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Exploring the potential for on-animal sensors to detect adverse welfare events: A case study of detecting ewe behaviour prior to vaginal prolapse

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Abstract

*Parturition is a critical period for the ewe and lamb, and the incidence of dystocia has known impacts on lamb and ewe welfare and productivity. Current methods of dystocia monitoring are mostly conducted through visual observation. Novel approaches for monitoring have also been suggested, including the application of on-animal sensor technologies for remote surveillance of parturition success. This short communication explores how the use of sensor-based parturition detection models can be applied for detection of adverse and successful parturition events, respectively, in pasture-based sheep (*Ovis aries*). Specifically, the alert profile of a single ewe that experienced vaginal prolapse is reported and compared with the alert profiles of 13 ewes that experienced typical birth events. Although the ewe that experienced vaginal prolapse exhibited some common precursor alerts similar to ewes that progressed through a typical birth event, the overall alert profile was markedly different for the prolapsed animal, with an increased number of alerts occurring from five days prior to the prolapse event. As successful parturition has significant welfare and productivity outcomes, application and validation of these research findings in a commercial system could greatly improve current methods of welfare monitoring at lambing.*

Keywords: *accelerometers, animal welfare, GNSS loggers, machine learning, on-animal sensors, sheep*