

Evaluation of control strategies for bovine viral diarrhoea in Hokkaido, Japan using stochastic modelling

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Infection with bovine viral diarrhoea (BVD) virus in cattle can result in decreased body weight and milk production, reproductive disorders and death. Primary source of infection are persistently infected (PI) animals. In Hokkaido, Japan, all cattle entering common pasture in summer are vaccinated before movement to control the disease. Additionally, these cattle may be tested for BVD antigen and culled if positive. The efficacy of this control strategy remains nevertheless controversial. The aim of this study was to evaluate the efficacy of a test-and-cull and/or vaccination strategy for BVD control in dairy farms in two districts, Nemuro and Hiyama in Hokkaido. The herd size in Nemuro is 126 heads per farm, and in Hiyama 56 heads per farm. A stochastic model was developed in order to compare the different control strategies over a 10 year period. The model is individual-based and follows the dynamic of the disease both within and between herds. Parameters integrated into the model were obtained from literature as well as from the Hokkaido government. Nine different scenarios were looked at in the model: no control, test-and-cull strategy based on an antigen testing either for calves or only for cattle entering common pastures, vaccination strategy either for all adult cattle or only for cattle entering common pastures, and combinations of these strategies. Results comparing the different control measures will be presented. The findings obtained from this model will be the first of their kind in Japan and provide important information for the implementation of BVD control measures in Japan.