

Vet Call

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Calf diarrhea caused by salmonella

The past few months I have written about fairly common causes of diarrhea in beef calves (*E. coli*, rotavirus, coronavirus, cryptosporidia, coccidia). This month I am writing about salmonella, which is not common in beef calves. Nevertheless, it is very important because of the high death loss associated with salmonella outbreaks and the fact that this disease may be transmitted from scouring calves to humans.

The disease is much more common in dairy calves than in beef calves; but when outbreaks in beef cattle occur, the disease can be spread easily, and the death rate

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among affected calves can reach 100%.

Both adults and calves can become sick due to salmonella, but calves are usually more severely affected.

Although there are 2,200 known types of

salmonella, five are known to cause disease in cattle in the United States. Two types most commonly cause disease in U.S. herds. These two types usually result in different signs of disease.

Salmonella typhimurium

Salmonella typhimurium is highly fatal to calves that come into contact with the organism, but this type of salmonella does not usually persist in carrier animals. Therefore, deaths and disease due to this organism are usually sporadic (likely to subside after an outbreak).

Another outbreak of *S. typhimurium* is likely only if a source of infection (infected rodents, contaminated feed, etc.) is re-introduced to the cattle.

Diarrhea and fever are the most common signs of illness in calves infected with *S. typhimurium*, but the disease can progress to pneumonia or infections of the joints, nervous system or other body parts.

Humans who are young, old or immune-suppressed are at risk to contract salmonella from these sick calves.

Salmonella dublin

Salmonella dublin is also highly fatal.

Calves may not have diarrhea, but they may show signs of depression, pneumonia, and infection of the nervous system, joints or bones.

S. dublin is a long-term problem for a farm because the organism tends to persist in some cattle without showing signs of disease. These carrier animals are a constant source of the organism to infect new calves. This form of salmonella is rarely passed to humans.

■ Source of infection

Calves that are scouring due to salmonella usually have a fever and bloody stools. Because these signs do not usually appear when diarrhea is caused by rotavirus, coronavirus or K99 *E. coli*, veterinarians and producers can often identify cases that are likely to be caused by salmonella.

Sunlight and temperatures above 70° F kill salmonella organisms. However, it is able to survive in dried manure, dust and feeds for years. Salmonella can survive in soil, manure and drinking water up to seven to nine months. Bonemeal and fish meal can be contaminated with salmonella from the source animal, and infected rodents or birds can contaminate grains with their droppings.

Salmonella almost always enters a calf through the mouth, and the severity of disease is often related to the amount of exposure due to crowding, unsanitary conditions or the amount of contamination in feedstuffs. Cattle may be exposed to the disease in several ways, including animal-to-animal (from dam to calf or from calf to calf), contaminated feed or a contaminated environment (soil, birds, rodents, insects, water source, etc.).

The amount of stress an animal is facing also affects the severity of salmonella infection. Feed and water restriction (usually

due to shipping), recent calving, changes in the diet, exertion, anesthesia, surgery and presence of other disease can cause a carrier (or subclinical) animal to show signs of infection. And it can make an animal exposed to salmonella organisms in the feed or environment more susceptible to disease.

Giving antibiotics by mouth to treat salmonella or other diseases can kill the normal bacteria in the digestive tract that compete with salmonella organisms, allowing the salmonella to multiply rapidly and cause disease.

■ Protection

Protection for calves relies on adequate consumption of colostrum. On a farm with a salmonella outbreak, calves that did not receive adequate protection from colostrum are at great risk of disease.

Treatment of salmonella cases involves prolonged use of oral and often intravenous (into the vein) electrolyte solutions. Because the calves tend to lose weight and body mass quickly, frequent feedings with small quantities of milk are advised.

Treatment with systemic antibiotics (those given into the muscle, under the skin or into a vein) for a few days early in the disease will probably be helpful, but they will not cure carrier animals. Only antibiotics that are shown to be safe and effective for salmonella cases — and that are approved to be used in food animals — should be used in scouring calves.

Veterinarians also use anti-inflammation drugs to reduce fever in affected calves.

Decreasing stress and environmental contamination helps prevent salmonella outbreaks. The calving and nursery environment should be as clean as possible, and feed should be protected from contamination from the manure of cattle, rats, birds and other animals.

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