

# The Effect of Selective Dry Cow Therapy on Subsequent Lactation Milk Yield

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## Introduction

Mastitis is the most common and costly disease in dairy herds around the world. Antibiotic treatment of all quarters of all cows at the end of lactation (dry cow therapy, DCT) is a common mastitis control procedure in US dairy herds to eliminate existing and to prevent new intramammary infections (IMI) during the dry period. However, due to growing concerns about antimicrobial resistance, selective DCT (SDCT) has received increasing attention in the past years; selectively treating only infected cows would offer the opportunity to reduce use of antimicrobials in dairy operations. SDCT is successfully practiced in some parts of the world, but there are no recent studies evaluating the effects of SDCT on udder health or milk production in the US dairies. For a switch from total to selective DCT to be feasible, the new alternative needs to maintain similar udder health and production level as the current practice of treating all quarters of all cows. The objective of the present study was to evaluate the effect of SDCT on daily milk yield during the subsequent lactation in US dairy herds.

## Materials and Methods

Four Ohio Holstein dairy herds were enrolled in the study. Based on monthly Dairy Herd Improvement testday records, cows with somatic cell counts (SCC) < 200,000 cells/ml during the last three months of lactation and no history of clinical mastitis (CM) were considered uninfected; additionally, a cow was considered uninfected if she experienced CM during the first three months of the lactation and her SCC was < 100,000 cells/ml for the rest of the lactation (low-SCC cows). These cows were randomly allocated either to receive or not to receive treatment at dry-off; others were considered high-SCC cows and were treated. Quarter milk samples were collected at dry-off and calving and examined microbiologically according to National Mastitis Council guidelines. A quarter was considered infected if  $\geq 100$  colony forming units (cfu)/ml of contagious major

pathogens (*S. aureus* and *Str. agalactiae*) or  $\geq 500$  cfu/ml of all other pathogens were isolated based on microbiological results from single samples. Daily milk yields were compared between treated and untreated low-SCC cows using repeated measures analysis (PROC MIXED, SAS®, SAS Institute Inc., Cary, NC, USA) adjusting for parity, infection status at dry-off, previous lactation 305-d milk yield, days dry, season, other diseases during the lactation and herd.

## Results

Data from 411 low-SCC (206 treated, 205 untreated) and 393 high-SCC Holstein cows were included in the analyses. Daily milk yield during the following lactation among treated and untreated low-SCC cows did not differ significantly, adjusting for parity, previous 305-d milk yield, days dry, and SCC and occurrence of diseases during the lactation. Cows with high SCC at dry-off had lower milk yield in the subsequent lactation than cows with low SCC at dry-off ( $P > 0.05$ ). Herd was an important source of variation and the effect of SDCT on milk yield was different in various herds, beneficial in some, detrimental in others.

## Significance

The preliminary results of this study suggest that the impact of selective DCT is not uniform across all herds. In some herds, treating presumably uninfected cows (based on their monthly SCC and clinical mastitis history) was detrimental and decreased milk yield during the following lactation, whereas in some herds the opposite was true. In conclusion, careful consideration of farm characteristics and SCC of cows at the end of lactation is needed to maximize the benefits of dry cow therapy in dairy herds. Recommendations about DCT should be herd specific. Blanket DCT appears to be beneficial in some herds, but may be detrimental in others.