Results

The likelihood of OC was significantly lower at both time point 2 (*P*=0.0003) and 3 (*P*=0.04) after adjusting for repeated measures on the bulls. There was a significant decrease in the number of distal talus lesions at time point 2 (*P*<0.01). Significant associations were observed between clinical joint effusion and OC location (*P*=0.04); and between joint effusion scores and OC grades between time points 1 and 2 (*P*<0.05). Four sires (out of 16) produced bulls having significantly higher numbers of lesions in time point 1 (*P*=0.02) and time point 2 (*P*=0.01).

Significance

The number of OC lesions decreased over time, particularly distal talus OC lesions. A significant association of tarsal OC between sires was identified, suggesting radiographic screening performed at approximately 1 year of age may be beneficial in breeding herds.

Incidence of health events and the associations with death and culling on 3 dairies

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Introduction

Some of the least available and most variable dairy herd data comprise records of disease and removal events. Although there are many studies based on the epidemiology of common diseases of dairy cattle, most studies solely focus on a specific disease with or without its effect on removals. Few studies have evaluated the combined impact of multiple diseases on culling and mortality. The objectives of this study were to estimate incidence of common dairy cattle disease and measure their subsequent impact on mortality and culling from the herd.

Materials and Methods

Health and removal (culling and death) records were obtained from 3 Kansas dairies with approximately 2,500 lactating and dry cows each. All dairies were owned by a single family and managed similarly. Data were collected for cows that started a new lactation from January 1, 2014 to December 31, 2014 and included all recorded events through May 25, 2015. All events and health data were entered into Dairy Comp 305 on-farm and exported into Microsoft Excel. Data were imported into SAS® for validation and statistical analysis. Health events were categorized into the following disease syndromes: abortion, digestive, non-ambulatory, hypocalcemia, ketosis, lameness, mastitis, metritis, pneumonia, and retained placenta. PROC FREQ was used to calculate incidence estimates and PROC LOGISTIC was used to model the health events and obtain odds ratios for events that were statistically (*P*<0.05) associated with individual cows being culled or dying.

Results

Records from 8,804 cows that calved in 2015 were included. A similar percentage of cows were enrolled from each of the 3 dairies. A third of enrolled cows were in the 1st lactation, a quarter in 2nd lactation, and the remaining 40% in 3rd or greater lactation. The lactational incidence risk (LIR) for lameness was 21.3 and for mastitis was 20.3. There was no difference in LIR by lactation group for lameness. However, the mastitis LIR for 1st lactation cows was 10.6, 19.6 for 2nd lactation, and 28.6 for 3rd and greater lactation cows. The abortion LIR was 11.4 for all cows. Metritis LIR was highest for 1st lactation (16.0), lowest for 2nd lactation (6.0), and 10.1% for all cows. Ketosis was not routinely evaluated or recorded on these dairies. Adjusting for other diseases experienced at the individual cow level, all disease events with the exception of metritis were sig-

nificantly associated with death, with abortion and mastitis actually protective. The syndromes with the highest risk of death were: down (RR=11.3), hypocalcemia (RR=5.9) and digestive (RR=5.5). The relative risk of cows being sold was significantly influenced by all syndromes except down and lameness. Pneumonia and digestive disease had the highest relative risk for being sold (RR=2.3 for both).

Significance

This dairy complex had lactational disease incidences similar to estimates across the U.S. Results from this study have focused disease detection and prevention strategies on health problems that most impact mortality and culling. Ongoing efforts are assessing the impact of health events and their sequelae on culling and death.

Delayed insemination optimizes conception in dairy cows with natural estrus

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Introduction

Dairy farmers struggle to decide when to inseminate a cow after estrus is detected, mainly because heat detection methods have changed over time and new rules apply. Although the AM-PM rule was widely used during the time of visual heat detection, with the advent of timed insemination protocols, many dairies have decided to inseminate only once every day, typically in the morning. This has led to inseminate cows as soon as they show estrus signs in fear of being too late when inseminating the following day. The objective of this study was to compare conception risk in cows inseminated at different times from the time of estrus detection via pedometers.

Materials and Methods

This was a retrospective study at 2 commercial dairy farms in the US, milking 3x/day and fitted with freestalls. Cows were fitted with pedometers (AfiAct, Afimilk Ltd., Israel) that allowed coding cows for high activity for each of the 3 milking sessions separately (H1, H2, and H3). Cows with prolonged heats were assigned multiple heat codes corresponding to each of the sessions with high activity. Estrus was defined as either a single session activity deviation ≥140% compared to the previous 10-day average of the corresponding milking session, or a combined activity deviation of at least 80% in 1 session and 90% in the following session.

Both farms inseminated once per day between 6 and 11am. The proportion of cows that conceived when inseminated 1, 2 or 3 sessions (approx. 8, 16, and 24 hrs) after registering a heat code were compared using a standard Z-test (α=0.05).

Results

A total of 1,964 inseminations resulting in 626 pregnancies (31.8%) recorded during a 4-month period were included in the analyses. Only cows that were inseminated once in that cycle were included (i.e. no double breedings). Overall, 62.5% of all cows showed high activity only during 1 session, 33.5% during 2 sessions and only 4.0% during 3 or more sessions. Significantly (P≤0.004) more cows conceived when inseminated 2 or 3 sessions after detection of high activity (33.9% and 31.2%, respectively) compared to cows inseminated in the session immediately following the high activity detection (21.1%). Due to the timing at which cows showed high activity (late afternoon and early evening) and the daily insemination time (morning), most of the pregnant cows (51.4%) had conceived when inseminated 2 sessions after high activity was detected.

Significance

Cows that are not synchronized will have natural variation in the time at which they start estrus. Given that the average life span of viable sperm is about 12 hours, and that two-thirds of the cows show high activity for only 1 session (approx. 8h), inseminating once per day on natural estrus is likely limiting reproductive performance in many dairy farms. Establishing a second time in the day to inseminate cows that have long estrus cycles or start estrus early in the morning will allow optimal insemination time for most cows.