries can afford such systems, CD-ROM probably will not soon become redundant; it remains a good compact means of data storage and retrieval and provides affordable access to a variety of databases.

Like all libraries on the UK campus, the Morris Library is directly connected to the central library system and can access any of the databases there. FirstSearch databases are also available through University gateway menus, direct telnet access, and most recently through the World Wide Web.

The advent of the Internet has had a major impact on the way libraries go about accessing and delivering information. Gopher servers were the first attempt to organize information available on the Internet. Gophers are useful when dealing with text files and numerical data that can be downloaded into spreadsheets. Many gophers are still available; but in the current Internet explosion, fewer are being created and many are not being maintained or updated.

The World Wide Web (or WWW) is the aspect of the Internet which has had the most impact on the Morris Library. Through the use of browser software programs the librarian or patrons can search the Internet and retrieve text and graphics. Text and image files can be downloaded and stored for use on the user's own system. Many commercial services are now developing Web interfaces that allow the user to search their files. Gopher and file transfer protocol (ftp) sites are also accessible through the Web.

The major problem in dealing with information on the Web is determining the source's reliability. The Web is open to anyone who can gain access. Determining the veracity of a source can be difficult.

Establishing a home page on the Web is a priority for the Morris Library. Certain data files unique to the Morris Library, such as our database of faculty publications and subject oriented bibliographies, can be linked to the WWW page and made available to patrons.

Despite the changing nature of information and the multiplying means of accessing it the Morris Library will continue to adapt and ensure that its patrons have the best access possible.

CONTACT:
Gracie Hale, (606) 257-1192
ghale@ca.uky.edu, Maxwell H. Gluck Equine Research Center

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

Address Correction Requested

U.S. POSTAGE
PAID
NON-PROFIT ORG.
LEXINGTON, KY
PERMIT NO. 51