

# BVD risk assessment: What factors are important in beef herds?

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## Background

During 2011 the New Zealand BVD Steering Committee released their BVD toolkit for vets which provides an approach to managing BVD on farms. After discussing how to implement this kit within our clinic it was decided that we needed a better understanding of how widespread the disease is locally and what farm management factors are closely associated with the disease. Farmer attitudes towards BVD were also investigated.

## What we did

In autumn and winter of 2012 VetEnt clinics in the Waikato, King Country, Gisborne and Wairoa districts offered free blood sampling for beef heifers as part of a farm BVDV investigation. In total 43 farm investigations were done. The investigation involved blood sampling 10-15 rising two year old replacement heifers and testing them for individual BVD antibody ELISA. During the farm visit for sampling a questionnaire based on the BVD risk assessment found in the BVD toolkit was completed.

If three or more heifers were antibody positive, the herd was classified as being likely to have a persistently infected animal (PI) present. Risk factors were analysed to determine those that were more or less likely to contribute to the herd having evidence of active BVD infection in their herd.

## Results and discussion

*Table 1. Estimated area prevalence of herds likely to have a PI.*

District	# herds likely to have a PI	Total # herds per district	Prevalence (%)
Waipa	4	6	67
King Country	7	12	58
Wairoa	6	11	55
Gisborne	8	14	57
Total	25	43	58

The differences in prevalence between the districts are not significant due to the small sample size.

## Important factors affecting BVD status for beef herds

A multivariable model was constructed which found three factors that were associated with an increased odds of having a PI in the herd, and one factor that reduced the odds. All odds ratios need to be interpreted with caution as they are accompanied by large confidence intervals due to the small sample size used in the analysis.

### Factors which increased odds of having a PI

#### Number of heifers

- Increasing the heifer mob size by 1 increased the odds of the herd being likely to have a PI by 1.02 (95% Confidence interval (95% CI) = 1.00–1.04,  $p=0.04$ ).
- To calculate the odds for increasing heifer numbers use the equation:

$$e^{((\text{new number of heifers} - \text{current number of heifers}) \times 0.022)}$$

- E.g. If the heifer mob size increases from 100 to 150 the increase in odds of having a PI is:

$$e^{((150-100) \times 0.022)} = 3 \text{ times greater } (p = 0.04).$$

#### Buying in replacement heifers

- Buying in replacement heifers was associated with 35 times' greater odds of a herd being likely have a PI (95% CI=3–1149,  $p=0.01$ )

#### Farmer attitude

- If the farmer thought BVD was an issue on their farm prior to knowing the blood test results they were nearly 10 times more likely to have a PI (95% CI=1.4–128,  $p=0.04$ )

### Factor which decreased the odds of having a PI

#### Vaccination of breeding bulls

- Vaccination of bulls decreases the odds of having a PI by 91% (OR=0.09 (95% CI=0.01–0.68,  $p=0.04$ ))

## Conclusion

BVD is widespread in beef herds in the North Island. In this analysis four farm management factors were found to be significantly associated with the odds of a herd being likely to have a PI present. Continued effort is required by veterinarians to help farmers manage BVD in beef herds.

A full copy of this analysis is currently undergoing editorial review for the New Zealand Veterinary Journal.