Dairy Cow Mortality Data Management: The Dairy Certificate of Death

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Dairy cow mortality levels in the United States have been increasing over time. This is both a financial concern and an important animal welfare issue. Summary studies of dairy cow removal have been in the literature for decades but information specifically related to dairy cow mortality has been sparse. The increase in dairy cow mortality has generated concern within the industry, yet no standard exists by which to define what might be considered the 'natural' or 'normal' level of mortality in dairy cow production. Historical data suggest that dairy cow mortality ranged between 1 and 5% of rolling herd inventory per year into the 1970's, while current estimates suggest an average of 8 to 10% mortality in dairy herds across the U.S. with a range between 2 and 15%.

Decreasing cow death losses logically requires that management needs to be directed at minimizing those factors that increase risk of death. But this requires information gathering and analysis that identify those risk factors on an individual dairy. Such systems appear to be lacking on most U.S. operations. The limited published information available to describe specific causes of cow mortality has mostly been derived from on-farm records. Unfortunately these descriptors of the causes of death are almost exclusively based upon owner or farm worker impressions with very limited veterinary input. The most recent national dairy survey from the National Animal Health Monitoring System reports that <5% of cow deaths are evaluated by necropsy.

Thorough necropsy-based postmortem evaluations are an underutilized but important means for defining the pathologic explanation of dairy cow deaths. The value of a postmortem evaluation is directly related to the accuracy and maintenance of data collected and its application to operational management. There are invariably a set of circumstances or events that underlie the development of specific pathology and this pathology ultimately results in the death. Therefore a necropsy examination can reveal the pathology, but needs to be matched with other information about the individual to understand why that pathology occurred. Such information might include descriptors of age, preceding health events, weather, location near time of death, diet, and so on.

To prevent future deaths requires that the underlying cause of death is identified and mitigated to reduce risks for other individuals in the future. Very importantly, much of this additional information must be gathered at, or near, the time of death, because many of the details are lost or cannot be identified at a later time. This reasoning has served well in human medicine for many years. It is incorporated into Death Certificates. These formal documents combine information about the specific assessment of the proximate cause of death, commonly including autopsy

information or results of ancillary testing, plus other historical assessments and characteristics of the individual, that lead the health official to define an underlying cause-of-death (COD).

Whereas human cause-of-death statistics generally rely on a sequence of data captured in a standardized Death Certificate, dairy cow deaths have been poorly defined, marginally recorded, and rarely analyzed. The lack of uniform COD statements clearly limits the ability of the dairy industry to monitor mortality in relation to variables such as diseases and other health problems, and characteristics and circumstances of the animals affected. Incorporating death certificates with COD statements into dairy systems is achievable. As with human COD statements, the dairy death certificate should record the estimated chain of events leading up to a death. Although the details defining the various causes of death (immediate, intermediate, and underlying) may rely on incomplete data, focus on this challenge can provide the impetus to enhance dairy- and cow-related data acquisition including postmortem evaluations. Importantly, shifting the focus away from the immediate cause of death to the process underlying a death affords an opportunity to improve communication between the various health care providers on a dairy, nutritionists, veterinarians, and owners.

The process we are proposing with the use of dairy cow death certificates may look somewhat complex or time consuming, but the process can be relatively fast. We believe using mortality investigation to assess dairy health management outcomes represents an opportunity for veterinary investment in cow well-being that is currently underutilized. Not all cows need to be examined by necropsy to utilize this approach. Heightening awareness of farm personnel of the nuances that underlie healthy cow management has benefits beyond just mortality management.