

Herd-Level Mastitis-Associated Costs on Canadian Dairy Farms

M. Aghamohammadi^{1,2}, C.A. Bauman¹, D. Haine^{1,2}, D.F. Kelton^{2,3}, H.W. Barkema^{2,4}, H. Hogeveen⁵, G.P. Keefe^{2,6}, and S. Dufour^{1,2}

¹Université de Montréal, St-Hyacinthe, QC; ²Canadian Bovine Mastitis and Milk Quality Research Network, St-Hyacinthe, QC;

³University of Guelph, Guelph, ON; ⁴University of Calgary, Calgary, AB; ⁵Wageningen University and Research Center, Wageningen, Netherlands; ⁶University of Prince Edward Island, Charlottetown, PEI

Why is this important?

Mastitis, both clinical and subclinical, results in considerable economic losses to the dairy industry due to reduced milk production and quality, discarded milk, culling of animals, and prevention and treatment expenses. More complicated mastitis issues result in additional veterinary expenses. It is difficult to get a sense of what this disease truly costs Canadian dairy producers, as previous work has not considered Canadian dairy costs of production, policies, and resource prices. Better understanding of these costs can help producers to make management decisions and implement measures to minimize mastitis in their herds. These researchers therefore set out to estimate herd-level costs of mastitis on Canadian dairy farms.

What did we do?

A questionnaire was completed by 145 dairy producers participating in the Canadian National Dairy Study. Information was collected on milk yield, drug use, mastitis cases, discarded milk, veterinary services, labour, diagnostics, culling and mortality, and materials and investments related to prevention of mastitis. The results of the questionnaire, along with data from previous studies, were used to develop a series of equations to estimate costs related to mastitis. Both clinical and sub-clinical mastitis were considered, with clinical mastitis defined as a cow producing abnormal milk (e.g. flakes, watery) with or without a swollen udder, fever or loss of appetite. Subclinical mastitis was defined as elevated somatic cell count (SCC).

What did we find?

Of the producers responding to the survey, average milk production was 32 kg/day and bulk milk SCC was 184,000 cells/mL. Adoption of various mastitis-preventive measures is shown in Table 1.

Table 1. Adoption proportion of mastitis-preventive measures.

Prevention measure	Proportion (%)
Pre-milking teat disinfection	79
Post-milking teat disinfection	97
Dry cow therapy	93
Wearing gloves at milking	77
Use of mastitis vaccines	35

In CAD per 100 cows/year, total clinical mastitis cost, which include milk yield reduction, drugs, discarded milk, veterinary services, labour, diagnosis, and culling and mortality, ranged from \$0 to \$94,253. Total subclinical mastitis costs, which include milk yield reduction, discarded milk, veterinary services, diagnosis, and culling, ranged from \$2,345 to \$98,381. Total materials and investments (prevention), which includes materials and labour for pre- and post-milking teat disinfection, dry cow therapy, gloves, and vaccines, ranged from \$0 to \$24,495. Finally, total product quality costs, including insurance, penalties, and premium loss, ranged from \$0 to \$11,912. Overall, producers are spending \$16,508 to \$182,581 per 100 cows/year on mastitis-related costs.

When treating cows with mastitis, most producers used intramammary infusion solely, with treatment ranging from 1 to 9 days. Interestingly, for clinical mastitis, producers often treated cows longer than the labelled treatment regimen. This may have implications for antimicrobial overuse and the rise of antimicrobial resistance. Producers reported calling a veterinarian for less than 1% of clinical cases and only 24% reported using a veterinarian for udder health monitoring, high SCC, or a clinical mastitis outbreak in the last 12 months. Relative importance of the different cost-components is presented in Figure 1. Overall, subclinical mastitis was the costliest category (48%), followed by clinical mastitis (34%), and materials investment (15%).

What does it mean?

It is clear that mastitis represents a significant cost to dairy producers, with median costs of \$662 CAD/cow-year. In fact, it is likely that costs were underestimated in this study, as some components were not included in the calculations. For instance, the potential negative effects of mastitis on reproductive performance or risk of other diseases were excluded, as were preventive measures implemented to control both mastitis and other diseases (e.g. cow comfort or stall design/surface). As the greatest proportion of cost was due to subclinical mastitis, this represents an area that producers can focus on (e.g. implementing best milking practices) along with their veterinarians during herd-health visits.

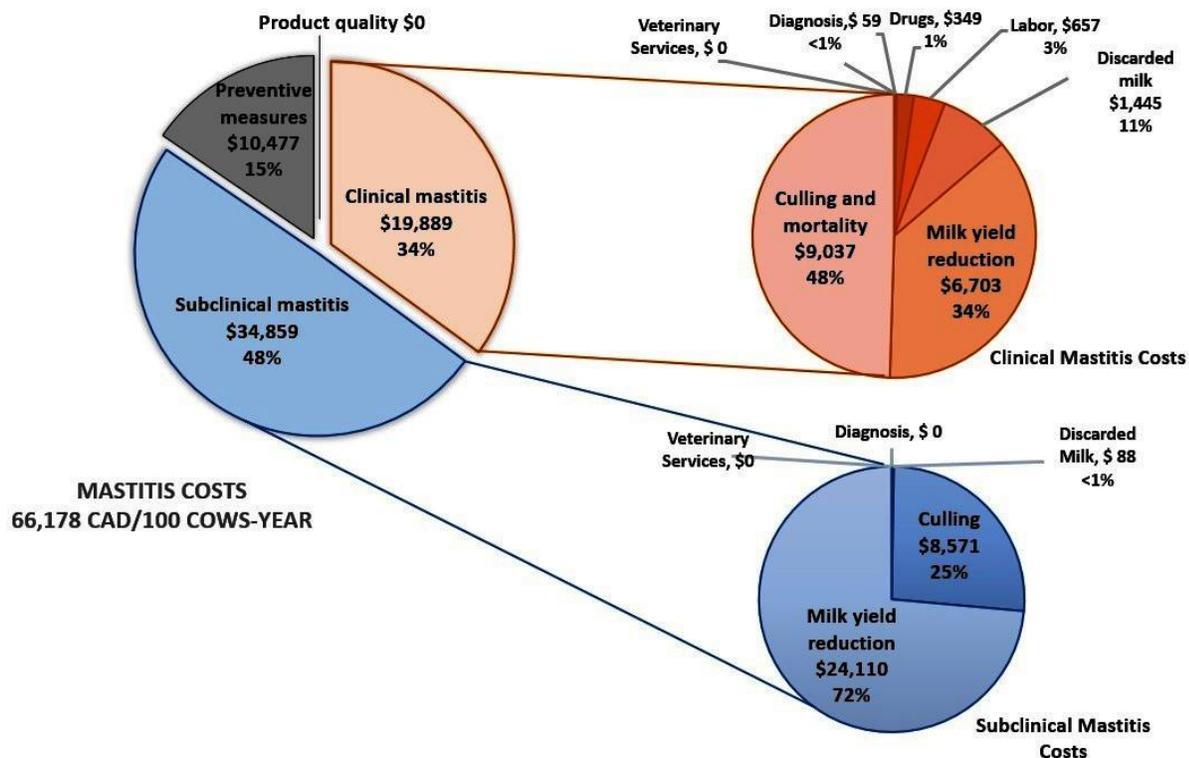


Figure 1. Absolute values and relative importance (in %) of different cost-components for the median herd in Canada (100 cows-year).

Summary Points

- Mastitis represents a significant cost to dairy producers, with median costs of \$662 CAD/cow-year.
- The greatest costs associated with mastitis include milk yield reduction, culling, and implementation of preventive measures. Producers should work with their veterinarians to implement best practices and preventive measures.