Another Look At Mastitis

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It's that time of year again when bulk tank somatic cell counts inevitably start to climb. The combination of climate and fall incentives in Ontario drive this problem each year. Mastitis is a very costly problem for the dairy industry. Clinical and subclinical mastitis decrease production and fertility, while increasing treatment, culling and mortality costs. Although culturing mastitis cases and using strategic treatment can decrease milk losses and antibiotic costs we need to also look at prevention.

It is important to first have a goal in mind for what you deem an acceptable somatic cell count (SCC) and clinical mastitis rate for your herd. Attempting to keep tank SCC just below 400,000 is risky as inevitable spikes will very quickly place you in penalty range. Instead, a better goal is to stay below 200,000 SCC, with the ideal goal to stay below 100,000.

Once you establish where you wish to be the next step is to monitor SCC and clinical mastitis. Although monitoring bulk tank SCC and checking the milk filter are helpful, knowing what is going on at the cow level is critical to SCC control. Visual inspection of udders and milk is good for identifying clinical cases while California Mastitis Testing (CMT) and individual SCC testing are needed to identify subclinical infections. Good records are imperative for mastitis troubleshooting. Having computer records makes analysis easy and convenient, but good paper records can be effective as well. With Dairy Comp we are able to access herd DHI SCCs and answer many mastitis questions. Dairy Comp can show us if the elevated somatic cell is because of only a few extremely high individuals or many moderately high animals. It can identify which groups are affected (fresh, mid-lactation or dry cows); the age of animals affected (first-calvers or older animals); and if the infections are acute (only one elevated SCC test) or chronic (2 or more elevated SCC tests in a row). It can also help us to determine herd cure rates and cull rates for mastitis.

When we are dealing with a client herd problem we start by examining this SCC information. For clients with high bulk tank SCC not on scheduled DHI we usually recommend testing the entire herd for individual cow SCCs. Next we CMT these high SCC cows to identify which quarters are affected so they can be cultured. When choosing a treatment plan we consider duration of infection (acute or chronic), pathogens cultured (treatable or not), and cow information (age, days in milk, pregnancy status, how many and which quarters affected). This helps us to select appropriate medications to recommend as well as duration of treatment. There are some situations where no treatment is necessary and others where it makes more sense to stop milking the quarter or cull the cow.

Ideally a full assessment of herd milking procedure, equipment and environment should be done. Combining this information with knowledge of which cows are affected and what type of pathogens are cultured (contagious or environmental) we can tailor our mastitis prevention recommendations as well.

Once the mastitis problem is identified, there are many steps we can take to minimize new infections. First we need to ensure cows are clean, dry and comfortable. Stalls should be adequately sized as to allow comfort, but also minimize manure contamination of the stall surface.

Udder and leg cleanliness is heavily linked to environmental mastitis incidence therefore frequent cleaning and bedding of stalls is critical. Proper ventilation keeps cows comfortable and stalls and bedded packs dry. Overcrowding often leads to dirtier environments and stressed cows increasing mastitis risk. Feeding cows immediately following milking will encourage cows to remain standing for at least 30 minutes following milking. This time is needed to allow teat ends to close following milking.

The milking procedure is also critical to mastitis control. Stripping milk prior to milking encourages milk letdown but also allows for inspection of foremilk for signs of clinical mastitis. Milk can be squirted onto parlour floors or into strip cups in tie stalls. Pre-milking teat disinfection is important to minimize infection with environmental pathogens during the milking procedure. Dry teats for milking are important, and single use paper or cloth towels should be used. Gloves should be worn by all milking personnel. Gloves allow for thorough and regular cleaning of hands during milking, minimizing spread of bacteria to teats. Gloves are one of the least expensive and most effective changes that can be made if not already practiced, but it is important to clean them frequently.

Units should be attached 60-90 seconds after start of prepping and adjusted to minimize squawks during the milking procedure. Units should be detached in a timely manor when milking is complete. We have done milk curve testing in herds that attached units too quickly, immediately following prep of a single cow only 20-30 seconds from the time the teat was first stimulated. These cows have a bimodal milk flow curve meaning they are over milked at the beginning of milking before the cow has time to let down her milk. Examining the curves of cows where units are left on too long we see over milking at the end. Over milking leads to damaged udders and teats, and increased risk of mastitis.

Following removal of the milking unit a post-milking teat disinfectant should be applied immediately. Teat disinfectant must completely cover the teat to control the spread of contagious bacteria, especially *Staph aureus,* that can persist in the milk residue left in the liner from the previous cow milked with the same unit. Ensure all teat disinfectants are licensed so you have proof of efficacy. Where possible cows with known clinical or subclinical mastitis should be milked last, with a separate unit or have the unit disinfected after each use.

Milking equipment should be inspected at least monthly, tested at least annually and replaced on a routine basis to keep it in top working condition. In testing milking equipment, we have found vacuum drops from leaks in the milking systems which will lead to large vacuum fluctuations at the teat end. These vacuum irregularities apply inconsistent pressures on the teat which can then affect proper milk out. It is also important to use approved sanitizers and chemicals to keep equipment clean.

Records of subclinical and clinical mastitis are very important, as well as records of any treatments performed. Treatment protocols should be established with your herd veterinarian, and are often best based on culture results to minimize treatment costs and wasted milk as well as supporting prudent use of antibiotics.

Many mastitis infections occur at dry off when abnormal pressures are placed on the udder at the same time as decreased frequency of teat cleaning occurs. Dry treatment protocols may include SCC or CMT and selective treatment of certain cows or blanket treatment of all cows. Dry cow

treatment protocols should be discussed with your herd veterinarian and may include antibiotics, teat sealants, vaccines and or immunity boosters depending on your situation. Decreasing the energy of the diet during late lactation to high producing cows can help decrease milk production by these cows therefore decreasing the pressures placed on the udder at dry off. Maintaining optimal nutrition, minimizing stress and keeping cows CLEAN in the dry and calving period is critical to minimize infection.

Biosecurity in the milking herd is critical to keep mastitis out. All purchased or reintroduced cows should be milked last until tested for mastitis. Culture cases with mastitis and cull animals that are persistently infected with bacteria like *Staph aureus* or agents non-responsive to antibiotics like Prototheca, Serratia, yeast, mycoplasma, and pseudomonas. Monitor cows at milking time to detect new mastitis cases. Keep permanent records of mastitis cases and analyse the patterns of cases to find new problems quickly and correct them.

Finally building the cow's resistance to infection is important. We can select bulls for breeding with good immunity, low somatic cell count, and good udders. Genetics can provide a lower risk cow, but immunity is also heavily influenced by environment. Therefore, optimal nutrition, minimal infectious and metabolic disease (milk fever, ketosis) as well as low stress are important for the immune system to function effectively.

Keeping all these things in mind will help us to continue to produce top quality highly nutritious milk in Ontario year-round.

Taken in part from NMC Recommended Mastitis Control Program, www.nmconline.org and Canadian Bovine Mastitis and Milk Quality Research Network www.medvet.umontreal.ca