Efficacy of Intramammary Tilmicosin at Drying-off, and Other Risk Factors, for Prevention of New Intramammary Infections during the Dry Period

R. T. Dingwell, *DVM, DVSc*[1]; **T. F. Duffield,** *DVM, DVSc*[1]; **E. Leslie,** *DVM, MSc*[1]; **G. P. Keefe,** *DVM, MSc, ADGM*[2]; **L. DesCoteaux,** *DVM Dipl ABVP (Dairy)*[3]; **D. F. Kelton,** *DVM, MSc, PhD, Dipl ABVP (Dairy)*[1]; **K. D. Lissemore,** *DVM, DVSc*[1]; **Y. H. Schukken,** *DVM, PhD*[4]

[1]*University of Guelph, Ontario, Canada N1G 2W1*
[2]*University of Prince Edward Island, Canada*
[3]*University of Montreal, Canada*
[4]*Cornell University, Ithaca, NY*

Introduction

This study compared the efficacy of an intramammary infusion containing tilmicosin phosphate to an infusion of a negative-control intramammary placebo for preventing new intramammary infections (IMI) during the dry period.

Materials and Methods

Cows were enrolled from 24 dairy herds from three geographical regions of Canada. A total of 900 cows was needed to detect a significant difference of at least 50% in the rate of new IMI between the two treatment formulations administered at drying-off. Data from only 294 cows were available for analysis when the trial ended. Due to this decreased sample size and risk that subsequent lack of power to the study could lead to a type-two epidemiological error, it was decided to relax the P-value at which significance was declared. Complete data from 248 cows and 938 bacteriologically negative quarters at drying-off are summarized.

Results

Overall the rate of new IMI during the dry period was 16.7% of quarters. New infection rate for quarters that received intramammary tilmicosin as compared to the intramammary placebo was 14.4% and 19.4%, respectively. Quarters that received intramammary tilmicosin at drying-off were less likely (OR = 0.67) to develop a new IMI during the dry period (P = 0.08). The majority of new IMI were caused by coagulase-negative staphylococci spp (49%) and environmental streptococcal organisms (26.8%). Probability for quarters to develop new IMI in the dry period was significantly increased when cows had higher milk production prior to drying-off (P = 0.04), when cows had longer dry periods (P = 0.02), and when dry cows were housed in tie-stall barns (P = 0.002). Higher-parity cows, and those that had a Linear Score above 4 on the last Dairy Herd Improvement (DHI) test, were also at increased risk for new IMI (P < 0.10).

Conclusions

Overall new infection rate of bacteriologically negative quarters during the dry period was observed to be 16.7% of quarters. Infection rate for quarters that received tilmicosin at drying-off was 14.4%, compared to a 19.4% rate in the placebo-treated control group. When all other variables in the final logistic regression model are considered, using a relaxed P-value to declare significance, infusion of intramammary tilmicosin at drying-off decreased new IMI (P = 0.08). Intramammary tilmicosin is quite likely an efficacious dry cow treatment for prevention of new IMI over the dry period. It should be noted that no approved intramammary formulation containing tilmicosin is currently available for this use.