



Vaccination Vital to Prevent Blackleg and other Clostridial Diseases in Livestock

Several life-threatening livestock diseases are caused by bacteria called *clostridia*. These diseases are extremely aggressive and nearly always fatal. As a responsible animal owner there are many ways to provide the best care for your stock when it comes to clostridial diseases – among them, vaccination is the most important.

***Clostridia*: A sneaky bacteria**

Clostridia are large, anaerobic, spore-forming bacteria which do not need oxygen to multiply. These bacteria can wreak havoc in herds. The spores are highly resistant and can survive in the soil for long periods of time. They also form a protective covering in a dormant stage when exposed to heat or drying. Under certain conditions and lack of oxygen (i.e., change in the environment, stress, or injury), they will multiply and cause disease.

Clostridial diseases can be divided into two categories: Those in which the organisms actively invade or when locally dormant spores are activated and reproduce in tissues of the host, with the production of toxins that enhance the spread of infection (the gas-gangrene group, the clostridial cellulitides group). Those characterized by toxemia resulting from the absorption of toxins produced by organisms within the digestive system (the enterotoxemias), in devitalized tissue (tetanus), or in food or carrion outside the body (botulism). Clostridial diseases are not spread from animal to animal or from animals to humans.

Meet the clostridial family of organisms

The clostridial family of organisms cause a variety of diseases in cattle and other animals, such as sheep and horses. When the bacteria grow, a toxin is produced with devastating consequences. Common diseases include:

Blackleg

Caused by *Clostridium chauvoei*, blackleg is a highly fatal disease of (primarily) young cattle. Although it is an infectious disease, it is not a contagious one. Animals only contract it through the bacterial spores in the soil; it doesn't pass from animal to animal. The organism can live in the soil for many years without causing problems.

Unusually wet or dry conditions can increase the risk of cattle contracting the disease. Drought can cause cattle to be exposed because grazing on shorter grasses may expose them to the spores. And wind can erode the soil, exposing the spores and spreading them. Conversely, flooding can also expose the spores to grazing cattle.

Clinical signs of blackleg include lameness, depression, fever, or sudden death. Treatment success is rare even if the illness is diagnosed – the first sign may be death. Vaccines are available to prevent this disease.

Black disease

Black disease is different from blackleg, although both are caused by clostridial organisms. Black disease is caused by *Clostridium novyi* and likely gets its name from the characteristic darkening of the underside of the skin. As with other clostridial organisms, *C. novyi* survives in the environment as a durable spore and is transmitted orally or through a contaminated wound. The spores cross the intestinal lining and set up home in the liver. Cattle infected with liver flukes are more susceptible to *C. novyi* infection; the damage caused by flukes creates an ideal environment for bacterial spores to multiply. The bacteria then release a toxin causing widespread harm to the liver.

Tetanus (lockjaw)

Although uncommon, another disease is tetanus, which is caused by the organism *Clostridium tetani*. This occurs when the bacteria get in a wound and damage tissue and grow. Since clostridial organisms grow best with no oxygen, tetanus is more common if the wound is deep or closed off. The organisms grow and produce a toxin which interferes with the nervous system. Tetanus may cause spasms of the muscles (often the jaw muscles are affected first, hence the name "lockjaw").

Enterotoxemia

Enterotoxemia from *C. perfringens* is a common, deadly clostridial disease in nursing beef calves. *C. perfringens* is a normal inhabitant of the GI tract. Problems arise when the calf is stressed, either environmental or nutritional, that causes harmful toxins to be released systemically. The clinical signs are typically sudden death. It is not uncommon for this disease to affect the best growing, more aggressive nursing calves. Vaccination is paramount to provide protection against enterotoxemia.

Choosing the right vaccine

Clostridial vaccines have proven to be very effective in the prevention of most clostridial diseases. However, they can be some of the most stressful vaccines given to cattle today, negatively affecting feed intake and weaning weights.

The BOVILIS® VISION® line of clostridial vaccines by Merck Animal Health reduces stress of vaccination and minimizes the negative impact on performance, while maintaining efficacy. In field trials, cattle vaccinated with VISION clostridial vaccines showed the following:

- Less post-vaccinal stress, appetite suppression, as well as swelling and inflammation at the injection siteⁱ
- Better cost of gains and feed conversionⁱⁱ⁻⁵
- Greater weaning weights

Prevention is crucial to protect your herd against many clostridial diseases. Look for the BOVILIS VISION line that offers combination protection against several of the most common clostridial diseases.

Prevention is key

Although clostridial organisms are normal inhabitants of the cattle environment and only become problematic on occasion, when disease does occur the consequences can be devastating. Even if the disease is caught early, the prognosis is very poor.

It’s impossible to predict disease, so preventive measures, including vaccination, are emphasized. Your veterinarian can help you select not only which vaccines are important in your area, but the correct timing of these vaccinations.

[Sidebar]

Top three clostridial diseases. What causes them? What are the effects?

Disease	Results	Signs
Black disease	Damage to the liver	Profoundly depressed and can have abdominal pain. Sudden death is common.
Blackleg	Damage to muscles, such as bruising	May be swelling of leg. The leg may crackle when touched.
Tetanus (lockjaw)	Damage to tissue	Usually muscle stiffness; the disease is called lockjaw because the animal can’t open its mouth.

[End Sidebar]

¹Merck Animal Health 1993 Field Trial Report 92-3 Vision 8 Injection Site Blemish Study
²Merck Animal Health 1993 Field Trial Report 93-9 Weaning Weight Comparison of Vision 7 and Ultrabac 7 in a Wyoming Beef Herd
³Merck Animal Health 1993 Field Trial Report 93-14 Vision Weaning Weight Trials (2-4250-93)
⁴Merck Animal Health 1993 Field Trial Report 93-15 Weight Comparison at Weaning in 5 Beef Herds Comparing Vision <2 ml> to 5 ml 7-way Administered at Spring Branding
⁵Merck Animal Health 1996 Field Trial Report 96-5 Weaning Weight Comparison of Calves Vaccinated with Vision® 8 vaccine or a 5ml 8-way Clostridial Vaccine