

Reduction in daily milk yield associated with sub-clinical Bovine Herpes Virus 1 (BoHV-1) infection

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Background

- BoHV-1 introduction into naïve dairy herds typically leads to a range of clinical syndromes described as Infectious Bovine Rhinotracheitis (IBR)¹
- BoHV-1 infection may lead to sub-clinical disease with insidious production losses²
- BoHV-1 infection has potentially serious economic consequences as well as adverse impacts on animal welfare
- Milk production losses from sub-clinical BoHV-1 infection have not been previously demonstrated over a prolonged period

Study aims

This retrospective study aimed to investigate the effect of sub-clinical BoHV-1 infection on milk production over a 2 year period on a commercial UK dairy herd.

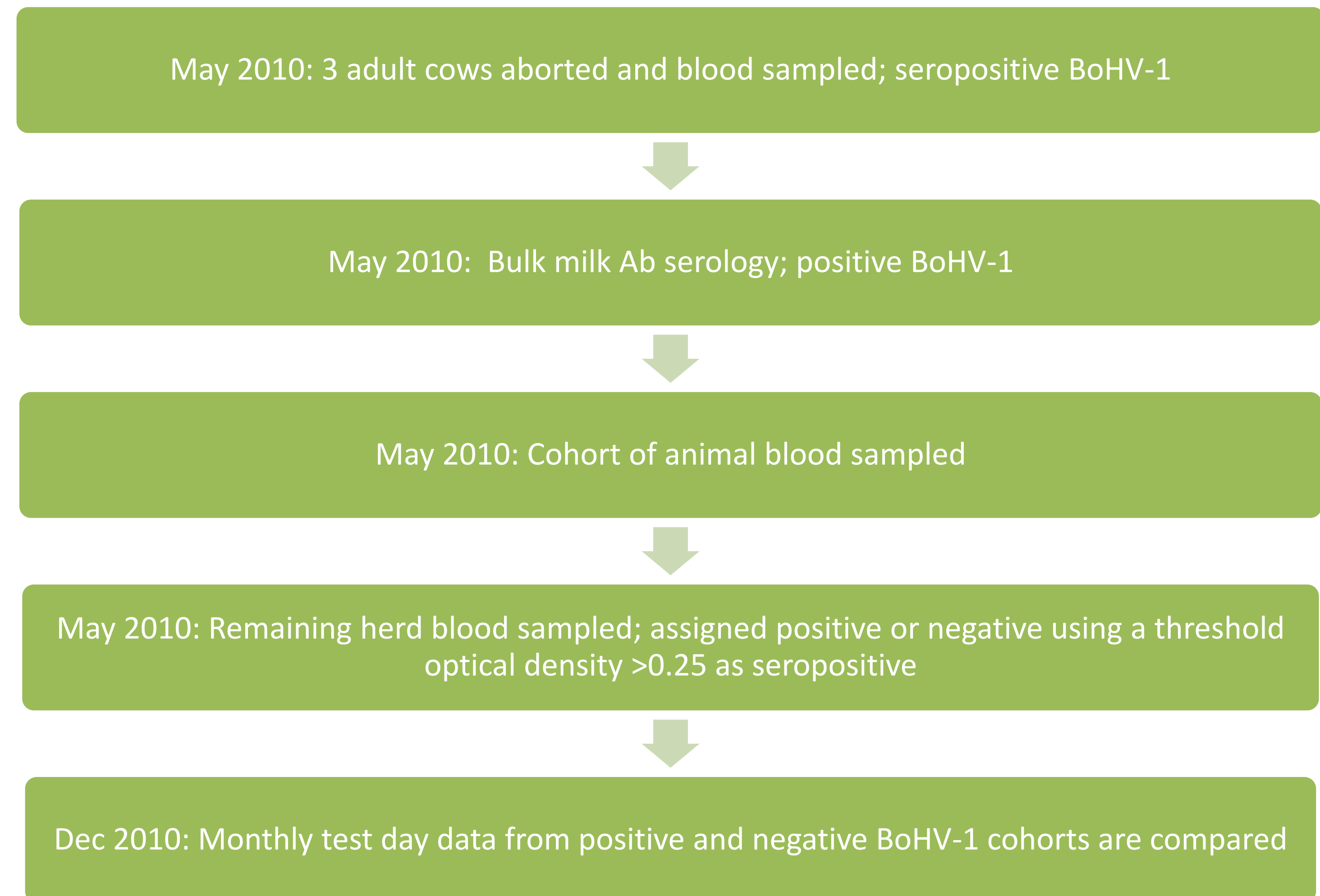
Data analysis

- Data collected; monthly cow level test day milk records (Jan 2009 to Dec 2010), BoHV-1 antibody status for each cow
- Multilevel linear model used to evaluate impact of infection status on milk production

Study Herd

- Closed autumn-calving dairy herd. Previously assumed BoHV-1 naïve through annual or biannual bulk milk serology and intermittent youngstock blood samples
- 129 Pedigree Holstein cows
- Approximate annual milk yield 9,000 kg

Method



Results

- 72% of cows were seropositive to BoHV-1 in May 2010 (bulk milk negative BoHV-1 February 2010)
- Risk of seroconversion varied with parity; higher proportion of parity 1 and > 4 positive
- **Seropositive cows produced 2.6 kg per day less milk (p<0.05) throughout lactation compared to seronegative cows (figure 1)³**
- A large decrease in potential daily milk yield was demonstrated for cows with associated sub-clinical BoHV-1 infection
- Cows with antibodies to BoHV-1 on average failed to produce almost 1,000 kg of milk per year compared with seronegative cows

Parity	BoHV-1 status		Proportion positive
	Negative	Positive	
1	5	24	0.83
2	16	20	0.56
3	11	14	0.56
≥4	5	34	0.87

*Based on identification of antibodies in serum (optical density >0.25)

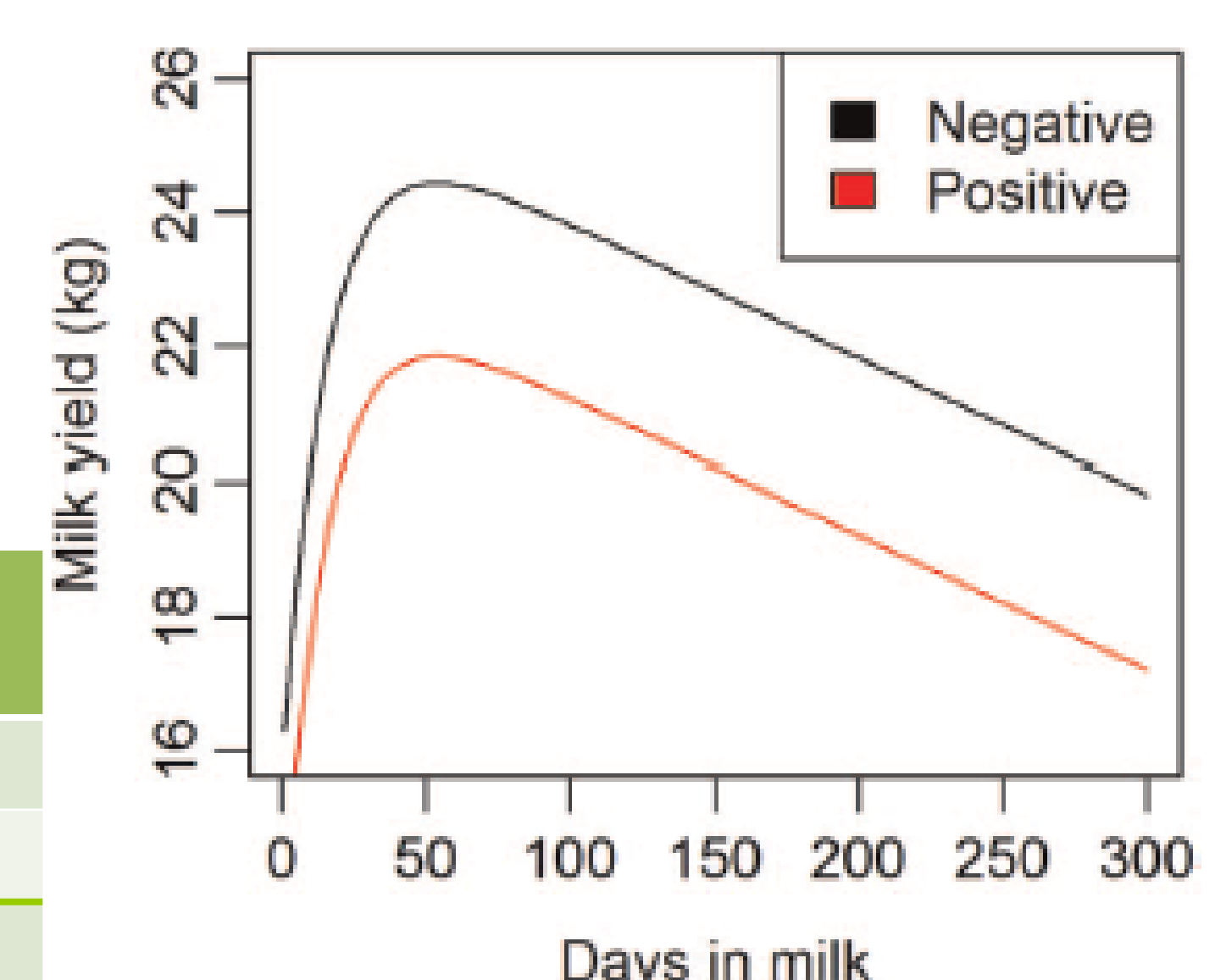


Figure 1: Mean predicted lactation curve shape by BoHV-1 antibody status (refers to parity 1 cows in Dec with mean milk fat, protein and somatic cell count)

Conclusions

- Subclinical BoHV-1 infection associated with significant reduction in potential milk yield
- Potential fall in production is larger and predicted to last longer than previous estimates
- Variation could relate to disease dynamics, cow differences between herds, study design, BoHV-1 strain or analytical methods
- Large potential losses in milk production highlights the importance of herd health management to prioritise interventions such as; biosecurity and vaccination
- Effective monitoring is important to mitigate the effects of sub-clinical disease through holistic herd health management

References

- ¹ Nettleton, P. F., (2007) IBR – One herpesvirus, a variety of clinical syndromes. Cattle Practice 15, 208-211.
² Van Schaik, G., Shoukri, M., Martin, S. W., Schukken, Y. H., Nielen, M., Hage, J. J., & Dijkhuizen, A. A., (1999) Modeling the effect of an outbreak of bovine herpesvirus type 1 on herd-level milk production of Dutch dairy farms. Journal of Dairy Science 82, 944-952.
³ Reduction in daily milk yield associated with sub-clinical bovine herpesvirus 1 infection. Veterinary Record 2015 177:339

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