A clinical diagnostic scoring system for bovine respiratory disease in dairy calves. W. J. Love*1, S. S. Aly1,2, P. H. Kass1, C. M. Drake3, T. B. Farver1, H. E. Crockford2, J. H. Davis2, A. L. Van Eenennaam4, and T. W. Lehenbauer1,2, 1Department of Population Health and Reproduction, School of Veterinary Medicine, University of California, Davis, 2Veterinary Medicine Teaching and Research Center, School of Veterinary Medicine, University of California, Davis, Tulare, 3Department of Statistics, University of California, Davis, 4Department of Animal Science, University of California, Davis.

Bovine respiratory disease (BRD) is an important source of economic loss in dairy and beef calf-raising operations, but reliable clinical diagnosis in calves remains challenging. The objective of this study was to develop a standardized clinical scoring system to identify BRD cases preweaning. A matched case-control study was performed on a large calf ranch in the San Joaquin Valley. Clinical signs were recorded and pharyngeal and nasal swabs were collected from 1774 Holstein calves between July 2011 and January 2012. Clinically ill calves were pair-matched to healthy calves based on age, source farm, and date. Calves ranged from 23 to 69 d of age. Observed clinical signs included ocular and nasal discharge, cough, head tilt, ear droop, fever, increased respiratory rate and effort, decreased appetite, and diarrhea. Viral PCR tests were performed to detect infectious bovine rhinotracheitis virus, bovine viral diarrhea virus, bovine respiratory syncytial virus (BRSV), and bovine coronavirus. Aerobic bacteria and mycoplasma cultures were also performed. Cases were clinically ill and culture- or PCR-positive for one of the following pathogens: BRSV, unpigmented Mycoplasma spp., B. trehalosi, H. somnus, M. haemolytica, or P. multocida. Controls were clinically healthy and negative for pathogens. Conditional logistic regression (CLR) models were used to determine the importance of each clinical sign for classifying calves as diseased or healthy while accounting for the matched study design. Ocular and nasal discharge, head tilt, ear droop, cough, and fever were forced in the model. Scores were weighted by their CLR coefficients and summed. Nasal discharge, eye discharge, and fever above 39.2°C were each assigned 2 points, and cough, ear droop, and head tilt were each assigned 4 points. A score of 4 or higher was identified as the optimal cut-off for a BRD case. The scoring system correctly classified 89.0% of the cases and controls with 91.7% sensitivity and 86.9% specificity. While neither clinical signs or culture are reference tests for BRD, this system offers a standardized tool to rapidly identify calves at high risk for BRD.