

Evaluating the impact of mid-lactation hoof trimming on first lactation dairy cows

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Introduction

Routine hoof trimming around dry-off is a common preventative practice for lameness on commercial dairy farms. Incorporating a second routine hoof trimming around mid-lactation has been shown to reduce lameness. However, the addition of a second routine hoof trimming represents an additional cost to the farmer and, as a result, must benefit the farm economically and the cow from a welfare standpoint. Conflicting evidence with regard to hoof trimming frequency and timing brings into question whether all cows benefit from a hoof trimming at mid-lactation or if certain populations can be omitted from mid-lactation trims to allow for the prioritization of those cows that will most benefit from its use. The objective of this study was to determine the effects of providing a mid-lactation hoof trimming to first lactation dairy cows at 114-120 DIM on lesions occurrence at the subsequent trimming and time to next lesion occurrence.

Materials and methods

First-lactation cows were enrolled from a single farm in a system located in the Midwest between December 2023 and December 2024 and randomly allocated at calving to a TRIM (n = 4,774) or NOTRIM (n = 4,795) treatment. The TRIM cows were automatically placed on the herd's trim list via the herd's management software at 114 DIM and trimmed at 114-120 DIM (Mean \pm SD: 116 \pm 1.5). The NOTRIM cows were not trimmed during this period and considered enrolled at 117 DIM. Cows trimmed before 110 DIM were excluded from the study. All enrolled cows received a scheduled hoof trimming at dry off. Hoof trimmings were done by farm personnel trained in the functional hoof trimming method with, at minimum, annual training by either local system trim leads or external consultants. Hoof trimmers monitored cows weekly for signs of lameness and hoof overgrowth in the pens and milking parlor. Hoof trimmers were blinded to treatment allocation. Hoof trimming records and cow-level information was extracted from the herd's management software. Cox Proportional Hazard models which included the fixed effect of treatment group were used to analyze time-to-next-lameness-event and lesion risk.

Results

Time to next trim was calculated from the time of hoof trimming in TRIM cows and the 117 DIM enrollment time for NOTRIM cows. The lesions recorded by hoof trimmers were digital dermatitis (DD), foot rot (FR), sole ulcer (SU), white line disease (WLD) and toe ulcer (TOE). The difference in median time-to-next-trim between NOTRIM (169 d) and TRIM (177 d) was -5.6 (95%CI: -8.4, -2.9). Lesions at the next trim were reported in 5.5% of TRIM and 6.8% of NOTRIM cows, with a risk difference of 1.3 (95%CI: -0.23, 2.9). A similar proportion of infectious (DD, FR) and non-infectious (SU, WLD, TOE) lesions were reported in each group. The hazard ratio of cows getting a lesion was 1.01 (95%CI: 0.76-1.35) for the NOTRIM group compared to the TRIM group.

Significance

Based on the results of the study, it is clear that, in this system, performing a mid-lactation trim did not increase lameness risk or time to lameness. This demonstrates the feasibility of designing more targeted approaches to routine hoof trimming and, in reducing the number of cows trimmed in mid-lactation, represents a significant decrease in economic cost for farms. The impact on the performance in the current lactation and occurrence of lesions in the animals second lactation needs to be confirmed to more completely determine the impact not performing a mid-lactation trim to first-lactation cows.

