



# VIRGINIA VETERINARY NOTES

VIRGINIA-MARYLAND REGIONAL COLLEGE OF VETERINARY MEDICINE

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## WORDS OF WISDOM

That oft quoted philosopher Yogi Berra, reminds us; "It's difficult to make predictions, especially about the future."

## THOUGHT FOR THE MONTH

While we are postponing, life speeds by. --Seneca

Kent C. Roberts, DVM  
Extension Veterinarian



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AND STATE UNIVERSITY

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VIRGINIA STATE UNIVERSITY

## **RISK OF FELINE INFECTIOUS PERITONITIS IN CATS NATURALLY INFECTED WITH FELINE CORONAVIRUS**

A longitudinal survey of 820 cats in 73 households was conducted over a period of 6 years to establish the fate of pet cats that were seropositive after natural exposure to feline coronavirus (FCoV). In particular, their risk of developing feline infectious peritonitis (FIP) was determined. The seropositive cats were assigned to 1 of 3 groups: cats from households in which FIP had recently been diagnosed; cats from households in which FIP had not been diagnosed, but from which kittens had been relocated and subsequently died of FIP; and cats from households in which FIP had not been diagnosed. Cats in the first group were not at a greater risk of developing FIP than were cats in the other 2 groups. Consequently, any household in which seropositive cats live must be considered a potential source of FCoV that can cause FIP. There was no evidence that the enhanced disease, which has been described after experimentally induced infection of seropositive cats, exists in nature.

Thus, analysis of the survival of the seropositive cats over periods of up to 36 months indicated that their risk of developing FIP decreased with time, suggesting the development of immunity rather than increased susceptibility to disease. In addition, of 56 cats deemed to have been naturally reinfected because their anti-FCoV antibody titers decreased and subsequently increased, only 3 developed FIP. These findings help answer the practicing veterinarian's question as to whether it is safe to introduce a seropositive cat from one household into another household of seropositive cats. Previously, a concern that was exposure to another strain of FCoV would result in increased susceptibility of either the new cat or the incumbents to FIP. We now know that this outcome is unlikely. --**Diane D. Addie, Sarah Toth, Gordon D. Murray, et al in Am J Vet Res (March 1995).**

## **WHEN NAVEL DIPPING, GENTLER IS BETTER**

Strong iodine is not the solution to umbilical health. Dipping the umbilical stump of a newborn foal is a routine management procedure on breeding farms. Yet some managers have long observed that stronger solutions sometimes seem to do more harm than good. Now, research from the University of California-Davis School of Veterinary Medicine has confirmed that when it comes to navel dipping, gentler is better.

A team of researchers compared dipping the navel stump in four common bactericidal solutions: 2% iodine, 7% iodine, 1% povidone-iodine solution and 0.5% chlorhexidine solution. The dipping was done immediately after birth and again six to eight hours later. A fifth group of control foals was not treated with any solution.

The researchers looked carefully at the various solutions' abilities to reduce the type and number of bacteria which typically colonize the umbilicus. They viewed the area with ultrasound to examine the way in which the umbilical vessels regressed and whether they were beginning to abscess. In addition, they followed the progress of separation and atrophy of the umbilical stump and compared that process with the development of complications which may have arisen due to invasion of bacteria.

The results indicated that 7% iodine, while extremely effective in eliminating bacteria, did its job all too well. The strong tincture opened the door for infection, due to rapid drying out of the stump, sloughing of adjacent tissue, and development of a long tail, giving bacteria a free ride into the bloodstream and opening the door to abscessing, systemic infection, and navel ill. Instead, the more gentle solution of chlorhexidine, diluted with water in one-to-four solution proved equally effective in controlling bacteria but without the undesirable side effects.

The results of the study were presented by John Madigan, DVM, at the Sixth International Symposium on Equine Reproduction in Brazil late last fall. --**Modern Horse Breeding, February 1995, as reported in Veterinary Newsletter, April 1995, Utah State University, Logan Utah.**

## EXCESSIVE GROOMING IN CATS

The best way to treat psychogenic alopecia in the cat is to identify and remove the stressor. If this is impossible, mood-modifying drugs may help. The following oral agents have been used to decrease excessive grooming. Phenobarbital at 8-15 mg, BID. Diazepam at 1-2 mg, BID. Primidone at 12.5-25 mg, one, two, or three times daily. The medication should be gradually tapered and discontinued (if possible) when excessive grooming has ceased. --**Sandra R. Merchant, *The Capsule Report*, Vol. 13, No. 2, May 1994, Pg. 2, as reported in *Florida Veterinary Scene*, Vol. 4, No. 4, April 1995, University of Florida, Gainesville, FL.**

## CHRONIC IDIOPATHIC LARGE BOWEL DIARRHEA STUDY MORE CASES STILL NEEDED

The response to our previous requests for dogs with chronic large bowel diarrhea was outstanding! We need your continued help as **four more cases are needed** to complete the study.

This is a randomized, controlled, and double-blinded study that will provide accurate data on the effects of fiber supplementation. Please consider referring dogs with chronic large bowel diarrhea for diagnosis and inclusion in this study. The dog must have signs of large bowel diarrhea for at least 4 weeks. A week is defined as at least 2 days with diarrhea. The 4 weeks can be intermittent, they don't have to be continuous. Signs of large bowel diarrhea include: mucus, frank blood, tenesmus, moderate to severe increased frequency, and decreased volume/defecation. ***Dogs with weight loss can not enter the study.*** Dogs must be dewormed for whipworms prior to referral.

If you are treating a dog that meets these criteria, please call Dr. Leib (703) 231-4621. The dog will receive a full diagnostic workup, including colonoscopy and biopsy. There is no experimentation, only routine diagnostic tests and appropriate treatments will be utilized. If another disease is discovered (inflammatory bowel disease, neoplasia, histoplasmosis, etc.) the client is responsible for 50% of the total charges, usually about \$200. If the dog has idiopathic diarrhea, it can enter the phase II diet trial and the study will pay the entire bill for diagnosis.

Each dog will be fed one of three diets for a six week period. The owner must record the fecal consistency daily. The diets being studied include Hills i/d, i/d with psyllium, and i/d with polysoy fiber. The owner and myself will be unaware of the diet being fed. After the six week trial, the owner may elect to try another diet, be given the supplements to make the diet themselves, or request consultation on medical management of their dog's disease.

The benefits to the client are financial, a free diagnostic workup and at least six weeks of an i/d based diet. The benefits to the profession and all dogs include scientific evidence of the potential role of fiber supplementation in dogs with idiopathic diarrhea. **Please call and refer any cases you can!** Thank you very much. --**Dr. Michael Leib, VMRCVM, Virginia Tech, Blacksburg, VA.**

## ANTIBACTERIAL PROPERTIES OF CANINE SALIVA

Canine saliva was tested for bactericidal effects against bacterial pathogens. Female and male saliva were bactericidal against *Escherichia coli* and *Streptococcus canis* but only slightly, and nonsignificantly, bactericidal against coagulase-positive staphylococcus and *Pseudomonas aeruginosa*. *E. coli* causes highly fatal coliform enteritis of neonatal mammals and *E. coli* and *S. canis* are the main pathogens implicated in neonatal septicemia of dogs. Maternal licking of mammary and anogenital areas could help protect puppies from these diseases. *E. coli* and *S. canis* along with coagulase-positive staphylococcus and *P. aeruginosa* are among the common wound contaminants found of dogs. Wound licking, and the application of saliva, would thus reduce wound contamination by *E. coli* and *S. canis*. Resistance of staphylococcus to bactericidal effects of saliva may be a factor in the high frequency (46%) with which coagulase-positive staphylococcus was isolated from wounds compared with much lower frequency (9-17%) with which *E. coli* and *S. canis* were isolated. --**Vet Med, Iowa State University Extension, Vol. 1, Issue 2, March 1995, as reported in *Animal Health Beat*, Vol. 11, No. 4&5, April & May 1995, University of Nevada, Reno, NV.**

## DISEASE OUTBREAKS ASSOCIATED WITH BVD VIRUS

Recent reports suggest cattle herds in the U.S. are being affected by atypical bovine viral diarrhea (BVD) virus with the disease occurring in cows as well as calves and heifers, and with higher than expected morbidity and mortality. This acute/peracute manifestation is characterized by high mortality and clinical signs including the following: high fever (107°F or higher), anorexia, decreased milk production (in dairy cattle), occasional diarrhea, respiratory signs, and death within 48 hours of onset.

Evidence exists that a similar BVD outbreak occurred in Canada, starting early in 1993. Ontario reports that multiple herds with peracute disease and high death loss in both young and adult cattle, as well as other acute forms of BVD, have been verified by a survey of veterinarians, BVD laboratory submissions, and rendering data.

Two distinct biotypes of BVD virus have previously been identified: cytopathic and noncytopathic. Persistent infection with noncytopathic BVD has been recognized and both biotypes are isolated from classical mucosal disease. Acute and peracute nonmucosal clinical presentations appear to be associated with a BVD virus that has major genomic differences from the virus that causes classic BVD. Researchers at USDA's Agricultural Research Service, National Animal Disease Center have tentatively labeled the classic BVD Type 1 and the other genomic form Type 2. Canadian peracute outbreaks have been associated with a noncytopathic BVD classified as Type 2. Both biotypes (cytopathic and noncytopathic) occur in each of the genomic types (Type 1 and Type 2).

The clinical picture of BVD is varied and diverse and includes the following disease syndromes. Perinatal BVD infections can lead to abortions, mummifications, stillbirths, birth of weak calves or, in other cases, persistent infection in surviving calves. Persistently infected calves, if later infected with a cytopathic BVD virus, may develop mucosal disease (with oral and gastrointestinal ulcers and diarrhea) or chronic debilitating disease. Acute BVD, alternatively, results from postnatal BVD infection. Often the result is subclinical or mild clinical disease. Other acute BVD presentations include hemorrhage syndrome with thrombocytopenia, fever, diarrhea (particularly in calves), or peracute disease (with fever of 107-110°F, anorexia, occasional diarrhea, and respiratory disease in all ages of cattle often resulting in death within 48 hours of onset).

Recommended management practices to control BVD include: 1) Modified live virus vaccination of breeding females prior to breeding to protect against fetal infection; 2) Limiting movement of cattle on and off the farm to essential traffic (maintain a closed herd to the extent possible; if not possible, test cattle prior to entry into the herd); 3) Isolate newly purchased and sick cattle; 4) Avoid overcrowding, stressing, and mixing of cattle; 5) Identify and remove persistently infected cattle from the herd. NOTE: Effectiveness relative to peracute BVD disease is unclear.

To date, reports from Ontario animal health officials, certain U.S. veterinary diagnostic laboratories, and university personnel indicate that outbreaks of acute/peracute BVD have typically occurred in herds with a history of no or inadequate BVD vaccination. Single initial doses of a killed vaccine are inadequate, even if vaccination appears to protect the cow from severe disease and death, it may not always protect the fetus. Most current vaccines contain only Type-1 BVD virus, but there does appear to be some cross-protection against Type-2 BVD virus, at least for a limited period.

Killed virus vaccines require a two-dose priming vaccination series, followed by frequent revaccination (e.g., as often as every 3-4 months) and are safe for use in pregnant cattle. Modified-live vaccines have the advantage of needing only a single initial dose, but should not be used in pregnant cattle or cattle in contact with pregnant cattle. Consideration should be given to vaccination of new arrivals upon entry into the herd. Good biosecurity measures should be maintained and incoming animals should be isolated from the rest of the herd until their health status is proven. Contact: Dr. Larry Pasley, USDA:APHIS:VS, Scotia, NY, (518) 370-5026, or Dr. Scott Wells, USDA:APHIS:VS Fort Collins, CO, (303) 490-7800. --**Veterinary Notes II \*Feb. 1995\* Pg. 6, as reported in Florida Veterinary Scene, Vol. 4, No. 4, April 1995, University of Florida, Gainesville, FL.**

## NAVEL ILL (INFECTIONS) IN FOALS

Certain infectious bacteria that gain entrance to the body of a newborn foal through the umbilical stump can potentially cause devastating permanent damage to organs and joints that can lead to death in spite of aggressive treatment. In the first hours after parturition, and before the stump dries up naturally, pathogenic bacteria can easily enter the umbilical blood vessels and spread throughout the body. Major body organs such as the liver and kidneys can become infected, making it very difficult to save the foal, even with intensive antibiotic therapy. The foal is also at a disadvantage in fighting these infections because its immune system is not mature enough to be effective. Other infections, often called "joint ill," localize in the joints of the legs, usually causing irreversible damage to the cartilage and joint capsule. Many foals with joint infections survive when treated but will suffer from chronic lameness problems and end up being euthanized.

The ideal place for a mare to deliver a foal in order to avoid these infections is on a clean pasture that has not been previously contaminated by other horses. Foals born in this type of environment seldom get umbilical infections, but most foals are born in stalls or paddocks where there is more likely to be contamination from harmful microorganisms.

Good management dictates that horse owners disinfect the navel soon after birth with appropriate disinfectants to prevent these infections. Even a mare on clean pastures should be observed closely and the foal's navel dipped in a disinfectant as an extra precaution.

Traditionally, products containing iodine in different concentrations have been used to dip navels with apparent effectiveness, but with some serious side effects such as irritation and sloughing of the abdominal skin.

Veterinary researchers from the College of Veterinary Medicine at University of California (Davis) recently conducted a study using different disinfectants on the navel to determine effects on bacterial growth. They concluded overall that a 0.5% solution of chlorhexidine diacetate was effective against the common bacteria incriminated in umbilical infections and also did not cause complications such as irritation of skin. According to the study, the stronger concentrations of iodine (7-10%) should not be used because they are harmful to surrounding skin and tend to cauterize and dry the umbilical stump rapidly. This rapid drying can trap bacteria in the tissues, resulting in abscesses, and also cause a higher incidence of patent urachus (open urine tube), which allows urine to drip from the stump.

There are some products available through veterinarians that contain chlorhexidine acetate as an active ingredient. Nolvasan® Antiseptic Ointment has 1% chlorhexidine acetate and Nolvasan® Teat Dip (Fort Dodge Company) has 4% chlorhexidine acetate plus glycerin. The teat dip must be diluted (1 pint made up with clean water to 1 gallon in volume will provide the proper concentration). The glycerin will help the solution adhere to the stump.

All foals, regardless of foaling environment, should have their navels disinfected soon after being born and again 6-8 hours later. If the stump has not dried up by that time, it should be dipped again. This should act as a good preventative against navel infections.

Note: Listing commercial products does not imply a specific endorsement. Horse people can check with their veterinarians for advice on other products containing chlorhexidine. --Submitted by **Ken Gallagher, DVM, MS, Equine Extension Veterinarian, Michigan State University, as reported in Vet Med, Vol. 1, Issue 3, May 1995, Iowa State University, Ames, IA.**

## HEAVYWEIGHTS

In the Brazilian Amazon rain forest, the dry weight of all the ants is approximately four times that of all the land vertebrates combined. --**Journey to the Ants: A Story of Scientific Exploration**

## HANTAVIRUS UPDATE

Three distinct hantaviruses which cause hantavirus pulmonary syndrome (HPS) have been identified in the United States. The first, which causes respiratory failure, was initially referred to as the Four Corners Hantavirus. Later, it was named the Muerto Canyon Virus and, most recently, it was renamed the Sin Nombre Virus (SNV). A second was found in the southcentral U.S. It was confirmed in Louisiana, and has been named the Bayou Virus. The third previously unrecognized U.S. hantavirus was found to exist in Florida, and has been named the Black Creek Canal Virus. These viruses are transmitted to humans from contact with infected rodents or their excreta.

The rodent reservoir for the SNV is the deer mouse, whose territory covers all of the U.S., except the Southeast. The cotton rat is the rodent reservoir for the Black Creek Canal Virus. Its territory ranges through the southeast and southcentral regions of the country. Together, their territories cover the entire continental United States.

As of February 1, 1995, the Centers for Disease Control and Prevention (CDC) reported a cumulative total of 103 hantavirus infections in the U.S., with 30 cases having occurred in 1994. Some cases have been retrospectively diagnosed through postmortem tissue samples. Currently, 70 health departments nationwide are working with CDC using clinical autopsy specimens and serum samples of persons who have died with unexplained adult respiratory distress syndrome (ARDS) to determine if more cases of HPS can be identified.

Based upon data collected from cases, the mortality rate of persons who contract HPS is over 50%. Universal symptoms are fever, and aches in the large muscle groups. Half of those infected have nausea and abdominal pain. Symptoms usually appear within two weeks of infection, but can appear as early as three days to as late as six weeks after infection. Cases have ranged in age from 16-69 years, with a mean age of 30 years. Males and females are affected fairly equally. Most cases were healthy and very active prior to becoming infected.

Transmission occurs through: inhalation of droplets from fresh or dried droppings, urine, saliva left by infected rodents, direct contact with these rodent excreta, and possibly through rodent bites. Transmission might also occur when a person touches a contaminated surface, then touches his nose or mouth. Times of the year in which people are most at risk for HPS are when doing spring and summer cleaning and in the fall when mice come indoors because of the cool weather.

Transmission consists of respiratory support and Ribavirin IV therapy. Prevention involves efforts to make it difficult for rodents to live where you do, and to control rodent populations. Cleanup guidelines and precautions remain those issued in 1993, and published in the May 1994 edition of *Kentucky Epidemiologic Notes and Reports*. Continued national surveillance will permit the identification of additional pathogenic hantaviruses and their rodent hosts, define the seasonality of the illness, and the full clinical spectrum of hantavirus infection.

The most recently confirmed HPS case near Kentucky occurred in Virginia. In June, 1993, a 61-year-old man was hospitalized in Southern Pennsylvania with ARDS and renal failure. He had hiked on the Appalachian Trail northbound from Georgia, through North Carolina, Tennessee, Virginia, and West Virginia. From May 13 through June 20, 1993, he had hiked primarily along the trail in Virginia. He reported evidence of mice, include excreta and rodent traps in shelters and bunkhouses. Confirmation of the diagnosis of HPS was attained through retesting of serum samples drawn on July 2 and 20, 1993. These were highly suspect for hantavirus antibodies. Testing of an additional sample obtained in September 1994 further confirmed the diagnosis. This is the first known case of HPS in the mid-Atlantic states.

Prominent renal failure has not been typical of HPS and has only been documents in two cases from the southeastern U.S. Both of these were associated with hantaviruses other than SNV (the Black Creek Canal Virus in Florida and the Bayou Virus in Louisiana). In addition, this 61-year-old also had marked elevated liver transaminase levels which has not been a prominent feature in other cases of HPS. Case investigation is ongoing to clarify the relevance of these findings. To further characterize the prevalence of hantavirus in local rodent populations, the Virginia State Health Department, the National Park Service, and the Centers for Disease Control and Prevention are conducting rodent trappings.

In Kentucky, 14 persons have been tested for hantavirus and all have been negative. A total of 48 rodents from the Mammoth Cave National Park have tested negative. Ongoing surveillance of HPS is also important in Kentucky. Any suspected cases should be reported to the local health department or the Communicable Disease Branch at 502/564-3261. --**Kentucky Epidemiologic Notes & Reports, APR 95, as reported in Herd Health Memo, May 1995, University of Kentucky, Lexington, KY.**

### CONTINUING EDUCATION OPPORTUNITIES Fall 1995

Date	Course	Location	Contact Hours
*October 6-7	Gastrointestinal Endoscopy (intermediate)	Blacksburg	10
*October 13-14	Practical Eye Surgery	Blacksburg	10
*October 20-21	Orthopedic Surgery - Canine Hindlimb	Blacksburg	10
*October 27-28	Neurology for Practitioners	Blacksburg	10
*November 10-11	Equine Necropsy Techniques	Blacksburg	10
*November 17-18	Wound Management & Reconstructive Surgery	Blacksburg	10
*December 15-16	Small Animal Dentistry	Blacksburg	10

\*Limited enrollment short course featuring hands-on instruction.

For further information, please contact:

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### COMPARISON OF PENTOBARBITAL ALONE AND PENTOBARBITAL IN COMBINATION WITH LIDOCAINE FOR EUTHANASIA OF DOGS

One of the undesirable results of euthanasia with pentobarbital alone is the occurrence of terminal gasps several seconds to minutes after the onset of apnea. This reflex, which is apparently a result of disparity between the sensitivity of medullary respiratory centers to hypoxia and the sensitivity of the cerebral cortex, is upsetting to observers and pet owners attending the euthanasia. None of the dogs euthanized with pentobarbital plus 2% lidocaine solution or with pentobarbital plus 3% lidocaine solution had terminal gasps. --**Veterinary Notes II, North Dakota State University Extension Service, Vol. 4, No. 4, April 1995, as reported in Animal Health Beat, Vol. 11, No. 4&5, April & May 1995, University of Nevada, Reno, NV.**

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