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## THE ENFORCED TRANSITION FROM BLANKET DRY COW THERAPY TO SELECTIVE DRY COW THERAPY IN THE NETHERLANDS: AN EVALUATION OF THE EFFECT ON UDDER HEALTH PARAMETERS

### Introduction

In response to the global increasing interest in the responsible use of antimicrobials and a reduction in the use of antimicrobials, there has been an enforced transition from blanket antimicrobial dry cow therapy (BDCT) to selective antimicrobial dry cow therapy (SDCT) in the Netherlands since January 1st 2014. The somatic cell count (SCC) thresholds to select cows for antimicrobial dry cow therapy were based on a simulation study by Scherpenzeel et al. <sup>(1,2)</sup> and were assumed to result in an optimal tradeoff between reduced antimicrobial usage associated with udder health versus increased risk of new intra-mammary infection (IMI). Particularly the potential increase in both clinical mastitis and subclinical mastitis and its negative impact on animal welfare and production raised concerns in the veterinary and dairy industry. Therefore, the aim of this study was to evaluate the effect of the enforced transition from BDCT to SDCT, as a result of the legislative guideline on dry cow therapy in the Netherlands, on udder health at national, practice and cow level.

### Material and Methods

#### *Udder Health at National Level*

A random selection of 3500 dairy herds with  $\geq 70$  cows in DHI recording was made from data available through CRV (Arnhem, the Netherlands). Data of each DHI recording from 2011 through 2015 was available.

An elevated SCC has been used as an indirect measure for the presence of an IMI. Multiparous animals with a  $SCC \geq 250,000$  cells/ml and primiparous animals with a  $SCC \geq 150,000$  cells/ml were classified as infected <sup>(3)</sup>. The SCC of each animal that was sampled for DHI, percentage infected and percentage new infected were routinely reported at each new DHI recording and were converted to a monthly variable per herd. This data was next used to calculate the following parameters in relation to dry cow management: herd level SCC, being the mean of the individual animal SCC in that herd;

the percentage of animals with a new infection at the first DHI recording after the dry period (% new IMI); and the percentage of animals that were cured of an IMI during the dry period (% cured IMI).

#### *Udder Health at Practice and Cow Level*

The University Farm Animal Practice serves around 330 dairy cattle herds, adding up to about 27,500 cows. All antimicrobial drugs used on these herds were solely distributed by the practice. Total sales figures of intra-mammary dry cow tubes, mastitis tubes and teat sealers by the practice were extracted from the practice management software (Viva, Corilus Veterinary BV, Houten, the Netherlands).

A selection was made of 280 dairy herds with DHI recordings available from 2013 through 2015. No other selection criteria were applied. The dry period management on these herds was evaluated by calculation of the % new IMI and % cured IMI.

Further analyses will use a subset of 22 herds using farm management software (CowVision, AgroVision, Deventer, the Netherlands) with data available from 2013 through 2015 for evaluation of the dry period management at herd and individual cow level. For these 22 herds, the annual mean percentage of culling was calculated and compared with national data.

#### *Statistical analyses of the data*

Data was first extracted from the different software programs and exported to MS Excel (Microsoft Office, Redmond, Washington, USA) for initial data handling. Further data analysis was performed using SPSS 24.0.0.1 (IBM, New York, USA).

### Results

#### *Udder Health at National Level*

From 2011 through 2015, the annual mean herd level % infected and % new infected at milk recording slightly declined with a few percent. The annual mean herd level SCC in these herds showed an overall slowly declining trend over the study period from around 210,000 cells/mL in 2011 to around 185,000 cells/mL in 2015 with a moderate rise in 2014. Within each year, highest monthly mean herd level SCC were recorded during the summer and lowest recordings took place during the winter and early spring.

The annual % new IMI over the dry period showed an increase from 2011 to 2014, to decline again in 2015, whilst the annual % cured IMI over the dry period showed little variation.

### *Udder Health at Practice and Cow Level*

From 2013 through 2015, the total sales figures of intra-mammary dry cow tubes and mastitis tubes have declined with 38% and 17% respectively, whilst on the other hand the total sales figures of intra-mammary teat sealers increased with 73%.

The % new IMI and % cured IMI over the dry period are shown in table 1.

*Table 1. Annual mean and median % new IMI and % cured IMI over the dry period for the 280 herds in the University Farm Animal Practice dataset*

year	% new IMI		% cured IMI	
	mean	median	mean	median
2013	16	15	74	75
2014	18	17	74	77
2015	17	15	76	78

The annual mean percentage of culling on the 22 herds showed a mild increase from 25% in 2013 to 27% in 2015. Whilst the national annual mean percentage of culling increased from 37% in 2013 to 45% in 2015.

### **Conclusion**

The evaluation of the enforced transition from BDCT to SDCT in this study showed that, after an adaptation period, most udder health parameters measured continued to have a trend towards better udder health both on national and practice level. On national level, an increase in annual percentage of culling was seen whilst this increase was much milder when investigated for a subset of farms with detailed data collection. These results are indicative that the transition from BDCT to SDCT is possible without detrimental effects on udder health, animal welfare and production.

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### **Conflict of interest**

Preliminary results were presented at the IDF mastitis conference (Nantes, 2016).

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