

A field study to determine antibody titers of BRD pathogens on Dutch dairy farms without BRD problems.

Henk Kuijk, Hanny Swam, Pleun Penterman, Geert Vertenten

INTRODUCTION

Major BRD pathogens are endemic in the Dutch cattle population.

Calves may have serological antibodies without clinical disease: from passive colostral protection or as an active response to field infection or vaccination.

A serological screening may give clarity on the importance of these pathogens as well as an indication to which level antibodies may have an influence on vaccination. The latter may help to develop a BRD vaccination program.

OBJECTIVE

In this field study, antibody levels against the BRD pathogens (Parainfluenza 3 virus (PI3), Bovine Respiratory Syncytial Virus (BRSV), *Mannheimia haemolytica* and *Mycoplasma bovis*) in healthy calves and cows were determined on several Dutch dairy farms without major BRD problems and not vaccinating against BRD to have an impression on the epidemiology of some major infectious risk factors for BRD.

MATERIALS AND METHODS

The study was performed on Dutch dairy farms with at least 100 lactating cows, that are not vaccinating against BRD and without major BRD problems.

In two different farms (January 2019), all the youngstock were blood sampled as well as three groups of ten lactating cows (respectively in first, second and third or more lactation) on the same day.

On ten other different farms (January-March 2019), blood sampling was performed in five

calves between three and six months old, as well as in five calves between eight and twelve months.

All the samples were analyzed in the Centre for Diagnostic Solutions (MSD Animal Health, Boxmeer, The Netherlands) for antibodies against *Mannheimia haemolytica*, BRSV, PI3 and *Mycoplasma bovis* by ELISA. An *in house* test was used to measure *Mannheimia haemolytica* and BRSV antibodies, whereas for PI3 and *Mycoplasma bovis* a commercial kit was used from respectively IDEXX and Bio-X.

The active circulation of Mh, BRSV and PI3 pathogens and the frequent absence or low seroconversion to Mb on farms free from clinical BRD, support vaccination against Mh, PI3 and BRSV as a comprehensive strategy to minimize the risk of future BRD outbreaks.



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RESULTS

On each farm antibodies against each BRD pathogen could be identified except for *Mycoplasma bovis*, that was only present in a few animals in seven of the twelve dairy farms.

Most samples were positive for antibodies against *Mannheimia haemolytica* (95%), followed by respectively PI3 (87%), BRSV (30%) and *Mycoplasma bovis* (6%).

For all the pathogens the level of antibodies increased with the age of the animals.

Antibodies against all pathogens were frequently identified in animals younger than one year, apart from antibodies specific for *Mycoplasma bovis* that only have been identified in 7% of animals younger than one year.

AUTHORS' AFFILIATION

MSD Animal Health, Boxmeer.

FIGURE 1. Antibody titers in all young stock on a Dutch dairy farm without clinical BRD problems. Notice the maternal antibodies in the first months and notice the presence of BRSV antibodies after seven months of age. Only one calf showed a low titer of *M. bovis* antibodies.

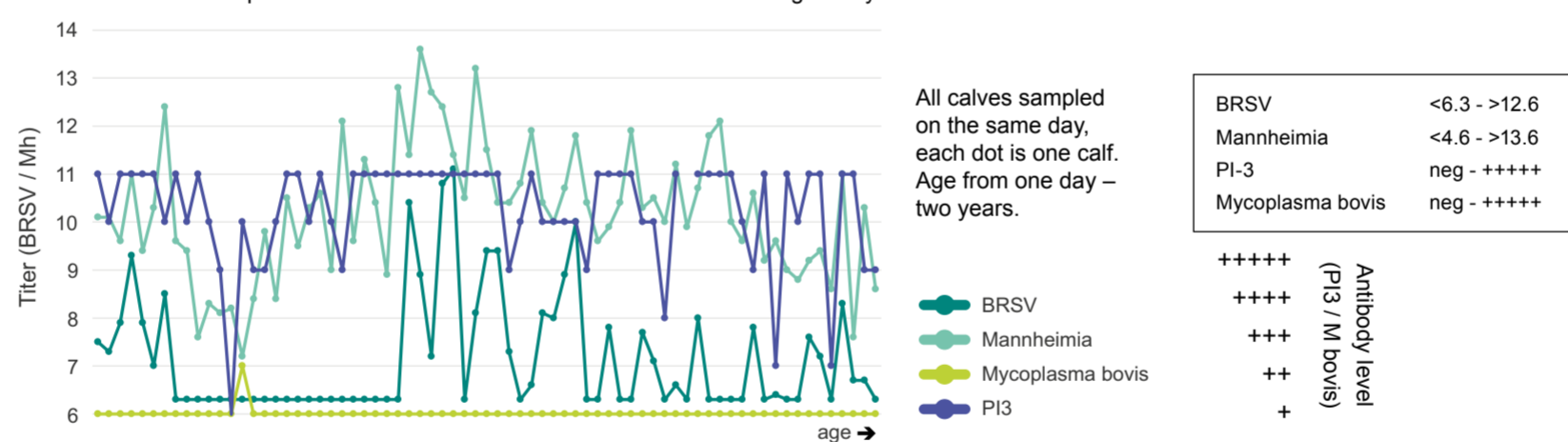


FIGURE 2. Antibody titers in two groups of five calves on a Dutch dairy farm without clinical BRD problems. Notice the absence of nearly all relevant antibodies in calves younger than six months.

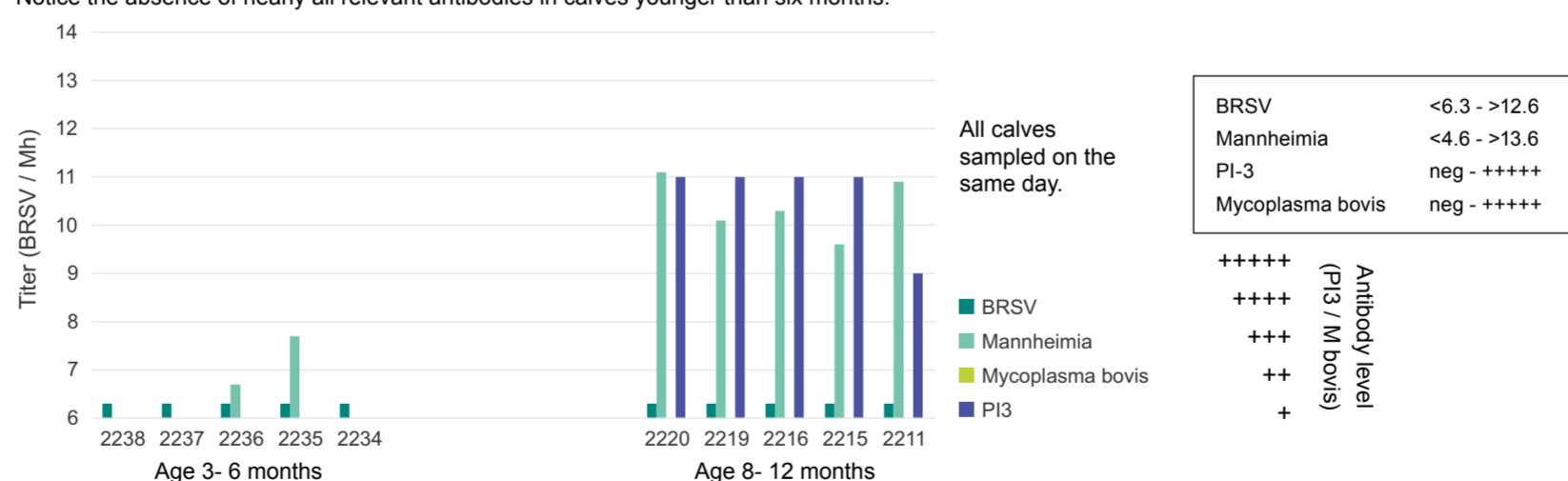


FIGURE 3. Antibody titers in two groups of five calves on a Dutch dairy farm without clinical BRD problems. Notice that in this farm before six months of age most calves already encountered *Mannheimia haemolytica* and PI3 virus.

