

**Epidemiological Study of Adult Dairy Cow Mortalities on a Colorado Dairy Farm**  
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Dairy cow mortality represents an economic loss for dairy farmers. It is estimated that annual mortality rates are as high as 4-12% nationwide. The objective of this study was to evaluate mortality rates on a modern dairy and determine the association between health or production-related factors and death. Cows were selected from a 1400 cow free stall dairy in Colorado. Blood samples were collected from cows 3-5 days in after parturition. Serum was separated and frozen for future analysis. The cows were followed for 100 days and subsequent health events such as mastitis, metritis and lameness were recorded. There were 1093 cows enrolled in the study that calved between March and November 2005 and 1839 health events recorded. Three percent of the cows died (34/1093), and 9% (97/1093) of the cows were sold within 100 days after parturition. First calf heifers represented 41.7% (456/1093) of the fresh cows during the study. Of the 456 first calf heifers enrolled, 11 (2.4%) died and 32 (7%) were sold. Analysis of health events from all enrolled cows showed that 18% (337/1839) of the health events were mastitis, 6% (122/1839) were metritis, 4.2% (79/1839) were pneumonia and 3.9% (72/1839) were retained placentas. Chemistry panels were performed on sera from ten cows that died within ten days of parturition, and ten cohorts, selected and matched by lactation and calving date that remained in the herd for at least 100 days.

The serum chemistry panel included glucose, creatinine, phosphorous, calcium, magnesium, total protein, albumin, globulins, total bilirubin, creatinine kinase (CK), Aspartate Aminotransferase (AST), gamma-glutamyltransferase (GGT), Sorbitol Dehydrogenase (SDH), sodium, potassium, chloride, bicarbonate (HCO<sub>3</sub>) and anion gap. A univariate Chi-square analysis was performed in SAS. At least one chemistry value was out of the normal range for all of the cows tested, including those that remained in the herd. All ten cows that died had elevated CK levels (> 280 IU/L) however not all of these cows had a history of Musculoskeletal injury. Only two of the cows that remained in the herd had an elevated CK level. Seven out of the 10 cows that died had elevated AST levels (>130 IU/L) whereas only one of the 10 cows sampled that remained in the herd had an elevated AST level.

These preliminary results show that there are clinical diseases as well as subclinical imbalances that could be used as risk indicators for death. Once the risks are identified, management changes can be implemented to minimize the risks and reduce dairy cow deaths.