

Investigating the source and spread of Border disease virus in cattle from a persistently infected bull
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In this paper we describe an investigation to understand the epidemiology of Border disease virus (BDV) occurring from natural infection in a bull. The virus was detected in a beef breeding bull found to be persistently infected. Reports of naturally infected cattle with BDV are uncommon in the literature. Poor reproductive performance (pregnancy rate of 23% for 57 days) occurred in dairy-heifers exposed to the bull persistently infected with BDV from a team of three sires used to mate the heifers. A high prevalence (39/40, 98%; 95% CI, 87-100%) of heifers had serological evidence of exposure to BDV. Border disease virus was not detected in the ear notches of six calves born to heifers exposed to the affected bull during the early mating period. There was no evidence of BDV circulating between cattle on the farm of origin of the affected bull. No BDV was detected in serum collected from all calves and adult animals present on the farm of origin during 2010. Border disease virus was circulating in sheep, shown by multiple ages of sheep being affected and the prevalence of exposure increasing with age of sheep. Exposure events between sheep and cattle on this property must be reasonably high as cattle and sheep share grazing during the pregnancy period. Therefore it seems that infection in cattle with BDV may be a low probability event with transmission of infection requiring other factors additional to shared grazing. Phylogenetic analysis of the isolate from the affected bull revealed that it could be allocated within the BDV species in the same cluster of the BDV 1 group as New Zealand isolates. It was concluded that cattle persistently infected with BDV can act as a source of virus for infection of other cattle. The benefit of bovine viral diarrhoea testing in cattle could be enhanced by using tests that also detect BDV.