
**Abstract**

The association between quarter somatic-cell counts (QSCCs) of milk and the risk of clinical mastitis (CM) was investigated in a 1-year study on three dairy herds in Somerset, UK. The three herds had 95–130 milking cows and an annual mean bulk milk somatic-cell count (BMSCC) of <150×10³ cells/ml. The farms were visited every 4–6 weeks at morning milking when quarter-milk samples were collected. The farmers recorded all cases of CM and were trained to collect sterile milk samples from affected quarters, before treatment for bacteriology.

The three herds had CM incidence rates of 25.4, 55.2, and 67.6 quarter-cases per 100 cow-years. *Escherichia coli* and *Streptococcus uberis* were cultured from approximately 50% of cases QSCC was categorised and the risk of CM occurring in the month after the QSCC was examined using multilevel models to account for the correlated nature of the dependent data. Three models were developed: one for all cases of CM, one for those caused by coliforms and one for those caused by *S. uberis*. When all cases of CM were considered, quarters with somatic-cell count (SCC) 21–100 × 10³ cells/ml had reduced odds (OR = 0.60, P = 0.06) and quarters with SCC >200×10³ cells/ml has over three time the odds (OR = 3.7, P < 0.01) of CM compared with QSCC 1–20×10³ cells/ml. When only coliform CM were investigated, quarters with SCC 6–200×10³ cells/ml had reduced odds of coliform CM (OR = 0.47, P = 0.04) compared with QSCC 1–5 × 10³ cells/ml, and SCC >200×10³ cells/ml were not significantly different from the baseline. Finally, when *S. uberis* CM were investigated, quarters with SCC >200×10³ cells/ml had more than three times the odds of *S. uberis* CM compared with QSCC 1–20×10³ cells/ml (OR = 3.73, P < 0.01). QSCC <21×10³ and >200×10³ cells/ml are associated with increased odds of CM in the following 4–6 weeks; this association may be pathogen specific.

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