Lactoferrin reduces mortality in pre-weaned calves with diarrhea

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Introduction

Calf diarrhea is the most common illness in young calves, and nearly 8% die as a result. Alternatives to antimicrobials are frequently used to treat calf diarrhea on organic operations, but there is little data confirming their effectiveness. Additionally, the availability of effective antimicrobial alternatives could help improve antimicrobial stewardship and reduce usage in cases of diarrhea. Lactoferrin and garlic extract have antimicrobial properties and have shown positive impacts on growth in pre-weaned calves. We hypothesized that lactoferrin and garlic extract would decrease mortality, improve weight gain, and decrease disease duration in pre-weaned calves with diarrhea.

Materials and Methods

In total, 633 calves with diarrhea were enrolled in a blinded, randomized field trial. Calves diagnosed with diarrhea (fecal score>3) were randomized to 3 consecutive days of oral treatments with garlic extract, lactoferrin, or water (control). Calves were clinically evaluated for up to 10 days following enrollment, and body weight was measured at enrollment and 10 days later. Mortality, culling, and farm treatments were recorded.

Results

Lactoferrin significantly ($P<0.05$) reduced the risk of death and culling in the pre-weaning period. In total, 7.5% (15/198) of calves in the control group died compared to 3% (8/201) of calves treated with lactoferrin. Lactoferrin was similarly effective in reducing mortality in older calves (11 to 21 days of age) with severe diarrhea (fecal score=4), without hyperthermia (temperature <103.0 °F; 39.4 °C), and with absence of depression (depression score=1) ($P<0.05$). Neither garlic nor lactoferrin had a significant effect on disease duration or average weight gain during the 10-day period ($P>0.1$).

Significance

These results suggest that treatment with lactoferrin is effective as an alternative to antimicrobials to reduce mortality in calves between 11 and 21 days of age with watery diarrhea in the absence of systemic signs of dehydration or depression. If confirmed with additional research, lactoferrin has the potential to reduce antimicrobial use and improve calf health and welfare.

Mortality risk factors for calves entering a multi-locational veal farm

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Introduction

Mortality in pre-weaned dairy-breed calves, whether replacement dairy heifers, veal, or dairy beef animals, represents both a welfare issue and a source of economic loss for the industries involved. Previous work describing morbidity and mortality in veal calves reflects a wide range of management practices and requirements throughout the world. In both veal production and dairy heifer rearing, rates of morbidity and mortality can range dramatically, which may in large part be due to different management strategies. It has been over 2 decades since morbidity and mortality in veal calves in Ontario have been described. The majority of mortality in white veal occurs in the first 3 weeks; farm of origin risk factors account for a portion of this risk. The objective of this retrospective case-control study was to determine if recorded on-arrival information from a large white veal farm could be used as predictors of mortality. If associations between on-arrival data and mortality existed, it was hoped this information could be used to better classify, group, and treat

calves on arrival, and to gain insight into the characteristics of highest- and lowest-risk calves. Identification of risk factors present in veal calves on arrival may help improve both their productivity and welfare, as well as that of their female counterparts on the dairy farm of origin.

Materials and Methods

Data were collected from 10,910 calves entering 7 barns of a white veal farm, all locations of barns within Ontario, from January 1 to December 31, 2014. Data from calves entering all facilities was collected as part of routine monitoring by facility staff members. Calves were followed until death or marketing; no calves were culled during the year. Three explanatory models were built for the separate outcomes of total mortality, early mortality (<21 days) and late mortality (>21 days), and were offered the variables of weight on arrival, season of arrival, supplier, sex, barn, and standardized purchase price per pound.

Results

Significant associations ($P<0.05$) were identified between season, barn, supplier and weight and total mortality risk, with lighter-weight calves arriving in winter being at increased odds of mortality. Early mortality was significantly ($P<0.05$) associated with weight, season, barn, supplier and tended ($P<0.10$) to be associated with standardized price paid on arrival; lighter-weight calves arriving in winter at lower prices were at increased odds of mortality. Late mortality was significantly ($P<0.05$) associated with season of arrival, barn, and supplier.

Significance

While not a proxy for body condition, increased weight on arrival was protective of early mortality and likely somewhat reflected body condition, as it was presumed calves on arrival were generally no more than 1 week of age. Although failure of passive transfer is an important risk factor for mortality, the seasonal association we saw with mortality may suggest early life nutritional stress as opposed to seasonal variation in passive transfer. A further exploration of dairy farm of origin risk factors for veal calf mortality would potentially serve to improve the productivity and welfare of calves of both sexes born on dairy farms in Ontario.

Utility of an online learning module to teach cautery disbudding technique for dairy calves, including cornual nerve block application

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Introduction

Although disbudding or dehorning dairy heifers is necessary for the safety of humans and other cattle, it has been identified as a key animal welfare issue when done without appropriate analgesia. Three-quarters of all disbudding or dehorning is done by dairy producers or on-farm staff, while the remainder is done by a veterinarian or veterinary technician. Reported use of pain control for these procedures by dairy producers ranges from 15 to 60%. Cautery disbudding is the most commonly used method; best practices include administration of a non-steroidal anti-inflammatory drug (NSAID) as well as local anesthetic given as a cornual nerve block (CNB). While NSAID administration is uncomplicated, CNB application requires technical training, which may limit use. Teaching methods have traditionally focused on one-on-one training with a veterinarian, although online disbudding training videos exist. To our knowledge, neither method has been studied for efficacy. Our objective was to determine if an online, interactive module could teach naïve participants cautery disbudding technique, including CNB, as compared to hands-on training.

Materials and Methods

Thirty-four student volunteer participants were recruited and randomly assigned to either hands-on training or online training. Hands-on training was done with live animals, in small groups, by a registered veterinary technician (RVT) following an established protocol, while online training was self-directed and used an interactive training module. Assessments of competency were performed by a