Vet Call

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Calf diarrhea caused by salmonella

Salmonella is a well-known family of germs that causes disease in both humans and animals. In beef herds, salmonella is not a common cause of scours in calves; however, it is important because when it occurs it can be associated with high death loss, and the disease may be transmitted to humans. Salmonella 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 can kill as many as 100% of affected calves. Both adults and calves can become sick due to salmonella, but calves are more commonly and more severely affected.

Two types of salmonella

Although there are more than 2,200 known types of salmonella, only a few are associated with disease in cattle, and two types of salmonella account for most cases of disease in U.S. cattle herds. The two types usually result in different signs of disease.

Salmonella typhimurium is often 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 only likely if a source of infection (infected rodents, contaminated feed, etc.) is reintroduced 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 get salmonella from these sick calves.

S. dublin is also highly fatal, but the calves may not have diarrhea. These calves 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.

The keys to preventing salmonella are to decrease stress and enhance sanitation.

Signs and sources

Calves that are scouring due to salmonella usually have a fever, and the manure is bloody. 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.

Direct sunlight kills salmonella organisms, although it is able to survive in soil, manure and drinking water up to 10 months. Mammals, birds, reptiles and insects can become infected with salmonella and carry it onto your farm or ranch. Bone meal and fishmeal can be contaminated with salmonella from the source animal, and infected rodents or birds can contaminate feed 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 amount of contamination of feedstuffs. Cattle may be exposed to the disease in several ways, including animal-to-animal (from dam to calf, or calf to calf), by contaminated feed or by 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 all cause a carrier (or subclinical) animal to start showing signs of infection, or 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 for calves also relies on adequate consumption of colostrum. Calves on a farm with a salmonella outbreak that did not receive adequate protection from colostrum are at great risk of disease.

Treatment

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 also 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 will not cure carrier animals. Only antibiotics that are shown to be safe and effective for salmonella cases, and that are approved for use in food animals should be used in scouring calves.

The keys to preventing salmonella are to decrease stress and enhance sanitation. The calving and nursery environment should be as clean as possible, and feed should be protected from contamination from the manure of other cattle, rats, birds and other animals.

Because people can become infected with salmonella, it is always wise to wash your hands thoroughly with soap and water after you take care of cattle or handle manure. You should also wash your clothes and boots frequently to help prevent spreading salmonella to other family members. When dealing with scouring calves, it is important to let as few people as possible handle the sick calves; and to have people treating calves change their clothes and boots when they are finished with treatments.

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