

Welfare impact of foot disorders in dairy cattle

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Foot disorders are an important health problem in dairy cattle, in terms of animal welfare and economics. Objective of this study is to quantify welfare impact of different foot disorders, both clinical and subclinical. The welfare model uses the same structure as an earlier model describing economic consequences of foot disorders, with input being derived from literature and experts. Welfare impact is assessed taking into account incidence, duration and severity of foot disorders. Foot disorder severity is based on locomotion score (five-point scale). Locomotion score is a widely accepted parameter that assumingly mirrors estimated pain intensity (1=slight...5=severe), which was based on pathology of the foot disorder and its impact during activity. Foot disorders have an impact on the fulfilment of behavioural needs of dairy cows, like resting and gaining access to resources by moving around. Behavioural impact was included in the model by determining the weighing of severity against duration. This weighing was benchmarked against expert opinions. The model quantifies welfare impact of different foot disorders in terms of severity and duration. Behavioural impact of foot disorders seemed significant only when locomotion scores were higher than two, which supported a non-linear relationship between foot disorder severity and welfare. Digital dermatitis (pain intensity 3.9) has relatively high clinical incidence and duration and therefore highest welfare impact. Foot disorders that mainly occur subclinical, sole haemorrhage (pain intensity 1.3) and interdigital dermatitis/heel erosion (pain intensity 1.5), have a substantial impact on welfare because of long duration. Interdigital phlegmon (pain intensity 4.7) has lowest welfare impact due to short duration. The model facilitates a transparent evaluation of welfare impact of different foot disorders. Gaps in knowledge become clear, spurring further research. The economic model and welfare model aid in approaches to improve dairy cow foot health.