

The Prevention of New Intramammary Infections during the Dry Period when using an Internal Teat Sealant in conjunction with a Dry Cow Antibiotic.

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Introduction

The use of an internal teat sealant containing 65% wt/wt bismuth subnitrate in heavy liquid paraffin (Orbeseal[®]; Pfizer Animal Health) to reduce the number of new infections acquired by the mammary gland during the non-lactating period has been described by several authors (1,2,3, 4). In cows that are unlikely to be sub-clinically infected at dry off, the product alone has been shown to be at least as effective as antibiotic dry cow therapy alone on a quarter comparison basis (4) and on a cow comparison basis (3).

Control of contagious pathogens is still an issue on most dairy farms in North America and blanket dry cow therapy remains essential. The question whether antibiotic treated cows that also receive teat sealant out-perform cows treated with antibiotic alone must be answered by studies conducted in J5 vaccinated, high yielding dairy herds in typical environments in the United States. Preliminary data (2) have suggested that there may be some benefits. In a split udder study design, quarters treated with cloxacillin alone (Orbenin DC[®], Schering Plough) were compared with those that also received sealant. A significant 27% reduction in new intramammary infection (IMI) rate was observed in the sealed quarters, suggesting benefits over and above dry cow therapy alone.

The objective of this study was to assess the efficacy of Orbeseal[®] (Pfizer Animal Health) to incrementally improve the preventative properties of dry cow antibiotic in commercial dairy herds using a between cow comparison and no prior cow selection procedure other than the presence of four functional quarters and the absence of clinical mastitis at dry off.

Materials and Methods

A total of 608 cows in 3 commercial herds in Wisconsin, milking between 265 and 1300 cows at the start of the study, were enrolled. At dry off, quarter samples were taken for bacteriology and cows were randomly assigned to receive either a commercially approved dry cow intramammary infusion (Quartermaster[®]; Pfizer Animal Health) in all four quarters of each cow alone or an internal teat sealant (Orbeseal[®]; Pfizer Animal Health) in addition to the dry cow infusion in all four quarters of each cow.

Quarter samples were taken from all cows within 3 days of calving for bacteriology. SCC was evaluated using routine monthly DHIA testing procedures. Clinical mastitis was recorded for all cows through 100 DIM.

Outcomes assessed were new IMI rate during the dry period, clinical mastitis rate during the first 100 days in milk, and first SCC in fresh cows at first DHIA milk test. Outcomes were analyzed across herds and within herds using mixed model procedures, with the across herd analysis using treatment by herd (2 degrees of freedom) as the error term for testing treatment effects.

Results

The mean new IMI rate for all herds for the Orbeseal[®] group (8.0%) was lower than that of the control group (16.7%) ($P = 0.08$). The relative IMI rate reduction (and control rate) was 59% (30%) and 62% (20%) in two herds ($P < 0.01$ ($n=291$) and $P < 0.01$ ($n = 741$)) respectively) whereas the third herd relative reduction was 25% (9%) ($P = 0.12$, $n = 941$), suggesting that either a treatment by level of challenge or a treatment by herd effect was present.

Clinical mastitis rates through 100 DIM were lower in the Orbeseal[®] treated cows at 23.4% compared to the antibiotic treatment alone at 29.9% ($P = 0.19$). There was again significant variation between the herds with relative reductions of 39%, 26% and 11% ($P = 0.38$, 0.09, and 0.50 respectively).

There was no difference in SCC between treatment groups at dry off but there was a 25% reduction in SCC at calving in the Orbeseal[®] group ($P = 0.19$). The three contributing herds all had reductions in SCC of 58%, 17% and 8 % ($P = < 0.01$, 0.22, 0.68).

Conclusions

Downward trends in new IMI, SCC at calving and clinical mastitis were observed overall, with significant reductions observed in some herds following the addition of Orbeseal[®] to the dry cow antibiotic. Clearly, factors related to the relative importance of non-lactating period new infections in dairy herds with respect to clinical mastitis will influence the overall benefits achieved through the use of Orbeseal[®].

References

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