



Vet Call

► by **Bob Larson**, professor of production medicine, Kansas State University

Calf scours

A substantial proportion of sickness and death for beef cattle occurs during the first six months after birth, with the greatest risk occurring in the first two to three weeks of life.

Importance of colostrum

In one study, farms and ranches averaged a little more than 10% of calves being treated for scours, with farm-to-farm variation ranging from no affected calves to more than 50% of calves treated for scours. In a survey conducted by the National Animal Health Monitoring Service (NAHMS), most calves that did not survive to weaning either died as a direct result of a difficult birth or within the first 10 days of life primarily due to scours and pneumonia.

Scours in beef calves is due to receiving inadequate protection from colostrum and/or overwhelming challenge with scour-causing germs due to muddy conditions and crowding. For a calf to consume adequate amounts of colostrum, it must be able to stand, walk, find the dam's teats and suckle. In addition, the dam must stand, have a good maternal bond with the calf and have teats that can be grasped by the calf. Problems in any of these areas can lead to late or decreased colostrum intake and low amounts of antibody protection for the calf.

Wet, muddy and damp conditions are ideal for the germs that cause scours. Anything you can do to keep calves away from wet areas will help prevent the disease. Right before calving starts, move the herd away from the pasture they have been using all winter into a "clean" calving pasture.

The calving area should be free of mud and should be protected from the wind. A large pasture with good drainage and a natural windbreak is probably all that is necessary. Inexpensive windbreaks can be constructed when natural protection is lacking. In addition, it would be reasonable to have an area that is sheltered from the weather and that has a chute, stall or other restraint area so calving problems can be addressed.

Only those heifers and, less frequently, cows that require assistance during calving or to establish a bond with their calf should be confined to a calving barn or small pen. Use large pastures and work to keep

cattle from gathering in one area. I have seen situations where a herd was in a large pasture, but they spent most of their time in one small area around the hay feeders.

Germs associated with scours

The most common germs associated with scours are enterotoxigenic *E. coli* (ETEC), rotavirus, coronavirus, *Cryptosporidium*, *Salmonella sp.* and *Clostridium perfringens type C*.

Rotavirus and coronavirus are the most common viruses associated with diarrhea in young calves and act by destroying the cells lining the small intestine. Rotavirus and coronavirus are present in all cattle populations; therefore, most cows have been exposed to the virus at some time in their life and have high colostral antibody titers that rapidly decrease to low, unprotective concentrations as colostrum changes to milk. Rotavirus and coronavirus rarely cause scours in calves younger than 5 days of age.

Cryptosporidiosis (crypto) is an important cause of diarrhea in calves and humans. *Cryptosporidium parvum* is related to the organisms causing coccidiosis in cattle, but there are some important differences, including the fact that crypto can cause disease in calves as young as 5 days of age. Crypto is most likely to cause death if the calf is infected with another diarrhea-causing organism (ETEC, rotavirus or coronavirus) at the same time.

In contrast to crypto- and viral-induced diarrhea, diarrhea caused by the bacteria ETEC is initiated most commonly in 1- to 2-day-old calves and rarely in calves that are more than 5 days old. Similar to antibodies from colostrum and milk against viral pathogens, antibodies against *E. coli* in colostrum and milk decline rapidly after calving.

The bacteria *Clostridium perfringens type C* is a normal inhabitant of the gastrointestinal tract of cattle and is detectable in intestines of calves shortly after birth. This organism secretes a toxin that can

cause bloody damage to the intestine. The toxin associated with the disease is destroyed by trypsin, and the low amounts of trypsin in the immature digestive tract may play a role in why the disease is most frequently observed in calves 1 week old or younger.

Because the bacterium is a normal inhabitant of the gastrointestinal tract, two criteria must be met for the organism to multiply rapidly and produce large amounts of toxin. First, the bacteria need an abundance of carbohydrates, which is provided by milk. Secondly, intestinal tract motility must be partially slowed or stopped, which happens after consumption of a large meal. After a large meal of milk, high amounts of toxin can be produced, and calves can die rapidly.

Salmonella is not a particularly common cause of scours in beef calves, but it is important because of the high death loss with salmonella outbreaks and the fact that this disease may be transmitted from scouring calves to humans. Both adults and calves can become sick due to salmonella, but calves are usually more severely affected with a bloody diarrhea.

Treatment

Treatment of scours consists of nursing care (keeping the calf warm and dry), fluid replacement (by mouth or in the vein), correction of acidosis and possibly antibiotic administration. Calves that are mildly dehydrated should receive electrolyte fluid replacement by mouth. For calves that are dehydrated enough to be depressed, fluid replacement should be intravenous (in the vein).

Don't forget that because humans can also be affected by two of the germs causing calf scours (salmonella and crypto), immunocompromised people should not take care of scouring calves, and anyone caring for young calves should wash their hands thoroughly and frequently.

E-MAIL: rlarson@vet.ksu.edu