

Research-Based Treatment Protocols

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Mastitis is the most common disease of dairy cows and is the leading reason for antibiotic use in adult dairy cows. Clinical mastitis (CM) can be classified as mild (only abnormal milk), moderate (abnormal milk and quarter swelling and/or redness) or severe (systemic signs such as fever, off-feed, etc). In this article, only treatment of mild and moderate cases will be addressed. Severity of CM depends on the interaction of the pathogen and the cow's immune system. For example, *E. coli* induces an acute quarter(s) inflammation and is often eliminated quickly by the cow. In contrast, *Staph aureus* induces a chronic response (long term SCC elevation) and is not often eliminated by the cow.

In order to determine the causative pathogen and choose an appropriate treatment protocol, culturing of milk samples is necessary. Milkers should be trained to detect cases early by forestripping and collecting aseptic milk samples from the quarter(s) affected. Samples should be sent to a diagnostic laboratory or on-farm culturing (OFC) can be used. Once the pathogen has been identified, the producer can choose the most appropriate treatment: 1) No antibiotic therapy should be used for cows affected with pathogens that are not described in the label, most cases that are caused by *E. coli*, or cases that are culture negative. 2) Short-term therapy (2-4 days) can be used when coagulase-negative *Staphylococcus* or a potentially chronic strain of *E. coli* are detected. If SCC has increased for 2 or more months prior to clinical *E. coli* mastitis, the strain may be chronic. 3) Extended antibiotic therapy (5-8 days) can be used when the mastitis is caused by *Staph aureus* (and the cow has characteristics that indicate treatment might be useful) or in some instances for mastitis caused by environmental *Streptococcus* species. Extended duration therapy should strictly follow the instructions of the product unless otherwise prescribed by a veterinarian.

In addition to looking at culture results, farmers should review the cow history to evaluate whether an antibiotic should be administered. It is especially important to pay attention to lactation number, milk yield, SCC history, and previous cases of mastitis. For example, cows that are >3rd lactation, have a history of previous clinical mastitis, or have a history of chronically elevated SCC are often poor candidates for antibiotic therapy. For cows that are not good candidates for treatment, options include segregation (*Staph aureus*), drying off a quarter, and culling (mycoplasma). To determine the effectiveness of therapy, treatment outcomes such as recurrence of CM, SCC reduction after CM, milk production after CM, and culling should be evaluated. Producers and veterinarians should work together to develop research-based diagnosis (OFC or veterinary lab culture) and treatment protocols tailored to a farm's needs.