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Holiday Schedule

CAHFS will be open, but with limited service on **Monday, November 12, 2012** in observance of Veteran's Day.

CAHFS will be closed on Thursday, **November 22, 2012** in observance of Thanksgiving Day, but will be open on **Friday, November 23, 2012** with limited services.

Please contact your laboratory to plan your testing needs accordingly.

Equine and Ruminants

Malignant edema, also called gas gangrene, is produced by one or more of the following clostridia: *Clostridium chauvoei*, *Clostridium septicum*, *Clostridium sordellii*, *Clostridium novyi* and *Clostridium perfringens*. The disease presents as rapidly progressive painful, muscular and/or subcutaneous swelling, lameness and severe depression. The skin over the affected site may be cold and insensitive with severe necrosis of muscle, gas formation (crepitus) and clinical signs of toxemia. *Clostridium* spp. are large anaerobic Gram-positive spore-forming rods which are also commensals of the soil, skin, oral cavity and intestinal tract. Malignant edema is a relatively rare disease in horses but more common in ruminants. Infection occurs by direct wound contamination with spores or vegetative bacteria, which then proliferate due to low oxygen tension in the wound associated with tissue necrosis. It is also thought that intramuscular injections with certain pharmacological compounds can cause soft tissue trauma and create a favorable environment for clostridial growth. Clinical signs of malignant edema can develop within 6 to 72 hours of bacterial infection. A presumptive diagnosis can be established by clinical signs, post mortem findings and demonstration of Gram positive bacilli in smears obtained from fine needle aspirates in the live animal or from affected tissues of dead animals. A final diagnosis, however, should be based on demonstration of the specific clostridia present in these materials by fluorescent antibody test and/or anaerobic culture.



Extensive muscle necrosis and edema with cellulitis following intramuscular injection, neck region of a horse.

Complications of malignant edema may include airway obstruction, myocardial necrosis, loss of function due to fibrosis, sloughing of large areas of skin and death as a result of acute toxemia. Clostridial myositis has a guarded prognosis; therefore, an early and aggressive therapy is critical for successful recovery.

Bovine

The **blue green algae toxin, microcystin**, resulted in the **acute death** of five, 6 to 7-month-old crossbred beef weanlings on pasture. A green ring of algae, found on all four legs of the dead animals, suggested they had been wading and probably ingesting water in the low end of a pond where an algae bloom and dead frogs were found. A toxic level of microcystins (47,000 ppm) was measured in the pond water and the algae *Microcystis* sp. was identified. Marked **liver necrosis** was found in the submitted pale liver tissue that had an enhanced reticular pattern observed by the veterinarian during the field necropsies. Histopathology was typical of the liver lesions seen with this toxin.

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Your feedback is always welcome. To provide comments or to get additional information on any of the covered topics or services, please contact Sharon Hein at slhein@ucdavis.edu.

We're on the Web
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Bovine (cont'd)

Pistachio shell impaction of the small intestine, colon or abomasum resulted in intestinal rupture or ulceration and secondary peritonitis in multiple dry cows and first calf heifers on three dairies. Dairies were purchasing pistachio hulls which apparently contained some indigestible, cracked, hard shells. The shells probably deposited in the intestine and abomasum occasionally damaging the mucosa by their sharp edges and in some cows they accumulated on one location causing bowel distension and rupture.

Feline

A recent case involving a geriatric hyperthyroid cat illustrates potential **problems with pharmaceuticals compounding veterinary drug formulations**. The cat had been given a compounded cream formulation of methimazole for approximately six years to successfully treat hyperthyroidism. After a refill of the medication, the cat began to lose weight quickly and had an elevated serum thyroid concentration despite treatment. Syringes of the medication were submitted for analysis and the methimazole concentration was determined to be approximately 1/10th of the intended concentration. The pharmacist who had been compounding the medicine for several years called the owner and admitted to a formulation error. New medication was provided to the cat owner which was subsequently confirmed by our laboratory to be of an appropriate strength. Unfortunately, the cat did not respond to the medication and was euthanized. While we do not test compounded medicines on a routine basis, it is possible to have samples tested in selected cases. It is advisable to call the toxicologist to discuss the situation prior to submitting samples.

Other Avian

Avian Malaria caused **multiple deaths** in an aviary housing approximately 1,500 **finches**. This mosquito-transmitted disease caused by *Plasmodium spp.* was confirmed by PCR after some of the birds necropsied were found to have **intra-erythrocytic protozoal** meronts, gametocytes and compatible histologic lesions. At least two birds submitted had hepatitis and splenitis with intracellular protozoa and dark brown, intra- and extra-cellular, bi-refringent pigment (malaria pigment). The aviary had been experiencing increased mortality for several weeks, with one or two birds found dead almost daily. The species of *Plasmodium* that infect birds are found in all major zoogeographic regions of the world where mosquitoes are present. *Plasmodium spp.* infections have been reported in many avian orders and the greatest diversity of species of *Plasmodium* is recorded from the Galliformes, Columbiformes and Passeriformes. A Giemsa stain on a thin blood smear will demonstrate the parasitic forms within red blood cells. Histopathology and molecular tests to confirm the etiology can also be performed.

Duck virus enteritis, a herpesvirus-caused disease, was the cause of death of Muscovy ducks submitted from a flock of over 30 ducks of which 10 had died in eight days. **Weakness** was the only clinical sign noted. Intranuclear inclusions in the epithelium of the crop, esophagus and the cells of the liver were typical of a herpesvirus infection. Necrosis was seen in the kidney, liver, spleen and ulceration was present in the proventriculus.

Small Ruminant

West Nile virus encephalitis resulted in circling and anorexia of a few days duration in an 18-month-old crossbred ewe in a flock of 20 sheep of which only one was affected. The ewe appeared to improve initially when treated with penicillin, vitamin B12 and dexamethasone but soon developed progressive neurologic signs, respiratory difficulty and died.

Mycoplasma mycoides ssp. mycoides large colony type caused **mastitis** and multiple deaths in a goat dairy. Milk from the affected mammary glands was often watery with flakes (garget). Several does died soon after mastitis was noted and they also had severe **joint infections and pneumonia**. *Mycoplasma* was isolated from the milk and affected tissues including joints. Infection produced by *Mycoplasma mycoides ssp. mycoides* large colony type is a contagious disease of goats that can be transmitted during milking procedures. Affected goats can develop a severe mastitis followed by septic spread to the joints and other organs. In neonates this organism can cause severe polyarthritis, polyserositis, pneumonia and meningitis from drinking *Mycoplasma* contaminated milk.