

# Evaluation of three detection strategies on the odds of lameness cure in dairy cows

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## Introduction

The high prevalence of lameness in US freestall dairy herds is both an animal welfare and an economic concern. To achieve a low prevalence of lameness, strategies to lower incidence need to be combined with methods to decrease duration. This requires rapid and effective methods to detect and treat lameness. The objective of this study was to evaluate the impact of 3 lameness detection strategies on the odds of cure of lameness.

## Materials and Methods

A trial was conducted from June to August 2015 on a 9,000-head, multi-site Jersey dairy farm in Minnesota. A convenience sample of 3 pens with 400 cows each, selected from among the breeding pens of 1 site, were included. The pens were allocated to 3 different lameness detection strategies. The strategies were: 1) locomotion scoring using a 3-point scale (VLS), 2) headlock scoring by observing leg posture and weight-bearing while cows were restrained (HS), and 3) casual observation at unspecified times (farm's current strategy), serving as the control group (C). Cows newly detected as lame by the different strategies were evaluated in a hoof trimming chute and treated for the cause of lameness. All groups were locomotion scored for lameness once per week (LS) as cows exited the parlor. The weekly LS were used as the outcome measure to assess odds of cure. Cows that began non-lame as defined by LS and who were subsequently diagnosed as lame by LS were included in the analysis. Logistic

regression models were used to evaluate the odds of cure at 3 and 6 weeks following a lame diagnosis. Models included the fixed effects of lactation and DIM.

## Results

The scores from the LS system showed a high degree of week-to-week variability. Results from the 3-week logistic regression model (n=486) showed that 176 individuals (36.2%) remained lame. Primiparous cows had higher odds of recovering than multiparous cows (OR=1.79, 95% CI=1.20 to 2.67). Days-in-milk at enrollment were negatively associated with odds of cure ( $P=0.03$ ). There was no significant association between detection strategy and odds of cure at 3 weeks. At the 6-week follow-up, 125 of 290 cows (43.1%) remained lame. Primiparous cows had higher odds of recovering than multiparous cows (OR=2.71, 95% CI=1.62 to 4.53) and DIM at enrollment were negatively associated with odds of cure ( $P=0.003$ ). The odds of cure comparing HL detection to C were not significantly different (OR=1.47, 95% CI=0.82 to 2.62). The odds of cure were higher in the VLS group compared to the C group (OR=2.15, 95% CI=1.12 to 4.12).

## Significance

The week-to-week variability in individual cow LS identified a limitation of the LS system, as this variation is inconsistent with the pathology of lameness. These results show that the odds of cure improved at the 6-week follow-up when the VLS active detection protocol was implemented.