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## COW SENSE CHRONICLE

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### CALFHOOD VACCINES, OR, WHAT ARE ALL THOSE CLOSTRIDIAL DISEASES?

As April is turning to May, some folks in Montana are already branding while some are still calving. This month, we'll focus on calfhooed vaccination programs, which are most often based around the clostridial diseases. Producers may add other vaccines (pinkeye, *H. somnus* or other respiratory vaccines, etc.) depending on their situation and veterinarian recommendations.

Clostridial diseases in calfhooed vaccines belong to same genus as tetanus and botulism. Clostridial organisms are generally found in the animal's body, but with ideal conditions, grow very rapidly to cause a disease state. Because of this, affected animals are usually found dead, not sick. Thus, prevention of disease through vaccination is a better approach than treatment. Here is a brief overview of each strain:

*Clostridium chauvoei* causes blackleg, which presents as air-filled swelling in heavy muscle that will crackle when palpated. There is no history of wounds with blackleg, unlike the next strain.

*Clostridium septicum* causes malignant edema, which results from contamination of wounds. Unlike, blackleg, malignant edema causes soft, fluid-filled swellings that pit on pressure. Large amounts of fluid are found in both subcutaneous and intramuscular connective tissue.

*Clostridium haemolyticum* causes redwater disease, also known as bacillary hemoglobinuria. Latent organisms lodge in the liver, waiting for localized cell death which is most often caused by liver flukes. *C. haemolyticum* produces beta-toxin, which ruptures red blood cells, leading to anemia and the presence of hemoglobin in the urine, hence the name redwater.

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*Clostridium novyi* causes black disease, also known as infectious necrotic hepatitis. Like redwater, latent organisms wait in the liver for anaerobic cell death, again usually from liver flukes. Extensive rupture of subcutaneous capillaries can turn the skin black, giving this disease its common name.

*Clostridium sordellii* causes sudden death, primarily in feedlot cattle, and has no common name. It is characterized by massive black hemorrhage and smelly muscle necrosis in the brisket and throat area. Unlike blackleg, there is no gas formation from *C. sordellii*.

*Clostridium perfringens* type C and D cause enterotoxemia and overeating disease, respectively. Both lead to severe intestinal damage from necrotic and lethal toxins: type C produces beta toxin and type D produces epsilon toxin. Both are associated with the predisposing factor of the animal ingesting excessive amounts of nutrients. In calves, this may be after a period of dam and calf separation followed by a large intake of milk.

Successful vaccination needs an effective vaccine, a functioning immune system, and administration of vaccine before the animal is exposed to the disease. On branding day, do your part to make sure vaccines are effective: the temperature of your vaccine should be at least as important as the temperature of your branding beverages!