

Neonatal Diarrhea “Calf Scours” in Beef Cattle

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Spring started with some ice and snow which has recently turned into rain. Now most producers are dealing with muddy soggy pastures and lots. With ranchers in the middle of calving season, another problem is not needed, but unfortunately the above conditions are ideal for causing neonatal diarrhea or calf scours.

Calf scours is a common cause of sickness and death in beef calves. According to the National Animal Health Monitoring System, digestive problems account for 14% of the death losses in beef calves less than 3 weeks of age. The disease is multifactorial which means that infectious agents, a lack of immunity, stresses, and environmental conditions all play a role in causing the disease.

Causative agents involved in calf scours can be bacteria, viruses, protozoa, and other causes. The common bacteria are *Escherichia coli*, *Salmonella dublin* or *typhimurium*, and *Clostridium perfringens* types A, B, C, D, and E with C being the most common. The common viruses found are rota- and coronavirus. Protozoa seen are coccidia and *Cryptosporidium parvum*. The infectious agents most often found are *E. coli*, rota- and coronavirus, and *Cryptosporidium parvum*. Combination infections with two or three different agents are also common. Another cause of diarrhea in calves is related to excessive nutrition. This occurs when a calf nursing a high milk producing cow ingest too much milk resulting in a pasty or gelatinous diarrhea.

Sources of pathogens causing neonatal diarrhea are found in the feces of healthy cows and calves. Obviously, sick calves shed large numbers of pathogens in their feces. Calves acquire these pathogens by the fecal-oral route. One common way this occurs is when a cow gets fecal material on her teats and the calf ingest that material when nursing. Another way of acquiring pathogens is by the fecal-aerosol route. This is basically breathing in the agent which allows it to get establish.

The ability of the pathogen to produce diarrhea depends on the several factors. Virulence of an agent influences whether it will cause an infection. Some strains of bacteria or viruses are more likely to cause illness than others. If more than one pathogen is involved, this may overload the calf's immune system. Calves that do not ingest enough colostrum or the colostrum is of poor quality are more likely to get an infection. The number of pathogens ingested plays a role in whether a calf gets diarrhea. The larger the number of pathogens ingested the more likely the calf will get sick.

The first clinical sign usually observed by producers is diarrhea. The diarrhea will vary in severity from pudding like to watery. The color may appear as yellow or white or gray. Flecks of blood may be seen on examination or large amounts of blood may occur in *Salmonella* or *Clostridial* infections. Diarrhea results in dehydrations, electrolyte imbalances, acidosis, and hypoglycemia. If the infection is severe, calves will become depressed and weak. Calves may lay around or refuse to stand up and nurse. Body temperature is normally low or normal. Elevated body temperature is found if checked very early in the infection or if the disease is septicemic. If left untreated, calves may become comatose and die.

Diagnosing the cause of the infections is based on age of calf, clinical signs, and laboratory test. The age that a calf gets sick is a clue of what the possible pathogen could be. *E. coli* occurs in calves less than 4

days old. The other pathogens normally occur in calves 5 days old or older. Fecal cultures and other laboratory test can be used to find the specific pathogen. Fecal floatation techniques can be used to find protozoa. Some producers want to skip laboratory testing since the calf is usually better or dead before the results are finished. However, lab results will help in the treatment of any new sick calves and will provide information of changes that might be implemented to prevent problems in the future.

Treatment of calf scours depends on the severity of the disease. Some calves may appear normal with the exception of some pasty feces on their tail. Those calves should probably be left alone unless the diarrhea gets worse. Calves in which the diarrhea is more watery or show more signs of depression and weakness should be treated. Replenishing fluids is the first step in treating diarrhea. Depending on the severity of dehydration, IV or oral routes of replacing the fluids may be used. Either way the fluids are needed to correct electrolyte imbalances, acidosis, and hypoglycemia. Fluids need to contain sodium and potassium since both are lost in severe diarrhea. Some form of a buffering agent such as sodium bicarbonate or acetate or propionate will need to be include to treat the acid-base disturbances. Calves with diarrhea also need energy in the form of glucose. If calves do not nurse quickly, they may need to be supplemented with milk since the glucose in the fluids is not enough to meet the energy demands of the calf. Do not give milk and oral fluids at the same time. The reason is that the sodium bicarbonate may interfere with the curdling of the milk in the abomasum. Another treatment that may be of value in the treatment of scours in calves is anti-inflammatory drugs. Anti-inflammatory drugs reduce days calves are sick and reduce antibiotic treatments. Also, calves treated with these drugs have improved appetites and perform better than non-treated calves. Routinely, an antibiotic is given to calves with diarrhea. With emphasis being placed on the careful use of antibiotics, this practice may be outdated. According to some studies antibiotics use should be reserved for calves with fever, depression and lack of appetite. Consult with your veterinarian about the use of an antibiotic in your situation.

Prevention of neonatal diarrhea requires reducing pathogen exposure, making sure calves get adequate colostrum, and increasing resistance through vaccinating the dam. Preventing calves from ingesting pathogens may be accomplished by proper sanitation practices. This includes keeping feed troughs and water troughs clean. Feed bunks and hay rings should be moved frequently to keep calves from congregating in areas contaminated with fecal material. The quantity and quality of colostrum is better in cows than heifers. For this reason it is better to calve heifers before cows. This will lessen pathogen exposure with a group that is less capable of fighting off disease. If land is available, producers may use the Sand Hills Calving System. This system requires moving cows that have not calved at specific times to clean pastures. This prevents newborn calves from being mingled with older calves which reduces pathogen exposure. Numerous studies have shown the importance of colostrum intake and its impact on prevention of diseases in newborn calves. Beef calves should be up and nursing by 2 hours after birth. If not, calves should be fed 3 liters of colostrum from the dam or a colostrum replacer if the cow cannot be milked. Also, cows and heifers need to be fed properly to be in good body condition at the time of calving. Cows and heifers in higher body condition scores (5.5 to 7) will have higher immunoglobulin concentration compared to cows in poorer body condition. Cows and heifers may be vaccinated with a scour preventing vaccine before calving to boost the immunoglobulin concentration in the colostrum. Lastly, calves that become sick should be moved to a quarantined area to limit exposing other calves to the pathogens they will shed in their feces.

Producer should remember that some calf scour pathogens are contagious to humans. This is especially true for young children and immune compromised people. Producers need to practice good hygiene and

be careful with soiled clothing. Some people have gotten sick from washing clothes from individuals who were treating sick calves.

Hopefully, you will not have to deal with calf scours this year, but if you do, contact your local veterinarian for assistance.

References

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