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TECHNICAL INFORMATION FOR TODAY'S FEED PROFESSIONAL

Causes of Calf Scours

Several areas provide sources of problem

The period immediately after birth and the first few days of life are critical times for calves.[1] Attention to details during this time can reduce death losses and lower the incidence of disease. It is far better to prevent diseases and ailments than to try to correct them after they occur. Early detection is essential for effective treatment and to prevent disease from spreading to other calves.

The two major types of calf health problems are scours (diarrhea) and pneumonia. Scours are most likely to be a problem in claves less than 1 month old, while pneumonia is usually the major health problem in claves after 1 month of age.

...calf scours is often caused by more than one pathogenic agent...

Calf scours are a complex disease problem since they can be caused by several types of bacteria, viruses, and protozoan parasites. Most scours outbreaks are caused by more than 1 pathogenic agent, oftentimes a combination of viruses, bacteria, and/or parasitic agens.[2] Poor nutrition and management make calves more susceptible to infectious agents that cause scours. Grouping the causes into three causative areas may help in pinpointing the most effective treatment.

Mechanical Causes

Overfeeding of whole milk or milk replacer to calves can cause a loosening of the stool which is not a disease problem, and will not respond to antibiotics. Follow feeding directions carefully, and match the amount fed to the size and age of calves being fed.

Feeding incorrectly diluted milk replacer can loosen up calves as well. Calves can handle product diluted from 10% to 18% solids without any major problems

Feeding less than 10% solids increases rate of passage greatly, as well as frequency of urination.
Feeding over 18% solids absolutely requires the availability of fresh water.

Nutritional Causes

Feeding poor quality milk replacer, i.e., one which has undergone substantial scorching or Maillard browning, contains low quality fats, etc., will increase the risk of nutritional scours.

Feeding indigestible feedstuffs to calves can increase scours problems. Take care to introduce raw grains and complex carbohydrates gradually, so enzymes are present in quantities sufficient for adequate digestion.

Environmental Causes

Poor nutrition and management increase stress on calves, resulting in greater incidence of disease problems. Currently, there are vaccinations for *E. coli,* Rotavirus, and Coronavirus.

Bacterial causes of calf scours include:
Escherichia coli: This is the most common bacterial organism associated with calf scours. Since the K99 strain can adhere to the intestinal mucosal surface, it is a common cause of calf scours.
Salmonella sp.: There are several types of salmonella and many types can cause scours. *Salmonella typhimurium* is the most common salmonella bacteria associated with scours.

Clostridium perfringens type C: This bacteria is a soil organism and causes scours on many farms.
Viral causes of calf scours include:

Rotavirus: There is more than one serotype of Rotavirus, but it is believed that vaccines provide cross-protection to the most important serotypes.
Coronavirus: Coronavirus is not as resistant to degradation as Rotavirus. Adult cows shed the virus in feces and contaminate calving areas.

Rota- and coronavirus are hardy and survive for months in moist, cool conditions.

Protozoan parasite causes of scours include:

Coccidial (Eimeria sp.): Coccidiosis should not be underestimated as a problem in calves. In addition to scours, it is also a cause of unthriftiness and respiratory disease because of its ability to suppress the immune system.
Cryptosporidia: Development of an autogenous vaccine for *Cryptosporidium parvum* is possible in the near future. *Cryptosporidium parvum* is very resistant to commonly used disinfectants.

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 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 10 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. There are over 35 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 8.5 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 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 maldigestion and malabsorption; 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 used (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.

Sources:

1. Crowley, J., Jorgenson, N., Howard, T., Hoffman, P., and Shaver, R., University of Wisconsin, Raising Dairy Replacements.
2. McGuirk, S.M., DVM, PhD. University of Wisconsin School of Veterinary Medicine, Presentation on Calf Health Programs.

FOR MORE INFORMATION, CALL OR WRITE MILK PRODUCTS, LLC
P.O. Box 150, Chilton, Wisconsin 53014, (920) 849-2348, Fax (920) 849-9014 www.milkproductsinc.com
