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Characteristics of respiratory disease with focus on *Mycoplasma bovis* in four Danish veal calf herds

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INTRODUCTION

Mycoplasma bovis is considered as a major cause of disease in veal calves world-wide
Manifestations of infection in young calves include arthritis, otitis media and pneumonia
In Denmark, *Mycoplasma bovis* associated disease has been of great concern leading to new research projects over the last six year, including this work which is part of a research project about *Mycoplasma bovis* in Danish veal calves

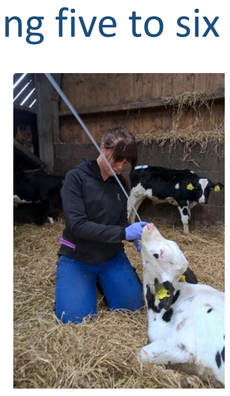
STUDY AIMS

- To characterize the development of respiratory disorders in Danish veal calf herds with different housing conditions, regarding both clinical and diagnostic parameters
- To identify animal-level risk factors of importance for development of respiratory disorders in veal calves

MATERIAL AND METHODS

The data was collected in a field study in four Danish veal calf herds with different housing conditions from September 2015 until January 2016. A cohort of 20-24 calves was selected representing five to six calves from four different suppliers in each farm

- Six visits on each farm 0-10 weeks after arrival
  - Clinical scoring of all calves in the cohort at each visit
  - Serology 0, 2, 6 and 10 weeks after arrival
  - Brochoalveolar lavage (BAL) of sick calves



The blood samples were analyzed by ELISA for antibodies against *Mycoplasma bovis* (BioX-K302). The BALs were analyzed by PCR for *Mycoplasma bovis*, Bovine Corona Virus (BCoV), Bovine Respiratory Syncytial Virus (BRSV) and bovine Parainfluenza (PI-3) and cultured *for Pasterella multocida*, *Mannheimia haemolytica*, *Haemophilus somni* and *Mycoplasma subspecies*

RESULTS

The development in antibodies and clinical disease in all of the calves is shown in Fig. 1 and Fig. 2 below.
The pathogens in the BALs were used to describe the presence of pathogens in the lungs of sick calves and their prevalence (Fig. 3)

Development in clinical disease

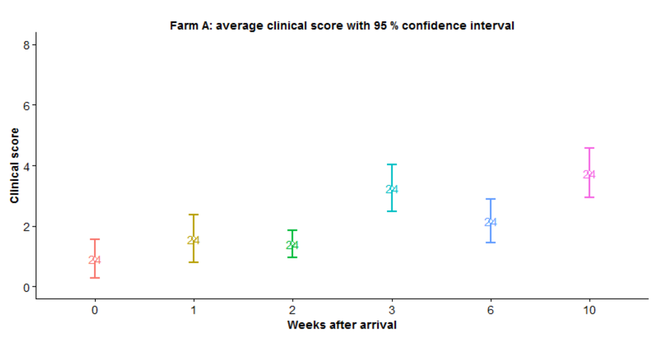


Fig. 1 Some of the farms had a peak in clinical signs14-21 days after arrival ,while some of the other farms had a more even level of disease.

Development in antibodies

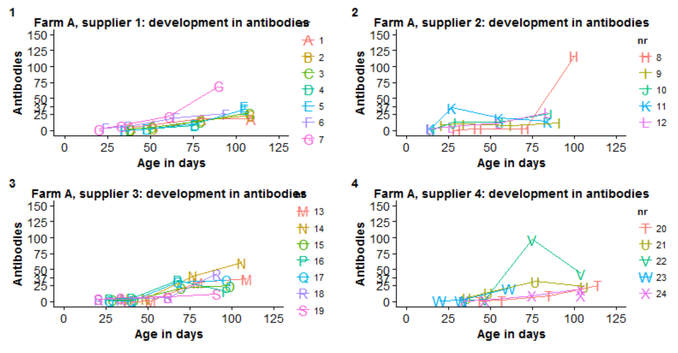


Fig 2. The results showed little reaction in antibodies against *Mycoplasma bovis* among the cohort calves, but some of the calves had a delayed antibody response with an increase in antibodies around 75 days of age.

Pathogens in BALs

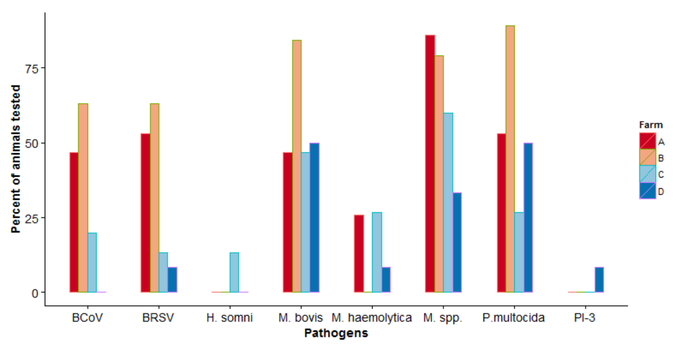


Fig. 3 *M. bovis* and *P. multocida* was the most frequently detected pathogens in BALs.
A higher number of calves with respiratory signs was found on farms with higher numbers of *M. bovis, P. multocida* and BCoV in the BALs.

Risk factors at animal-level

Age and calf mortality in calves aged 0-14 days in the supplier herds were identified as significant risk factors for development of clinical disease. One of the veal calf herds had markedly more diseased calves than the others.

PERSPECTIVES

The results regarding 0-14 days calf mortality in the supplier herds provides the farmers with a possible way to reduce the number of sick calves by selecting their supplier herds based on 0-14 days calf mortality. The other results from this study can contribute with knowledge and thoughts to form hypothesis for new studies.

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