

Impact of following recommendations for tie stall configuration on outcome-based measures of welfare

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To evaluate how well Canadian dairy farms with tie stalls complied with recommendations for stall dimensions, and the effect of compliance on cow welfare, we assessed lactating Holstein cows (n=3,485) on 100 tie stall dairy farms for neck and leg lesions, lameness, and cleanliness, and measured time spent lying down. Data on the width and length of the stall were recorded for each cow. The majority of cows were housed in stalls that are smaller than recommended. The prevalence of lesions and lameness was high (neck=33%; knee=44%; hock=58%, lameness=25%) and the prevalence of dirtiness was low (udder=4%; flank=11%; legs=4%). Mixed models (GLIMMIX) were used to examine how the risk of each outcome changed as the stall dimensions deviated from the recommendations. Meeting the recommendation for stall width reduced the risk of neck injuries (odds ratio OR=0.89; SE=0.05 P<0.01) and lameness (OR=0.85; SE=0.04; P<0.01) and increased the daily duration of lying time, (P<0.01) but increased the risk of a dirty flank (OR=1.21; SE=0.06; P<0.01) and dirty legs (OR=1.17; SE=0.08; P=0.04). Meeting the recommendation for stall length tended to reduce the risk of knee lesions (OR=0.90; SE=0.06; P=0.08) and increased lying bout frequency (P<0.01) but increased the risk of a dirty udder (OR=1.36; SE=0.13; P=0.02). Compliance with recommendations for stall dimensions, especially stall width, is associated with signs of better cow welfare. There is a trade-off between the prevalence of lesions and lameness and prevalence of cleanliness: stalls of recommended size reduce the risk of lesions and lameness but increase dirtiness, but the prevalence of dirty cows remains very low.