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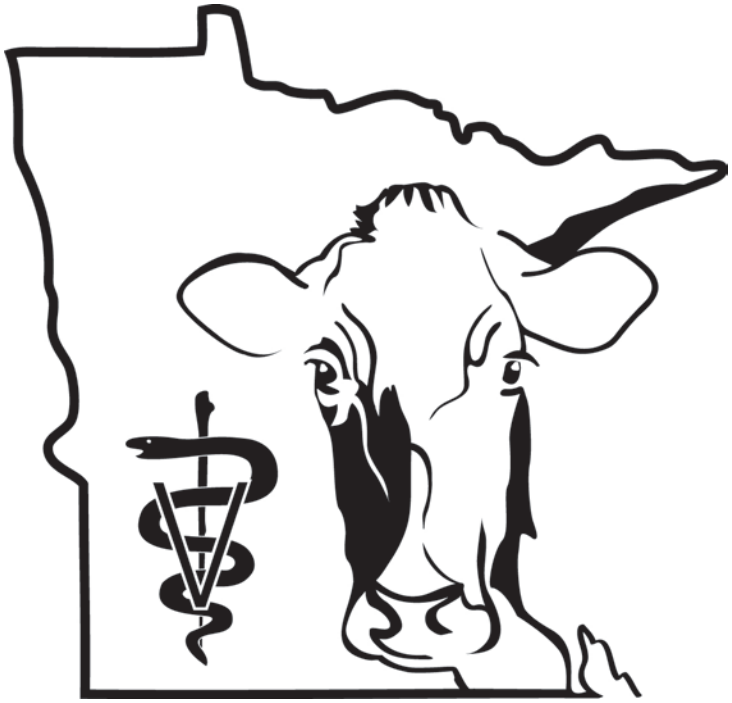

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Effect of maternity pen management on neonatal calf health during the first 90 days of life.

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The effect of utilizing individual maternity pens for improving calf health was evaluated on three Minnesota commercial dairy herds between January and December, 2005. The objective was to determine whether heifer calves born in individual maternity pens have a lower risk of neonatal calf diseases compared to heifer calves born in multiple cow maternity pens.

The study was a systematic randomized clinical trial, in which the first cow that was due to calve at the start of the study was randomly allocated to calve in the individual cow maternity pen on each farm. Thereafter all cows that were due to calve were systematically allocated (every other calving) to either individual cow maternity pens or the multiple cow maternity pens. Upon birth, calves were assigned to one of two treatment groups based on place of birth; the intervention group consisted of calves born in individual cow maternity pens while the control group consisted of those born in multiple cow calving pens. Fecal materials and placental remains were removed from the individual maternity pens between each calving and calves were separated from their dams and removed from the maternity area, within 2 hours of birth. Standard disease monitoring and diagnosis protocols were developed for the study. Disease events (Scours, respiratory disease and navel/joint infections) experienced by calves, during the first 3 months of birth and treatments administered, were recorded by the calf managers.

A total of 449 calves were recruited to the study at time of enrollment of which 238 (53%) were born in individual cow maternity pens (intervention group) while 211 (47%) were born in multiple cow maternity pens (control group). Of the 238 calves in the intervention group 38 % (91/238) suffered at least one morbidity event compared with 37 % (79/211) of those in the control group. For neonatal calf diarrhea, 33 % (78/238) of affected calves belonged to the intervention group compared with 30 % (64/211) in the control group. Seventeen percent (13/76) of calves in the intervention group experienced an event of pneumonia compared to 17 % (14/81) in the control group.

After adjusting for season of birth, dam parity, ease of calving at the time of birth and herd in a multivariable logistic regression model, no significant effect of intervention was observed for each neonatal calf disease outcome: pneumonia (OR = 0.67; 95 % CI = 0.19, 2.33); diarrhea (OR= 0.94; 95 % CI = 0.59, 1.49); morbidity due to any cause (OR = 0.92; 95 % CI = 0.61, 1.40).

Use of individual maternity pens as cow calving areas does not provide added protection against neonatal calf diseases. Despite these findings, we do not recommend discontinued use of individual cow calving pens in herds that are currently utilizing them as calves born in multiple calving pens may still be at greater risk of acquiring other infections (e.g. *Mycobacterium avium* subspecies *paratuberculosis*). Long–term follow–up of these study animals, to determine infection status for *Mycobacterium avium* subspecies *paratuberculosis*, is ongoing.