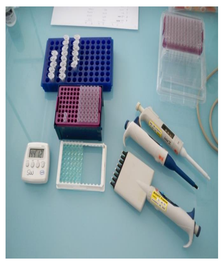

How well do bulk tank milk results correlate with blood results for Schmallenberg Virus?

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Jim Grant[1], Ann Hallinan[2], Michael Doherty[3], Damien Barrett[4], John Mee[5]

Conclusions

Mean herd blood ELISA results are moderately-highly correlated with BMT ELISA results

Herds with identical BMT ELISA results can have significantly different distributions of individual animal blood results

Introduction

Schmallenberg virus (SBV) is seroendemic in many regions in Europe. However, the within-herd and between-herd SBV seroprevalence in these regions is sparsely documented and largely unknown.

Bulk milk tank (BMT) ELISAs are widely used to determine herd exposure to infectious diseases. However, the correlation between milk and blood results for SBV is unknown. Thus, the usefulness of BMT ELISAs in in predicting within herd SBV seroprevalence is also unknown.

Objectives

- Establish animal-level and herd-level SBV seroprevalence in a seroendemic region
- Determine correlation between BMT results and blood results

Materials and Methods

Blood and milk samples:

5,527 individual animal blood samples (73% lactating cows, 27% replacement heifers), 24 BMT samples, 26 Munster (SBV sero-endemic region) dairy farms, collected between 14 March - 5 April 2014

Lab tests:

ID Screen® ELISA :

- Serum: *Schmallenberg virus Competition Multi-species*
- Lacto-serum: *Schmallenberg virus Milk indirect*

Statistics:

Mean herd seroprevalence results were regressed on BMT results.

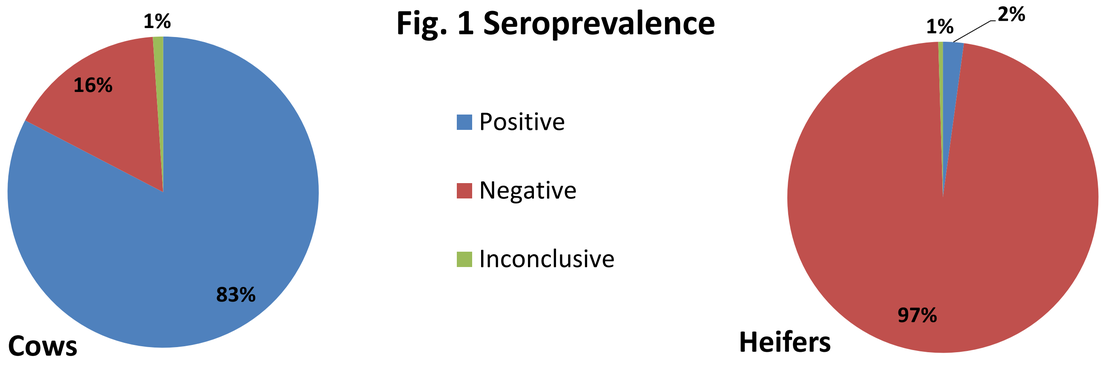
Cumulative distribution curves of individual blood results were compared for herds with identical BMT results had using Kolmorogov-Smirnov test

Results

Seroprevalence

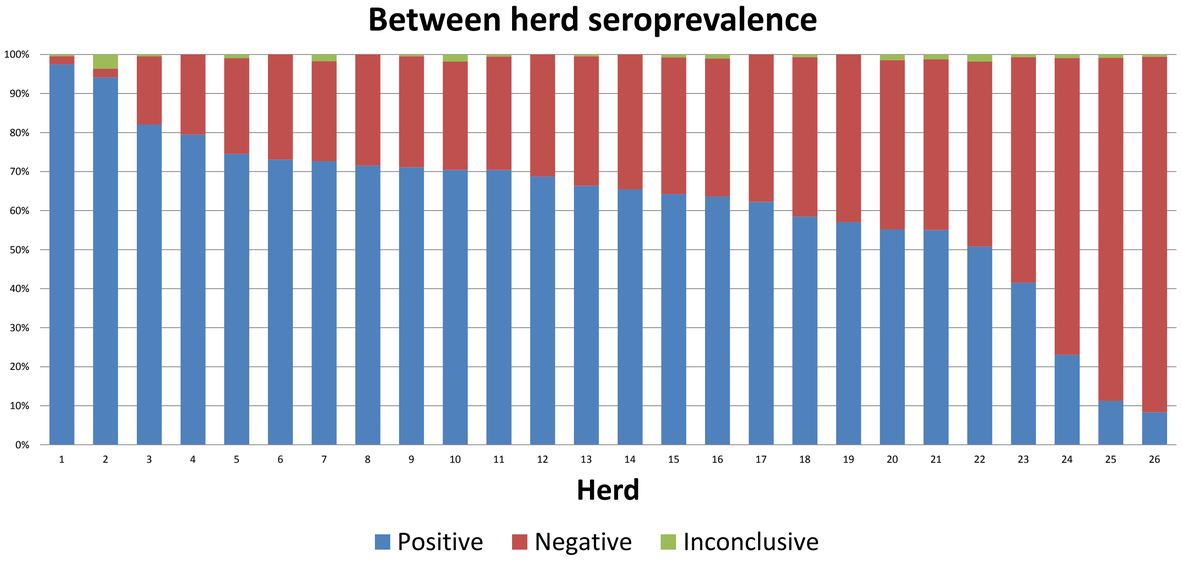
•**Animal level:** 61%; 83% in lactating cows and 2% in replacement heifers (Fig.1)

Fig. 1 Seroprevalence



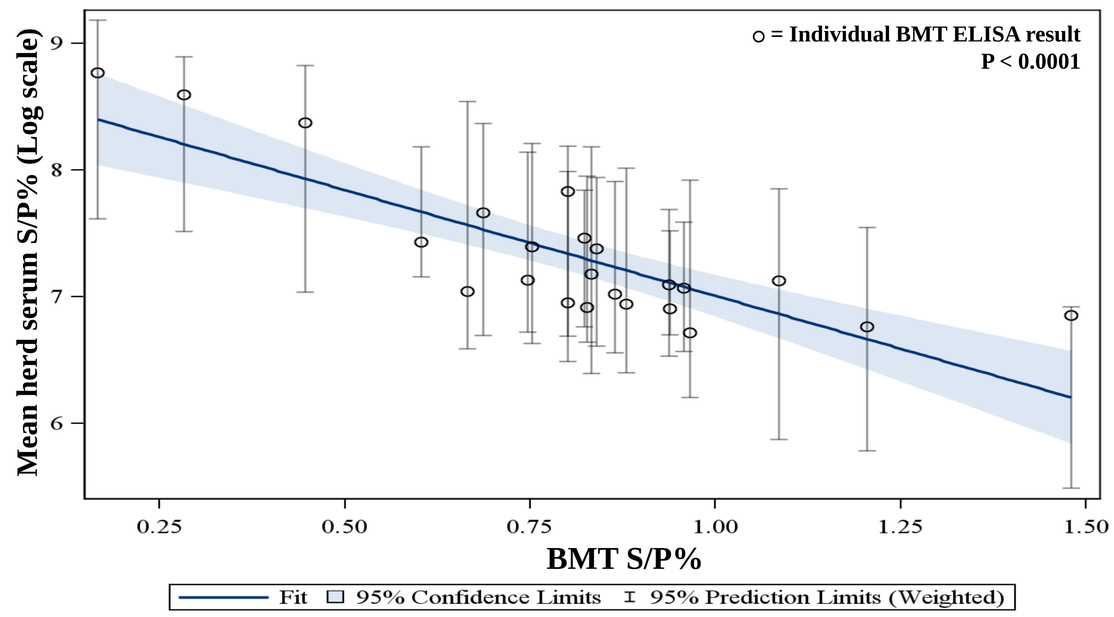
•**Herd level:** Between-herd varied widely (range 8% to 98%), within-herd ranged 10.5%-100% in lactating cows and 0%-22% in replacement heifers

Between herd seroprevalence

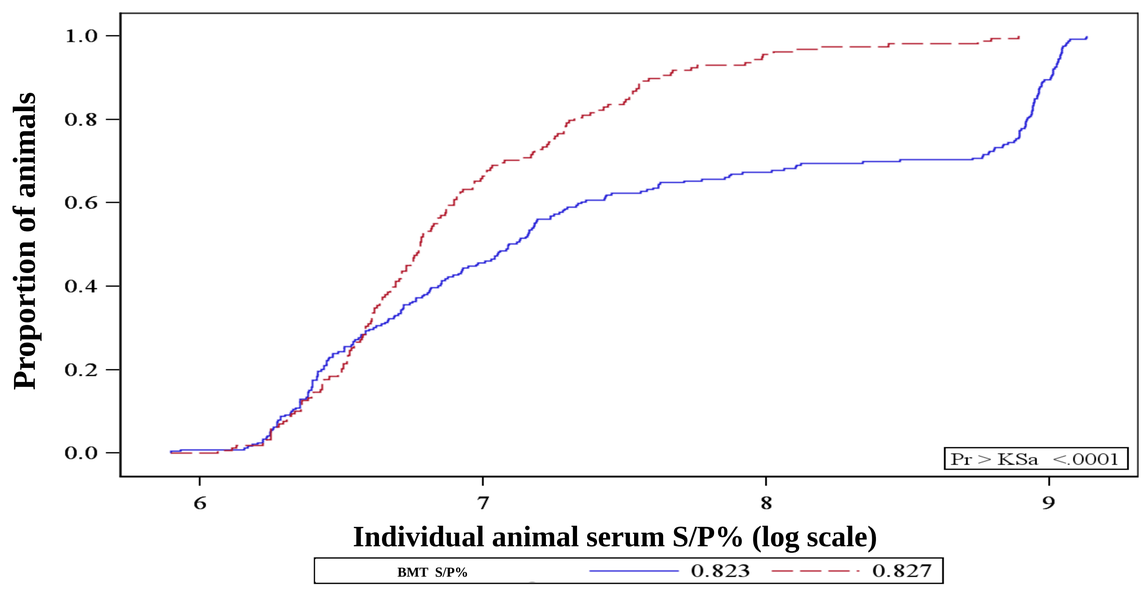


Correlation:

•BMT results were moderately-highly correlated (r=0.75-0.85) with mean herd seroprevalence results



• Herds with identical BMT results had significantly different distribution curves of individual animal serology results



Discussion

•A large population of **naive animals**, replacement heifers in particular, were identified in this seroendemic region. These animals may be at risk of infection if SBV remerges.

•There was a **wide variation** in between-herd and within-herd SBV seroprevalence rates, despite SBV seroendemisity.

•BMT ELISA results are **moderately-highly predictive** of mean herd seroprevalence rates.

•Herds with the same BMT ELISA results can have significantly **different distributions** of individual animal serology results.

•This should be considered by veterinary practitioners when determining the **risk of new SBV infections** in dairy herds

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