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Clostridium novyi (Black Disease)

Black disease is caused by the bacteria *Clostridium novyi*. This disease causes acute toxemia in cattle, sheep and occasionally pigs and horses. It is always fatal in cattle and sheep. The bacteria is found worldwide, but the disease is most prevalent in areas where liver flukes are found. Black disease gets its name from the dark or black appearance under the skin due to rupture of the capillaries in the subcutaneous tissue.

Clostridium novyi bacteria is present in soil and is ingested by the animal as it grazes in pasture. The bacteria produces spores which can gain entry into the body from the intestinal tract. The spores are then transported to the liver where they lie dormant. Once the spores are in the liver no disease process is noted until there is injury to the liver. Usually, the inciting cause of injury to the liver are liver flukes which migrate through the liver creating an anaerobic environment for the spores to proliferate. Once the spores start to grow, they release necrotizing toxin which causes local tissue destruction and more diffuse damage to the vascular system. Clinical signs in cattle are sudden, severe depression, reluctance to move, absent rumen sounds, muffled heart sounds and low body temperature. Typically, the animal dies within one to two days. In sheep, death is typically sudden with no outward signs noted. Black disease has a seasonal occurrence because of fluctuations in liver fluke and host snail populations. The disease usually occurs in summer and autumn. The first frost of the fall usually will stop the cycle.

Post mortem findings in cattle with Black disease include frothy blood from the nostrils, black subcutaneous tissues, swollen liver with areas of necrosis, blood stained serous fluid in the pericardial, pleural and peritoneal cavities. Diagnosis of Black disease is through culture of the liver and the characteristic lesions noted on necropsy.

One method of control of the disease is through managing liver flukes with deworming and control of the snails with molluscicides. The better method of controlling the disease is through a good vaccination program utilizing Colorado Serum Company's **Essential 4** Clostridial toxoid. Vaccinations are usually done in early summer prior to seasonal occurrences of liver flukes and their host snail population. Annual boosters are recommended. Calves are vaccinated at two to three months of age and should be revaccinated at four to six months of age.

