Diagnostic performance of clinical observations of young lamb welfare
Phythian, C.J.¹, Toft, N.², Cripps, P.J.¹, Michalopoulou, E.¹, Clarkson, M.J.¹, Jones, P.H.¹, Winter, A.C.¹ and Duncan, J.S.¹, ¹University of Liverpool, Epidemiology and Population Health, United Kingdom, ²University of Copenhagen, Life Sciences, Denmark; sheep-vet@bristol.ac.uk

The objective of this study was to develop valid, reliable and feasible indicators for the on-farm welfare assessment of young lambs (aged≤6 weeks). A literature review and consensus of expert opinion identified a diverse number of on-farm welfare concerns for young lambs (n=53) including starvation, hypothermia, and the presence of conditions such as lameness and ocular abnormalities. Consequently, 4 non-invasive welfare indicators: demeanour, lameness, body condition and eye condition were assessed according to the behaviour and physical appearance of individual lambs. Indicator assessments were performed by 2 trained veterinary surgeons (A and C) and 2 trained animal-science students (B and D) on 966 young lambs from 17 farms. Inter-observer reliability was examined using Fleiss's κ and graphical distributions of observer scoring differences. Latent Class Analysis (LCA) estimated the diagnostic sensitivity (Se) and specificity (Sp) of each observer and predicted the test performance of unknown, random observers who may perform indicator assessments in the future. Demeanour assessments produced a κ 0.55, Se of 0.75-0.85 and Sp 0.98-1.00. Eye condition assessments were also consistent (κ 0.72, Se 0.86-0.89, Sp≥0.99). Lameness assessments achieved a κ 0.68, Se≥0.7 and Sp 1.00. Body condition produced κ 0.71 and observers A, B and D achieved higher test performance (Se≥0.80, Sp≥0.99) than observer C (Se 0.38, Sp 0.98). Overall, few scoring disagreements occurred and future observers were predicted to have good diagnostic ability for all indicators (Se≥0.76, Sp≥0.98). Results suggest that demeanour, lameness, body condition and eye condition appear to be valid, reliable and feasible indicators of young lamb welfare that could be included in on-farm assessments applied by trained assessors.