

## ***Calf Scours Disease***

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### ***Abstract***

*Calf scorus disease is a major health problem which chronically affects the cattle population. The scouring in calf leads to the dehydration of calves' body. This paper deals with the symptom and features of scorus disease.*

***Keywords:-Scorus, Disease, calf scours, dehydrates***

### **INTRODUCTION**

Calf scours causes more financial losses to cow-calf producers than any health problem in their herds. Calf scours is not a single infection; it is a clinical signalled with several diseases characterized by diarrhea. Regardless of the cause, diarrhea prevents the absorption of fluids from the intestines; also, body fluids pass from the scouring calfs body into the intestines. A calf is about 70 percent water at birth.

The scouring calf loses fluids and rapidly dehydrates. In addition, dehydration is associated with loss of essential body chemicals (electrolytes)-sodium and potassium-and the buildup of acid. The scouring calf typically becomes

dehydrated and suffers from electrolyte loss and acidosis. Infectious agents cause the prime damage to the intestine, but death from scours usually results from dehydration, acidosis, and loss of electrolytes. The identification of infectious agents which cause scours, is quiet essential for implementing effective preventive measures (Wenzel et al., 2009).

### ***Causes of Calf Scours***

The known causes of scours are grouped into two categories: (1) noninfectious causes, and (2) infectious causes. The noninfectious causes are often categorized to as “pre disposing” or “contributing” factors. Whatever they are called, there is a dramatic interaction between noninfectious

causes and infection. Any effort to typically prevent infectious causes is usually fruitless unless serious control of contributing (non-infectious) factors is part of the overall program.

### *Noninfectious Causes of Calf Scours*

Noninfectious causes are best delineated as flaws in management which appear as nutritional short comings, inadequate environment, insufficient attention to the newborn calf, or a combination of these. The most generally encountered noninfectious problems include:

a) Inadequate nutrition of the pregnant dam, particularly during the last third of gestation. Both the quality and quantity of colostrum are quiet adversely affected by short changing the pregnant dam in energy and protein (Wenzel et al., 2009).

Deficiencies in vitamins A and E have been associated with greater incidence of calf scours.

b) Inadequate environmental conditions for the newborn calf. Muddy lots, crowding, contaminated lots, calving heifers and cows together, wintering and calving in the same area, storms, heavy snow or rainfall, etc. are

stressful to the newborn calf and may increase the chance for easy exposure to infectious agents. The wet and chilled newborn calf experiences drainage of its body heat, may be chronically stressed, and all too often lacks the vigor to nurse sufficient colostrum early in life.

c) Insufficient attention to the newborn calf, particularly during difficult birth or adverse weather conditions. The calf is born without scours-fighting antibodies. The calf will acquire these antibodies only by profound nursing colostrums early in life. Any effort to prevent scours by vaccinating cows is wasted unless the calf nurses colostrum, preferably before it is two to four hours old. As the calf grows older, it loses its ability to absorb colostrum antibodies by the hour. Colostrum given to calves 24-38hours old is practically useless; antibodies are seldom absorbed this late in life (Fig:1).



*Fig: 1 Calf affected with scours disease*

***How can scours be treated?***

- It is significant to note that some infectious agents that make calves ill can also make people sick. People working with scouring calves should wash their hands before and after handling calves, their feed, or their bedding. Persons working with these calves should wear waterproof outer boots that can be cleaned with soap and water and disinfected with after use. Persons working with scouring calves should wear coveralls or a dedicated set of working clothes and change these before handling other calves or returning to the ranch office or house. Persons with immune system disorders, pregnant women, and very old or very young individuals should not come into contact with scouring calves, their bedding, feeding utensils, or the clothing of individuals who have handled these calves. It is

significant to feed and perform daily chores for the healthy animals before treating the sick calves with scours. The person treating the sick calves should not work the healthy calves(Timmerman et al.,2005),

- Whenever possible, scouring calves and their dams should be mainly isolated from healthy calves and from pregnant cows.
- The highest priority in treating scours is to give back to the calf the water and electrolytes that it has lost in scours – this is termed fluid therapy. This corrects dehydration, restores the normal acid-base balance, and replaces salts in the calf’s bodily fluids. There are two primary methods for providing water and electrolytes:

1) By oral administration. This option is predominantly appropriate for scouring calves that are still able to stand and who are alert enough to follow their dams and move away when approached. Most beef calves will not accept being fed by a bottle, water and electrolytes are most often delivered by an esophageal feeder (Timmerman et al.,2005). Learn how to properly use an esophageal feeder. Electrolyte powders that have been prepared by veterinary pharmaceutical manufacturers are carefully balanced to garner the correct proportions of salts relative to water for optimal benefit to the calf; these are recommended over home-prepared recipes. Many different products exist, but in general, the most effective products contain salts, dextrose (to improve blood sugar concentration in the calf), and either bicarbonate or acetate to restore acid-base balance. Consult with your veterinarian to find an appropriate product, and a target volume to typically administer for the average baby calf on your ranch. ALWAYS prepare these electrolyte solutions by adding the recommended amount of powder to the recommended amount of clean water as directed on the product label. Adding more or less

powder than what is prescribed can cause additional health problems for the calf. Mixing electrolytes with milk or solutions other than clean water is not recommended. Depending on the size of the calf and the adversity of the scours, 2 to 8 quarts (roughly equal to 2-8 liters) of electrolytes may need to be administered each day. The total volume of fluid is divided into two or more feedings per day. As a rough rule, most average-sized beef calves will require approximately 4 quarts (~ 4 liters) of oral fluids per day until the scours resolves.

2) By intravenous administration. This route of fluid administration is mainly reserved for those calves that are too weak to stand or too lethargic to follow the dam or avoid being caught. The fluids are usually administered through a catheter placed in the jugular vein. Although some experienced lay personnel can place a catheter in a scouring calf's vein, this is most often performed by a veterinarian or veterinary technician. The fluids that are available for intravenous administration are purified and carefully balanced with the appropriate balance of salts and dextrose (for blood sugar). These fluids are administered

under the calf's skin. The volume to be given depends on the calf's size and the severity of the scours.

- Nutritional and thermal support: A calf with severe scours may not want to nurse much in the initial day or two of the illness. Most calves will regain their appetite with appropriate fluid therapy, as described above. Since scours can last several days, baby calves who fail to nurse or be fed milk for that duration of time are at risk of starvation. Consult with your veterinarian to develop a feeding regimen for scouring calves. Thermal support implies typically providing deep bedding, shelter from wind, rain, and snow, and even blankets for the scouring calf, so that it does not experience excessive cold stress on top of its existing disease (Stolte et al., 2003).
- Intestinal protectants, such as Kaopectate® or Pepto-Bismol®, may give some level of relief from nausea, as in people. Similarly, calves with fever or signs of abdominal discomfort may benefit from non-steroidal anti-

inflammatory drugs; many of these have side effects, and it is important that you discuss drug selection and dosage with your veterinarian.

- Some veterinarians advocate administration of live, helpful bacterial cultures termed "probiotics." These can range from commercially-prepared cultures to plain yogurt.
  - On the other hand, antibiotics may be available to treat scours caused by certain agents, or to treat or prevent the development of superimposed infections, such as bacterial pneumonia, in the scouring calf. Consult with the veterinarian to determine the criteria that he or she feels should be applied when considering antibiotic administration for scouring calves. There is not a uniform, one-fits-all policy for this topic.
- Causes of Scours**
- The most usual infectious causes of calf scours are *Escherichia coli* (septicemic strains, enteric and enteropathogenic strains), *Salmonella* spp., *Clostridium perfringens*, rotavirus, coronavirus,

- bovine viral diarrhea virus, Cryptosporidium and coccidian (Eimeria) parasites. Calf Diarrhea (aka Scours)
- E. coli that gains access to the bloodstream (bacteremia/septicemia) can profoundly cause inflammation in any body location, but it does the most damage in the meninges/brain, kidneys and joints. Animals with this type of scours do not respond to treatment and will not survive.
  - Enterotoxigenic-E. coli such as strain K99 attaches to cells that line the interior of the intestine and causes a hypersecretory diarrhea. This type of diarrhea occurs in neonatal animals (1 to 4 days of age) and can be prevented by ensuring the calf ingests colostrum from cows that have been vaccinated with a K99 product. No vaccines are available for other types of E. coli that create hypersecretory and malabsorptive diarrhea (Radostitis et al., 2000).
  - Salmonella spp., causes diarrhea that results in important tissue damage, which can lead to problems with absorption and septicemia (bacteria in the blood). Infected animals shed the bacteria from all body orifices and can be a source of infection for humans (this is a zoonotic disease) and other animals. The bacteria are resilient in the environment (can survive for few weeks), and antibiotic-resistant strains are common. Animals that recover from salmonellosis often become "carriers" that shed the bacteria when stressed. Salmonella bacterins are available; however, their effect is not always consistent. Consult with your veterinarian about their use.
  - Clostridium perfringens infections commonly are typically referred to as enterotoxemic. Enterotoxemia (toxins in the gut) is typically fatal and is caused by toxins that various types of C. perfringens release. The disease has a sudden onset. Affected calves become listless and strain or kick at their abdomen. Bloody diarrhea may or may not occur. Infection usually is allied with changing weather conditions,

changes in the feed or feeding of the cows, or management practices that cause the calf nursing interval to be longer than usual. The hungry calf may over consume milk, which establishes an environment in the gut favorable to clostridial organism growth and production of toxins. In many circumstances, calves may die without any clinical signs being observed (Quigley et.al, 1998).

- Viral diarrheas such as rotavirus and corona virus cause damage to the cells that line the intestine, and pave to problems with fluid and nutrient absorption. Virus is shed into the environment by cows (low amounts of virus) and infected calves (high amounts of virus). The virus remains infective in the environment for few days. Vaccines are available for these two viruses but have variable success in preventing disease. Consult your veterinarian about their use. Antibiotics may aid with bacterial infections secondary to the viral infection and damage in the intestine, but antibiotics will have no effect on the virus itself.
- The bovine viral diarrhea virus (BVDV), although not a usual cause of scours, can cause sporadic diarrhea and death in young calves. Diarrhea begins about 24 hours to three days after exposure and may persist for days or weeks (if the animal survives that long). Erosions and ulcers on the tongue and lips, and in the mouth, are the usual lesions found in the live calf.
- Cryptosporidium spp. is a protozoal parasite that is found in immune-suppressed animals or as a co-infection with other bacteria or viruses. The parasite mainly occupies the surface of the cells that line the intestine and cause problems with fluid and nutrient absorption. No vaccine or licensed therapeutic agent is available. Diagnosis is typically made through the examination of a fecal sample. Most animals recover from Cryptosporidium infections with supportive care.
- Coccidiosis usually occurs in calves that are 3 weeks to 7 months of age. Diarrhea can vary from watery to bloody and the calf often has tissue damage in the intestine.

Fatalities can occur (Mulligan, et al., 2006).

## **TREATMENT**

The principal damage caused by diarrhea is loss of water and bicarbonate, sodium and potassium ions from blood and body fluids. When the scour-causing agent typically irritates the intestine, the calf's body tries to neutralize, destroy and flush out the irritant. The feces of calves with scours may contain 5 to 12 times as much water as normal. A calf becomes dehydrated when this extra water is removed from its body and may die within a few hours due to dehydration and/or increased acidity of the blood. Treat calf scours as soon as it is detected. Calves which are severely dehydrated may require fluids administered intravenously (Mazza, 1994). There are over 38 commercially available electrolyte formulations for rehydrating calves with diarrhea. The critical factor to remember when selecting and administering an electrolyte solution is that dehydrated calves will need 7 to 8.6 quarts of fluid daily to correct dehydration and maintenance needs. They also need an adequate caloric intake for maintenance and growth. Maintenance requirements are increased by cold weather and disease. Research trials mainly indicate that calves with scours will maintain weight gain and

resolve their diarrhea faster if they continue to receive milk while on electrolytes. Depending on the calf's weight, 4 quarts of milk or milk replacer daily, and an equal volume of electrolyte solution between feedings, are effective in correcting dehydration and providing adequate calories for weight gain. Because some causes of diarrhea damage the intestinal lining, causing localized mal digestion and mal absorption; smaller volumes of milk fed at more frequent intervals during the day are preferable. Antibiotic therapy is not essential for resolution of calf diarrhea problems. Except for *E. coli* and *Salmonella* infections, the organisms which cause diarrhea are not susceptible to antibiotics. If antibiotics are not essential, they should not be availed (particularly oral antibiotics) because they destroy the normal intestinal bacteria which can compete with the disease pathogens. Administration of direct-fed microbials may be beneficial where antibiotic usage has been extensive and diarrhea has been chronic (Lorenz, 2006).

## **CONCLUSION**

Calf scorus is a severe disease which affects the calf life adversely. There will be nutrient deprivation and dehydration of water source in affected calf source. There

are several treatment procedures, initial diagnosis is the major life saving step to deal with calf scorus.

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