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# Equine Disease



# Quarterly

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## Commentary

Basic and applied research pertinent to the horse industry, especially the Thoroughbred component, is vastly underfunded. As Chair of Surgery at the University of Louisville School of Medicine, I have long recognized that human medical research receives only a tiny fraction of the vast expenditures for health in the U.S. The situation in veterinary medicine vis-à-vis the Thoroughbred is almost certainly worse.

The Grayson-Jockey Club Research Foundation, Inc. and the Morris Animal Foundation presently represent the only regular sources of significant basic research funding available to open competition in the USA. Fortunately, the Grayson-Jockey Club Foundation has received another gift from the late Mr. Paul Mellon and should play an even greater role.

The Grayson-Jockey Club Foundation, which this year committed to awards exceeding \$700,000, depends on the recommendations of a newly organized Research Advisory Committee, which provides breadth and depth of expertise in a variety of areas. Drs. Gary Lavin and Larry Bramlage provided the leadership in developing this format and carrying through its first review of research proposals.

As a fellow scientist and a person with a significant personal commitment to breeding and racing in Kentucky, I find the breadth of subjects extremely reassuring. Conceptual areas funded at this most recent round include exercise-induced musculoskeletal injury, airway and respiratory problems, basic reproductive frontiers, infectious processes, gastric ulceration, and molecular genetic work.

While the evaluations and recommendations are made by eminent veterinary scientists and clinicians, the Directors of the Foundation are also concerned with balancing wisely the concept of a large number of relatively small grants focused on a wide variety of challenges versus a more targeted approach with more money committed to narrower projects that represent greater health and/or economic concerns to the sport and industry. Similarly, striking a healthy balance be-

tween applied and basic research is more easily said than done.

We need to maintain a healthy balance between such decisions, and in my opinion, the committee ought to consider annually at least one substantial grant that would provide more in-depth and ongoing funding for pursuit of an area that the veterinary committee identifies as being of special importance.

The Grayson-Jockey Club Foundation has taken a role when threats to the well-being of the industry surface. An example was the symposium that brought to light many of the myths, as well as scientific substance, involved in the EPM/wobbler epidemic that was so disconcerting to all of us as little as two years ago. This "clearinghouse" or communication center role is especially important.

While the Directors' functions continue to be primarily fund raising, the opportunities for further synergies with the American Association of Equine Practitioners, and particularly with industry, deserve even more attention. The interaction between the colleges or boards in human medicine research funding agencies such as the National Institutes of Health and the American Heart Association, among many others, has been the linchpin of progress in human medical research and is worthy of emulation.

We should strive to create programs that broadly enhance both basic and applied research and maximize promptness of communication to the practicing veterinarian caring for the individual horse.

I personally feel that the entire Thoroughbred veterinary research endeavor could line up under the new National Thoroughbred Racing Association Charities umbrella for some very modest proportion of any new and/or enhanced revenue stream, which should be diverted to the health of the animals that are the focal point of all our efforts and, indeed, the ultimate athlete. ■

### IN THIS ISSUE

Commentary

#### INTERNATIONAL 2

First Quarter 1999

Outbreak of Erosive Stomatitis in Argentina

#### NATIONAL 3

Weighing Young Horses to Assess Quality and Quantity of Growth

#### KENTUCKY 4

Managing Ticks on Horses

Cutaneous Neoplasms of Horses

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## International

### First Quarter 1999

The International Collating Center, Newmarket and other sources provided the following information.

An outbreak of African horse sickness (AHS) occurred in the Stellenbosch district of Western Cape Province, South Africa during the month of March. The outbreak occurred within the surveillance zone of a recently established controlled area enabling horses to be exported to the European Union. As a consequence all exports of horses have been halted from this area. Exports of horses from the rest of South Africa to the United States are not affected as the United States Department of Agriculture (USDA) considers South Africa an infected area with the requirement that all horses entering the United States undergo a 60-day quarantine in the United States.

The outbreak originated following the illegal introduction of two horses from Free State Province on March 3, without the required health and vaccination certification. Between March 11 and 15 one of the horses became sick but subsequently recovered. On March 21 a horse died on an adjoining property and up to the end of April a further 28 fatalities had occurred on 17 neighboring premises. AHS was confirmed on March 26 and promptly reported to the various international veterinary agencies. The virus has been identified as serotype 7. Movement of horses in the immediate area has been restricted and vaccination against AHS of all horses has been undertaken.

The neurological form of equine herpesvirus was reported in Italy, Sweden and the United Kingdom. The latter outbreak involved a Thoroughbred stud farm with cases of paralysis among pregnant and non-pregnant mares as well as abortions in pregnant mares and respiratory disease among yearlings. Equine herpesvirus 1 (EHV-1) was isolated from aborted tissues and heparinized blood samples. EHV-1 abortion cases were reported from Germany, Ireland, Japan, Netherlands, United Kingdom and the United States.

Strangles cases continued to be reported widely throughout the world.

The last positive premise for vesicular stomatitis in Colorado, USA was released from quarantine on January 22. ■

### Outbreak of Erosive Stomatitis in Argentina

During the months of May and June 1998, a disease clinically characterized by erosive stomatitis affected 20% (60/300) of stabled horses in a riding club situated in Buenos Aires.

Cases were also reported in four other clubs but the number of affected animals was lower and the clinical symptoms were less severe. Affected animals presented erosive lesions in the oral cavity and on the tongue. The areas around the nose, lips, anus and external genitals became dry and cracked. Other signs were a serous nasal discharge, edema and jaundice. Horses did not show anorexia, pain or depression, and the rectal temperature varied between 38.5° and 39.5°C.


Remission of symptoms occurred in 5 to 7 days, leaving two animals with chronic lesions for more than 30 days. Two deaths occurred during the outbreak. The hematological and biochemical profile showed increments of the total bilirubin, and a rise of liver enzymes.

The episode provoked justified worries within equine circles and among the veterinary authorities, who, facing the possibility of an infectious disease, suspended horse-riding activities in the city and suburbs of Buenos Aires. The outbreak was reported to the international veterinary authorities (OIE) and the import and export of equines was cancelled.

Under the supervision of National Services of Animal Health (SENASA), a strategy to find the cause of the problem was established. Samples of the affected animals (nasal and oral swabs, pieces of affected skin, blood, etc.) were taken for virological and serological studies. The results eliminated viral diseases such as vesicular stomatitis, equine viral arteritis and African horse sickness, as well as rhinopneumonitis, coital exanthema, adenovirus, and equine infectious anemia. Bacteriological and mycological studies also discarded the possibility of a bacterial or fungal etiology.

Simultaneously, experimental transmission of the disease with material obtained from affected equines was attempted by the inoculation of two healthy horses. The inoculated horses did not show symptoms or lesions and the hematologic and biochemical status did not alter during the course of 28 days.

The results obtained by the end of June indicated it was not a transmissible infectious disease, so the sanitary precautions were lifted and activities of the



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clubs returned to normal. Once the possibility of infectious disease had been discarded, the diagnosis focused on possible toxic causes.

Supported by bibliographical antecedents and previous clinical observations the suspicion was directed towards wood shavings used as bedding, specifically from the wood of a vegetable species of the *Simaroubaceae* family, commonly referred to as "marupá." The presence of these specific shavings was confirmed by the Centre of Investigation and Wood Technology (CITEMA) and an attempt was made to reproduce the disease.

Two adult equines were stabled on shavings that was 100% "marupá" and fed alfalfa hay spread on the shavings. After 14 days the animals developed erosions in the oral cavity similar to those observed in natural cases. To confirm this observation, four other equines were added to the study. In separate rooms, two of the horses were exposed to "marupá," and the other two remained on wheat bedding. The two equines exposed to the "marupá" died after the fourth and fifth day of exposure, presenting hyperacute cases of erosive stomatitis with lesions similar to the ones observed in natural cases, but of greater severity.

The biochemical-hematologic analysis showed hemoconcentration, hyper-bilirubinemia and a rise of hepatic enzymes. The similarities of the disease obtained experimentally with the disease observed in natural cases established a cause-and-effect relation between the wood shavings used as bedding for stabled equines in the riding clubs.

As a corollary of this episode that affected the interests of horse-riding clubs nationally, steps are being taken to form a National Commission of Equine Health. The commission will collaborate with the veterinary authorities in the formation of strategies and regulations to maintain equine health and protect the horse industry, which represents an important economical activity in Argentina. ■

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## Weighing Young Horses to Assess Quality and Quantity of Growth

Routine weighing of young horses is not by any means a new and novel concept. Windfields Farm in Canada has years of records on body weights of Thoroughbreds and Michael Osborne has used weight gains of horses to assess growth and development at North Ridge in Kentucky and Kildangan Farm in Ireland for twenty years.

Over the last ten years there has been an increase in Central Kentucky in the routine weighing of young horses to assess growth and development. Currently there are numerous farms that weigh foals, weanlings and yearlings and use that information in making management decisions relative to those horses. The primary reason for the increased interest is the development of a reliable data base for use in interpreting weights once they are collected.

When horses are weighed, one is able to assess the horse's development when compared to a set of contemporaries. The weight is a reliable, objective number which can be used as a tool along with visual appraisal to determine if the horse is growing in a normal fashion or if intervention is required either to increase or moderate growth rate.

Weights are viewed as absolute numbers to determine if weight/day of age is within a normal range and also may be used to calculate average daily gain (ADG) and construct a growth curve comparing the growth curve (rate of gain) to a normal growth curve as illustrated in *Figures 1 & 2*. After looking at a number of growth curves of foals it becomes obvious if a mare is not milking well, a foal is sick or has been confined, a foal has some chronic problem that reduces growth rate, foals/weanlings or yearlings on a farm are not performing well or forage becomes limiting or abundant. Feed should then be increased or decreased.

Use of the above information allows the manager to intervene early to get the individual back on track. Many times we see a foal with lower than normal growth take months to achieve the growth that would have been seen had the foal not gone through the slump. Therefore assessment of under perfor-

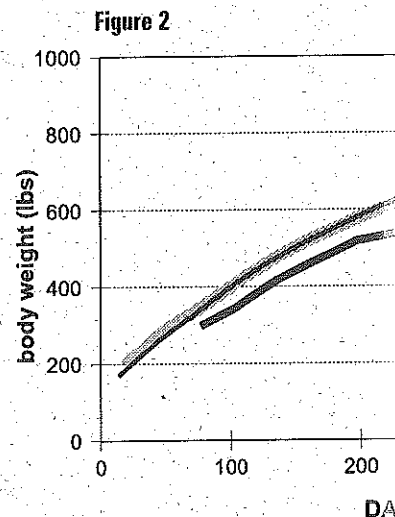
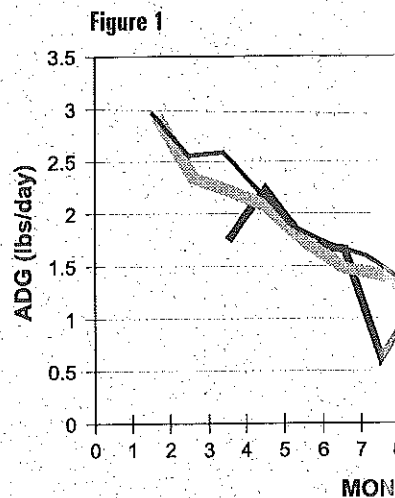
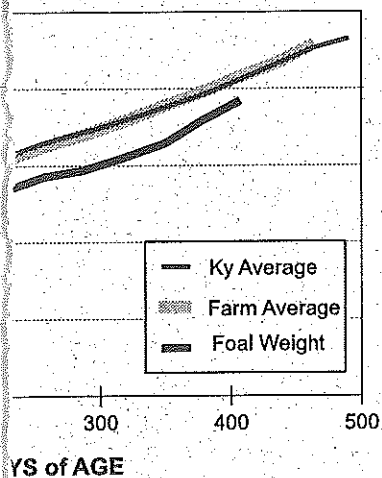
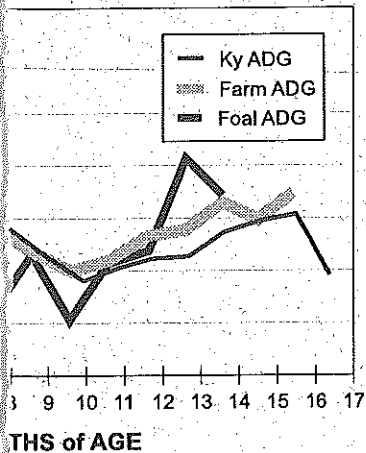


Figure 3—Insecticides Labeled for Equine Use. Consult a veterinarian prior to using or

Insecticide	Concentration
Coumaphos-Co-Ral	25% wettable 11.6% emuls
Permethrin- Atroban, Expar, Ectiban, Gard Star, Hard Hitter, Insectaban, Insectrin, Permaban, Permethrin II	Emulsifiable c various conc



### Tick Control on Horses

*pregnant mares or breeding stallions*

Application	Application
powder or pourable concentrate	Treat animal thoroughly.
concentrate, injections	Repeat in 14 days. Do not treat more often than every 14 days.

mance is aided a great deal by having objective body weights and numbers. Many times the scales provide information that even the most astute horseman is missing or provides more data upon which to base management decisions.

In addition to identifying horses that are not performing well, there are young horses that are growing "too fast." If we look at the growth curves of horses that exhibit some sort of developmental orthopedic disease (DOD) we see that they are extremely rapidly growing horses that show erratic or accelerated growth when compared to other horses of the same age. With a departure from the normal curve, steps can be taken to moderate growth.

The use of weights in the management of horses is a tool to be used in conjunction with good horsemanship. It provides an objective assessment of growth, growth rate and development when compared to a sample of horses of the same breed and age. It is a tool, an inexpensive way to add some objectivity to a very subjective business. ■

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## Managing Ticks on Horses

Ticks are bloodsucking creatures that attach to human or animal hosts at specific times during their life cycle to obtain a blood meal. When full, they drop off and remain hidden in thatch and overgrowth until it is time to feed again.

Ticks are most commonly found in overgrown, brushy areas which provide the shelter and humid conditions that ticks need. These areas also harbor the small mice and other mammals that are important hosts during tick development. Avoidance of "ticky" areas, use of protectants, and keeping horses in mowed pastures where the vegetation dries out quickly and allows penetration of sunlight will reduce problems with ticks.

The lone-star tick and the American dog tick are the most common ticks in Kentucky, and both feed on horses. They are three-host ticks, which means that they attach to and feed upon three different animals during their life. The three animals may be of the same or different species. Underbrush and a large population of small mice and other animals provide plenty of hosts.

Adult American dog ticks are brown and about the size of a small pencil eraser. They have a silvery-gray, shield-like plate covering part or all of their backs. Adult females that have filled themselves with blood are slate-gray and about the size of a raisin. Early stages, larvae and nymphs are much smaller and difficult to identify. They feed almost exclusively on small wild rodents. Dogs are the common host for adult ticks, but these adults also will feed on cattle, horses, and people. They are most likely to be encountered in overgrown areas, woods, and fields. The adult ticks are active in Kentucky from spring through mid-summer.

The lone star tick gets its name from a distinct white spot on the back of the adult female. Adult males do not have this spot; instead, they have pale, lacy white markings on the rear edge of the back. Lone star ticks are most prevalent in western and south-central Kentucky, but are spreading to other areas. They are especially abundant during spring and summer. Lone star ticks have long mouthparts which can penetrate deeply into the skin and make a painful bite. Deep sores can form at the site of attachment and may develop secondary infections.

Small numbers of attached ticks should be removed promptly. The mouthparts of a tick are shaped like tiny barbs. Therefore, the best way to remove a tick is to grasp it with tweezers as close to the skin as possible and pull it straight out with gentle, even pressure. Don't jerk or twist the tick because the head and mouthparts may remain embedded, increasing the chance of infection. If tweezers are unavailable, grasp the tick with a piece of tissue, trying not to squeeze or crush the tick's body since this may force disease organisms into the wound. Petroleum jelly, hot matches, and other "folk" methods of removal should not be used.

If there are large numbers on animals, it is impractical to remove them singly. Curry combs will not do the job. Use a fly wipe-on containing either the active ingredient permethrin or pyrethrins. These fast-acting insecticides will tend to irritate the ticks and prompt them to detach.

For prevention, wipe-ons or whole animal sprays

containing permethrin are safe for use on horses and provide a relatively long term residual effect (in the range of 3 to 5 days). Regular applications are needed to keep protection in place. This is needed only when horses are in "tick country" such as overgrown pastures, edges of woods, etc. See *Figure 3* for information on using pesticides for tick control. ■

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## Cutaneous Neoplasms of Horses

During the period from January 1, 1993 to January 1, 1998, 503 skin tumors, excluding sarcoid, were diagnosed in horses from the Central Kentucky area at the University of Kentucky Livestock Disease Diagnostic Center (LDDC). The most frequently diagnosed tumor was squamous cell carcinoma (36%) followed by melanocytic tumors (20%), squamous cell papilloma (14%), mast cell tumor (5%) and vascular tumors (4%). Other tumors accounting for the remaining 21% included fibroma, sarcoma, carcinoma, lymphoma, basal cell tumor, Schwannoma, adenocarcinoma, adenoma, fibrosarcoma, neurofibroma, neurofibrosarcoma, liposarcoma, trichoepithelioma, myxoma and myxosarcoma.

Cutaneous squamous cell carcinomas (SCC) are locally invasive tumors that are slow to metastasize but frequently recur after surgical excision. The majority were located on the eye or related structures (65%), and external genitalia (20%). Less frequently affected sites included the head, limbs and perineum. The Thoroughbred, which represent 65% of the equine accessions at LDDC, was the breed most commonly affected followed by the Quarter Horse and Appaloosa breeds. The age of affected animals ranged from 1 to 31 years (mean 13.5). Although more female (93) than male (76) horses had SCC, a gender predisposition is not likely.

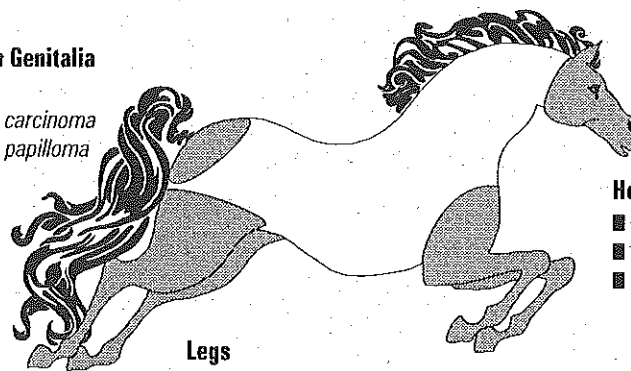
Melanomas are benign tumors that frequently occur in aged gray horses, in breeds such as Thoroughbreds and Arabians which have a high number of gray individuals. Most melanomas developed slowly over months to years and occurred as isolated masses in the perineal and neck regions and over the trunk of the body. Multiple or metastatic lesions were present in a quarter of the cases. Metastases typically occurred late and involved regional lymph nodes. Distant sites were involved less frequently. Affected horses ranged in age from 1 month to 31 years. In seven cases, the melanomas were either congenital or developed shortly after birth. Thoroughbreds (46) and Arabians (17) were the most frequently affected breeds. More melanomas occurred in female (57) than male (37) horses.

Squamous cell papilloma (SCP) is a benign tumor caused by equine papillomavirus infection. Sixty-nine SCPs were diagnosed during the survey period. SCPs were most common on the limbs (24), fol-

Figure 4—Distribution of Skin Tumors

### Perineum, Tail & Genitalia

- Melanoma
- Squamous cell carcinoma
- Squamous cell papilloma



### Head & Ears

- Squamous cell carcinoma
- Squamous cell papilloma
- Mast cell tumor

### Legs

- Squamous cell papilloma
- Vascular tumors

lowed by the head and eyes (20) and external genitalia (12). One third of the affected horses were less than two years of age with Thoroughbreds and Tennessee Walking Horses the most frequently affected breeds. More male (41) than female (21) horses were diagnosed with SCP.

Mast cell tumors (MCT) are benign in horses and, although there is no supporting scientific evidence, may represent hypersensitivity reactions to migrating parasites (*Onchocerca spp*). Twenty-seven mast cell tumors were diagnosed over the five year period; the majority were located on the head. Affected animals ranged in age from 4 months to 33 years with 11 diagnosed in Arabians. More male (19) than female (8) horses were affected. Vascular tumors included hemangioma and hemangiosarcoma, three quarters of which were located on the legs of

affected horses. Two thirds occurred in horses less than two years of age. There was no breed predilection. Only one hemangiosarcoma recurred after surgical excision.

Conclusions from this survey are similar to those made in other studies. Squamous cell carcinoma is the most frequent tumor of the eye and related structures. Mast cell tumors and squamous cell papilloma are benign tumors that occur most commonly on the head and limbs, respectively. Melanomas occur frequently in aged gray horses and are usually benign, but if left unattended may develop metastatic lesions. Vascular tumors occur most frequently on the legs of young adult horses and may be congenital. ■

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