Review Your Clinical Mastitis Treatment Protocol

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The protocol used to treat clinical mastitis cases has not changed on many dairy farms over the last 5-10 years, even though the principal types of pathogens causing the udder infections have changed. Intramammary infections caused by Streptococcus agalactiae and Staphylococcus aureus have been greatly reduced or eliminated in many herds, and now the primary causes of udder infections are environmental pathogens. Some of the environmental organisms can be controlled with antibiotics, while others can not. Still, many producers continue to treat every clinical mastitis case as though it were caused by a contagious or antibiotic sensitive organism.

The topic of rethinking clinical mastitis treatment protocols was discussed by researchers from Michigan State University in a paper in the proceedings of the 2003 summer meeting of the National Mastitis Council. The researchers reported on a study they conducted in a large commercial dairy which evaluated the standard mastitis therapy protocol used in the herd with an alternative treatment protocol. The dairy’s standard practice was to treat all identified clinical mastitis quarters with an antibiotic twice a day for three days, and then if the milk appeared normal the cow would be added back into the milking herd after the specified milk withholding time. If the milk was still abnormal in appearance after the antibiotic treatment, antibiotic was administered again for another two days, after which time unresponsive quarters were re-evaluated and the antibiotic changed, or the quarters were deemed untreatable and removed from production (the cows became 3-quarter cows).

The alternative protocol that was evaluated was to not treat any clinical quarters with antibiotic until after milk from the infected quarters was cultured to determine the type of organism causing the infection. An on-farm culture laboratory was set-up to provide convenience for getting milk culture information in 24 hours. Cows with infected quarters caused by E. coli or Klebsiella (Gram-negative bacteria) were not given any antibiotic and the cows/quarters were just monitored. Infections caused by all other organisms were treated with the antibiotic protocol outlined above. The treatment procedure was modified several months into the study so that only the infections caused by Gram-positive bacteria (includes environmental Staph and Strep species) were treated with an antibiotic.

By using the modified alternative treatment protocol the number of cows requiring antibiotic treatment was reduced by 80%, a considerable economic savings for the herd. Fifty-five percent of the clinical quarters cultured no bacterial growth, and 25% cultured Gram-negative bacteria (environmental coliforms), all of which did not require intramammary antibiotic administration. Most clinical infection signs were resolved when antibiotic treatment was delayed for 24 hours to await the milk culture results.
Because of the results found from the study, the commercial dairy now follows a treatment protocol that holds cows identified with clinical mastitis cases in an observation pen for 24 hours to await the milk culture results. Any cow with a fever or signs of dehydration (often the signs of severe coliform mastitis infections) is given oral or systemic fluids and an anti-inflammatory drug. When the culture results are available in 24 hours, the cows with no bacterial growth are returned to the herd as soon as their milk is normal. Cows with coliform caused clinical infections are observed and receive supportive therapy if needed. They are returned to the herd when their milk is normal. Quarters that do not recover from the infection are removed from production. Quarters which culture Gram-positive organisms are treated with intramammary antibiotics for 3-5 days. Quarters that do not respond to the antibiotic therapy are removed from production, thereby eliminating (most likely) the spread of the contagious pathogen to other quarters or cows.

The implementation of the alternative treatment protocol outlined above has increased the mastitis monitoring procedure used in the herd. It has also reduced the use of intramammary antibiotics and reduced the number of lost days of milk production by the herd due to the required drug treatment withholding times that are observed (fewer cows are treated with antibiotics so less milk must be discarded). Another benefit is that these results have been accomplished without putting the health or well being of cows at risk.

The alternative protocol is one that most dairy producers should be able to follow. Producers could set up their own milk culture lab (more plausible for larger-sized herds), or ask their veterinarian to do the culturing (more practical for smaller-sized herds). The potential economic benefits of using the approach outlined above in dealing with clinical mastitis cases should make this treatment protocol worthy of serious consideration by dairy producers.