

When to Treat Mastitis

Cecilia Baumberger, MV, Aine O'Connell, BSc. and Pamela Ruegg, DVM, MPVM,
University of Wisconsin, Madison, Department of Dairy Science

Mastitis is a bacterial infection of the udder and can cause either subclinical disease (recognized only by increased somatic cell count) or clinical symptoms that are apparent because the milk has an abnormal appearance. Mastitis is identified after the cow's immune system has already responded to the infection. The symptoms that are observed (such as abnormal milk, or a swollen quarter) are a direct indication that the immune system of the cow has detected and responded to the infection. While a few mastitis cases result in sick cows that require immediate treatment, about 85% of mastitis cases have only mild or moderate symptoms (such as abnormal milk or a swollen quarter) and some of these cases will be spontaneously cured by the cow's immune response. On most farms, about half of the cases of clinical mastitis are successfully cured by the cow's immune response, however the other half of the cases require treatment with intramammary antibiotic tubes for successful cure. The only way to determine if a case requires treatment is to review the history of the cow and to culture milk samples to identify the type of bacteria that is the cause of the infection.

The ability to successfully destroy the infecting bacteria is dependent on several factors such as the type of bacteria, and the history of the cow. Cows with a long history of a high somatic cell count, or many previous cases of clinical mastitis have a reduced probability of achieving a successful cure. On most farms, about 50% of the cases are caused by Gram positive bacteria (such as Staph aureus, coagulase-negative staphs and streptococci), which generally require intramammary antibiotic treatments to achieve a successful cure. About 25% are often caused by Gram-negative bacteria, many of which are successfully cured by the immune response and about 25% are culture negative when detected. Culture negative cases often seem frustrating for farmers, but in most instances no bacteria are found because the cow's immune response has already killed most of the infecting bacteria before the symptoms of mastitis occur.

Knowledge of the type of bacteria is required to know which treatment should be used. When possible (for mild and moderate cases), treatments should be linked to a culture result. However, even when antibiotics are not immediately administered, the cow should be isolated and the abnormal milk discarded. There are some situations where antimicrobial treatment should not be used. Firstly, mild (abnormal milk) or moderate (abnormal milk and inflammation of the udder) clinical mastitis cases with no bacterial growth in the milk are unlikely to benefit from antibiotic therapy. These cases should be monitored and in most cases the milk will return to normal within about 4-6 days. Similarly, several types of bacteria (yeast, *Pseudomonas*, *Mycoplasma*, *Prothoteca*, *Serratia*, etc.) do not respond to antibiotic treatments, so antibiotic treatment should be avoided. Finally, mild and moderate cases of mastitis caused by *E. coli* rarely require antimicrobial treatment as the cow can

usually clear the infection herself successfully. The outcome from other coliform (*Klebsiella* or *Enterobacter*) mastitis infections depends on the level of exposure to the pathogen and the ability of the cow to eliminate the infection.

Not only is the success of mastitis cure dependent on bacteria type, it is also reliant on various cow factors. It is unlikely that cows in the third lactation or greater with a history of previous clinical cases or with chronically elevated SCC will respond to antimicrobial therapy. Treatment decisions for these cows should be based on culture results. Culling, drying off the infected quarter, or extended antimicrobial therapy may be more appropriate treatments decisions depending on bacteria type.

Evaluation of cow factors and bacteria type is necessary to better select animals that will benefit from antimicrobial treatments.