Comparison of Observational and Necropsy Derived Diagnosis for Cause of Death for Cattle in Commercial Beef Feedlots

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Introduction

Necropsy results are used routinely by feedlots to provide insight into causes of mortality and to provide a surveillance mechanism for emerging diseases. Necropsy also allows for the feedlot to make management decisions regarding events occurring in their cattle population such as digestive problem outbreaks or management decisions in high risk calves. This is an occupational hazard for feedlot employees because they can become injured or be exposed to zoonotic disease while conducting necropsies. The objective of this study was to determine the accuracy of a pre-necropsy mortality diagnosis made by feedlot personnel to the mortality diagnosis made from necropsy results.

Materials and Methods

This study was conducted at a commercial feedyard located in western Kansas. Feedlot mortalities were assigned a cause of death prior to necropsy by feedlot personnel. Personnel were allowed to use any history on the animal, where the animal was found, physical appearance, and any past experiences to help them form a diagnosis that was then recorded. Trained personnel that were blinded to pre-necropsy diagnosis then performed a thorough necropsy where the cause of death was recorded. The recorded pre- and post-necropsy causes of death were categorized into seven categories for data analysis: bovine respiratory disease (BRD), atypical interstitial pneumonia (AIP), tracheal edema, bloat, injured, peritonitis, and dystocia. A Kappa statistic was estimated between the pre-necropsy determined cause of death and post- necropsy determined cause of death. Kappa was calculated using Stata® Version 10.

Results

There were 54 mortalities observed in this study during the months of June and July of 2009. The pre-necropsy determined cause of death and the post-necropsy determined cause of death had a Kappa value of 0.6093, which falls right on the boundary between moderate and significant agreement. The agreement of pre- and post-necropsy determined cause of death for BRD and bloat cases was 100%. Most (22/25) BRD animals died in the hospital or chronic pen and had been treated previously. Pre-necropsy AIP mortality diagnosis (n = 12) was under-reported compared to post-necropsy mortality diagnosis (n = 15). The majority (9/12) of AIP animals died in their home pens prior to treatment. Also, cattle euthanized due to chronic lameness or injury were under estimated on post-necropsy mortality diagnosis compared to pre-necropsy diagnosis as the individual performing the necropsy did not observe the cattle antemortem.

Significance

These data indicate that management strategies could be developed by consulting veterinarians to decrease time spent by employees at the necropsy area without decreasing the accuracy of mortality diagnosis in select groups of cattle. Feedyard personnel in this study were extremely accurate at determining BRD and bloat causes of death without performing necropsies. However there was less accuracy in diagnosing cause of death without a necropsy for animals that died in the home pen without treatment history from non-bloat causes, such as AIP or chronic injury. Further research on necropsy sensitivity, specificity, and economic utility in the commercial feedyard setting is warranted on this subject.