

# Poster Sessions

## Prewaning Health and Performance of Minnesota Dairy Calves Fed Either Pasteurized Waste Milk or a Traditional Milk Replacer Feeding Program

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### Introduction

A great deal of interest has developed in adopting commercial pasteurization systems for feeding waste milk on commercial dairies and heifer growing operations. Some considerations in adopting this technology include economics, infectious disease control, and calf health and performance. The objective of this study was to describe preweaning morbidity, mortality and growth rates in calves fed either pasteurized waste milk or a traditional 20:20 milk replacer feeding program between birth and weaning.

### Materials and Methods

Between December 2002 and August 2003, a total of 439 one-to-two day old heifer and bull Holstein calves arriving at a commercial heifer grower in central Minnesota were systematically assigned to one of two feeding programs: treatment = pasteurized waste milk (n = 222), or control = traditional 20:20 milk replacer (n = 217). Calves were housed in individual pens in greenhouse barns and fed twice daily. Waste milk from just fresh (transition milk) and antibiotic-treated cows was pasteurized at 145 °F for 30 minutes before each feeding using a commercial batch pasteurizer (Dairytech Inc, Windsor, Colorado). Milk replacer was mixed at a rate of 1 lb (0.45 kg) per 4 qts of milk. Feeding rates of both pasteurized milk and milk replacer were 2 qts/feeding, 2.5 qts/feeding, or 3 qts/feeding when average ambient temperatures were > 24 °F, 5 to 24 °F, and < 5 °F, respectively. Calves were weighed on arrival and again after weaning. Records were kept of serum total protein concentrations (1-7 days old), and of all treatment and mortality events occurring during the period from arrival to weaning.

### Results and Conclusions

Arrival weights and serum total protein (TP) concentrations were not different for calves assigned to milk replacer (arrival weight = 89.2 lb (40.5 kg), TP = 5.7 mg/dl) vs. calves assigned to pasteurized waste milk (arrival weight = 88.5 lb (40.2 kg), TP = 5.8 mg/dl). Age at weaning (46 to 47 days old) was also not different between the two treatment groups. Calves fed pasteurized waste milk gained significantly more weight and were heavier at weaning (58.9 lb [26.8 kg] gain; 146.3 lb [66.5 kg] at weaning) than calves fed milk replacer (45.0 lb [20.5 kg] gain; 133.9 lb [60.9 kg] at weaning) (P < 0.05). Average daily gain (ADG) was significantly greater in calves fed pasteurized waste milk (1.04 lb [0.47 kg]/day) vs. calves fed milk replacer (0.76 lb [0.35 kg]/day) (P < 0.05). Prewaning morbidity rates were significantly lower for calves fed pasteurized milk (12%) vs milk replacer (32%) (P < 0.05). While morbidity rates were generally lower in the summer months, there was no treatment by season interaction affecting risk for morbidity. Morbidity rates were significantly lower for both scours and pneumonia for calves fed pasteurized milk (scours = 3.1%, pneumonia = 7.5%) as compared to calves fed milk replacer (scours = 16.9%, pneumonia = 19.6%) (P < 0.05). Prewaning mortality rates were significantly lower for calves fed pasteurized waste milk (2.3%) than for calves fed milk replacer (11.6%) (P < 0.05). There was a treatment by season interaction affecting calf mortality, with treatment effects being most pronounced in the winter months (born Dec. – Mar.) when mortality rates were 21.0% or 2.8% for calves fed milk replacer and pasteurized milk, respectively (P < 0.05). There was no significant difference in mortality rates during the summer months (born Apr. – Aug.) when mortality rates were 2.7% or 1.7% for calves fed

milk replacer and pasteurized milk, respectively ( $P > 0.05$ ). Preweaning health and performance was significantly better in calves fed pasteurized waste milk as compared to calves fed a traditional 20:20 milk replacer feeding program. Further work is planned to evaluate

the cost-benefit of feeding pasteurized waste milk, the impact on fecal shedding and antimicrobial resistance patterns in fecal pathogens, and prevalence of Johne's disease infection once heifer calves reach maturity.

## Effectiveness of an Internal Teat Seal in the Prevention of New Intramammary Infections During the Dry and Early Lactation Periods in Dairy Cows When Used with an Intramammary Antibiotic

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### Introduction

The practice of blanket dry cow antibiotic therapy has been very successful in eliminating many existing infections at dry-off and in preventing new intramammary infections (IMI) during the dry period. However, many new intramammary infections still occur during the dry period due to factors such as delays in keratin plug formation, poor sensitivity of some invading pathogens to intramammary antibiotic preparations, and decreases in antibiotic concentrations near the end of the dry period. The primary objective of this study was to describe whether quarters treated with an internal teat sealant in addition to an antibiotic (treated) at dry-off would develop fewer new intramammary infections during the dry period and early lactation, as compared to quarters treated with antibiotic alone (control). Secondary objectives were to describe the effect of treatment on the prevalence of intramammary infection after calving, the incidence of clinical mastitis events between dry-off and 60 days in milk (DIM), and linear score (LS) after calving.

### Materials and Methods

The study enrolled 437 cows from two commercial dairy farms in western WI, with four functional quarters and no evidence of clinical mastitis at dry-off. On the day of dry-off, all four quarters were sampled for bacteriological culture and somatic cell count (SCC) measures. After the final milking, all four quarters were

routinely infused with a commercially available long-acting antibiotic. Two contralateral quarters (LF/RH or RF/LH) were then randomly assigned the additional treatment of infusion with an inert internal teat sealant (Orbeseal<sup>®</sup>, Pfizer Animal Health, Groton, CT). The teat sealant was stripped out at first milking after calving, and the quarters re-sampled at both 1-3 DIM and 6-8 DIM for bacteriological culture and SCC analysis.

### Results and Conclusions

Quarters treated with Orbeseal<sup>®</sup> had significantly lower prevalence of IMI at 1-3 DIM (tx = 22.8%, control = 29.1%), had significantly fewer quarters that acquired a new IMI between dry-off and 1-3 DIM (tx = 20.2%, control = 25.4%), and had significantly fewer quarters affected by a clinical mastitis event between dry-off and 60 DIM (tx = 5.9%, control = 8.0%;  $P < 0.05$ ). Multivariable analysis showed a significant effect of treatment, with treated quarters being 30% less likely to develop a new IMI between dry-off and 1-3 DIM, 31% less likely to have an IMI present at 1-3 DIM, 33% less likely to experience clinical mastitis between dry-off and 60 DIM. Finally, there was a significant reduction in LS associated with treatment. Mean linear scores for control vs. treated quarters were 5.4 vs. 5.1 at 1-3 DIM, and 3.1 vs. 2.8 at 6-8 DIM ( $P < 0.05$ ). Orbeseal<sup>®</sup> teat sealant offers the dairy industry a very promising management tool to prevent new intramammary infections during the dry period.