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Calf Diseases & Prevention

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Among all animals present on a dairy farm, the highest mortality rates generally occur in baby calves prior to weaning. This is a statistic worth paying attention to when thinking in terms of total herd profitability. Chances are high mortality of replacement animals, impaired growth of calves, decreased milk production of chronically afflicted calves, increased risks of infectious disease transmission throughout the herd, and increased veterinary costs will not add up to generating profits.

Three important disease problems for young calves are **septicemia**, **diarrhea**, and **pneumonia**. This edition of *Mastitis Minute* will discuss factors and potential sources of infection on the farm that put young dairy calves at risk of developing these diseases. By designing health management programs that include care and housing of calves, standard operating procedures for the calving process, proper nutrition and other preventive health measures for newborn calves, these diseases can be controlled.

Septicemia

Septicemia is a systemic infection in which bacteria and toxins get into the bloodstream of the calf and travel throughout the body. It usually occurs while the calf is in the uterus or during or immediately after birth. In most cases, these toxins in the blood are characterized as gram-negative bacteria like *E. coli* and *Salmonella.* Septicemia is difficult and expensive to treat, and survival rates are low.

Calves with septicemias and pneumonias are difficult to tell apart because those affected show up as acute deaths or having respiratory distress.

Early signs of septicemia may be subtle to detect, but signs include calves that are depressed, weak, reluctant to stand, and suckle poorly within five days of birth.

Swollen joints, diarrhea, pneumonia, meningitis, cloudy eyes, and/or a large, tender navel may develop.

Bacterial infection may enter the body through various routes: from an externally infected wound or navel or as the result of a compromised immune system. Fever is not a consistent finding in septicemic calves as many have normal or subnormal temperatures.

Preventing bacterial septicemias (particularly E. coli) often requires paying close attention to colostrum management on the farm. Calves with inadequate colostrum intake or given poor quality colostrum increases absorption risks of E. coli and allows these organisms to quickly transport across the small intestines into the lymphatics and bloodstream. Poor nutrition, in general, can play an important role in controlling septicemia. In the first month after birth, calves are rapidly growing and still have an immature immune system. They require adequate sources of energy, proper protein, vitamin and mineral levels.

In Salmonella outbreaks, it is best to examine feeding procedures. Evaluate the pasteurization process and storage of pasteurized milk. Outbreaks can occur when feeding unpasteurized milk or if there are malfunctions in the equipment. Make sure other feed sources are not contaminated by flies and rodents, and are stored in coll, dry, secure spaces.

Diarrhea

Diarrhea is the most common cause of death in young calves and is almost entirely avoidable by good management. The highest risk period for calf diarrhea is within the first month after birth. In the very young calf, diarrhea is generally caused by E. coli.

If that bacterium crosses the GI tract into the bloodstream (and the calf has no immunity to fight it), that calf will become septic and will be very hard to save without early and diligent treatment. There are other bacteria, viruses, and/or parasites that cause diarrhea in calves.

It is important to be able to recognize these calves quickly and begin appropriate treatment to maintain hydration and to prevent or correct blood acidosis.

Clinical signs of diarrhea begin with loose feces and can progress to a semi-comatose state: Production of thin and watery feces → Signs of dehydration appear (sunken eyes, dry mucus membranes, rough hair) → Calf extremities become cold to the touch → Loss of appetite → Difficulty getting up → Unable to rise → Loss of consciousness.

A good rule of thumb for how aggressive treatment should be is to consider two levels of severeness. Calves that can stand and suck on their own and those that cannot. Generally, calves that can still stand and suck an be treated with oral fluids. In contrast, calves that are down generally already have acidosis of the blood and will require intravenous fluids.

However, whether or not to use antibiotics in calves with diarrhea has become a little controversial. Though most would agree that antibiotics are recommended for calves that have diarrhea plus some other sign of systemic bacterial infection, there is debate surrounding cases when the calf *only* has diarrhea. Some veterinarians would say that antibiotics are not necessary if there are not any additional significant problems. Others may say that antibiotic use may be indicated even in these simple, uncomplicated cases.

The veterinarian uses fecal samples or intestinal exams to determine the most likely cause of the diarrhea problem and to revise vaccination, treatment, and disinfection protocols. Knowing the potential pathogen provides insight into the infection source as well as the relevant factors that may have triggered the outbreak.

In most cases of fatal diarrhea, the calf dies of dehydration and loss of electrolytes**,** not from the infectious agents that triggered the diarrhea. For this reason, prompt treatment of fluids to correct the dehydration is necessary and successful.

Pneumonia

Another common disease we see in dairy calves from birth to weaning is pneumonia– inflammation of the lungs.Clinical signs of pneumonia include nasal discharge, dry cough, body temperature of greater than 41°C, respiratory distress, and decreased appetite.

Calves that develop pneumonia prior to weaning frequently share the same risk factors as those that develop diarrhea and septicemia: failure or incomplete transfer of immunity from colostrum, prolonged exposure to adult cattle, and/or the ventilation limitations of warm housing. Calves that are not given enough antibodies at birth are at increased risk for pneumonia throughout the

entire growing period. And again, the most important step in any calf health-management program is a successful colostrum-management program.

In general, problems that occur within five days of birth usually have their source from the dam or the calving environment. Whereas after seven days of age, problems develop from a source in the calf's environment. Remember, pneumonia is not just a post-weaning problem.
Because of the significant impact that pneumonia has on growth and future productivity of dairy calves, early identification and treatment are important, but resolution of significant risk factors is imperative.
Calves that develop chronic pneumonia seldom recover completely and should be culled. Early vaccination is not an effective means of prevention.