

Lying Times of Lactating Cows on Dairy Farms With Automated Milking Systems and the Relation to Lameness, Leg Lesions, and Body Condition Score

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Lying down and resting are important for optimal cow health, welfare, and production. The aims of this study were to describe the variation in lying times of dairy cows in AMS farms and to understand how much of the variation in individual lying times is related to cow-level factors, including lameness, the presence of hock and knee lesions, and body condition score (BCS). We visited 36 farms in Canada (Quebec: $n = 10$; Ontario: $n = 10$; British Columbia: $n = 4$; and Alberta: $n = 5$), and the United States (Michigan: $n = 7$). Gait scores, presence of hock and knee lesions, and BCS were recorded for 40 Holstein cows from each herd. Parity and DIM were retrieved from farm records. Lying time was recorded across 4 d ($n = 1,377$). Multivariable analysis was performed. Of scored cows, 15.1% were lame (203 of 1,348 cows). Knee lesions were found in 27.1% (340 of 1,256 cows) and hock lesions were found in 30.8% (421 of 1,366 cows) of the animals. Cows spent a median duration of 11.4 h/d lying down (25th–75th percentile = 9.7–12.9 h), with a lying bout frequency of 9.5 bouts/d (25th–75th percentile = 7.5–12 bouts/d) and a median bout duration of 71 min (25th–75th percentile = 58–87 min/bout). Lameness was associated with cows lying down for 0.6 h/d longer in fewer, longer bouts. Increased lying time was also associated with increased parity and higher BCS. Older cows (parity ≥ 3) spent about 0.5 h/d more lying down compared with parity 1 cows, and cows with BCS ≥ 3.5 lay down 1 h/d longer than cows with BCS ≤ 2.25 . Hock lesions were associated with shorter lying times in univariable models, but no associations were found in the multivariable models. We concluded that only a small proportion of the variation between cows in lying time is explained by lameness, leg lesions, and BCS.

Implications: Cow-related factors only explained a small percentage of the variation between cows in lying time, suggesting that farm level factors, and other cow level factors are important sources of variability.