

# Bacterial isolates and factors associated with infection and outcome in calves with septic arthritis: 64 cases (2009-2014)

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## Introduction

Lameness is an important problem in cattle and is often associated with an important economic loss in beef and milk production. Because of the pain, it is becoming an important welfare issue and represents 1 of the major culling causes in dairy herds. The joint is the second most important cause of lameness after the digit.

There is in an important lack in the literature regarding prognosis and factors associated with septic arthritis in calves. The objective of the study is to determine clinical characteristics, clinicopathologic data, and bacterial culture results associated with septic arthritis in calves less than 180 days old and to establish long-term prognosis of the condition.

## Materials and Methods

The study was a retrospective study (n=64 calves). Medical records (2009-2014) were reviewed and calves less than 180 days old with confirmed infection of at least 1 joint identified. Data retrieved included signalment, clinicopathologic information, radiographic finding, bacterial and PCR results, and outcome. Data were analyzed for all calves as a single population and for calves stratified into 2 age groups (less than or equal to 28 days, 29 to 180 days). Positive

outcome was defined as reaching performances according to the owner's expectations 1 year after hospital discharge.

## Results

Mean  $\pm$  SD age of all calves was  $24.5 \pm 32.7$  days (range, 0 to 161 days). Mean  $\pm$  SD number of joints affected per calf was  $1 \pm 0.79$  (range, 1 to 5 joints). Thirty-two of 54 (59.3%) calves had a positive long-term outcome. One synovial sample was submitted for each calf. Thirty-eight (59.5%) calves had an etiologic agent identified. Of the 49 bacterial isolates identified, 20 (40.8%) were Gram-positive, catalase negative cocci and 13 (26.5%) were *Mycoplasma*. Positive long-term outcome was positively associated with synovial leukocyte concentration and negatively associated with number of affected joints, blood neutrophil concentration, and fibrinogen.

## Significance

Results indicated the main bacterial agents responsible for septic arthritis in calves, which may be helpful in empirical treatment. Also, the positive association between positive long-term outcome and synovial leukocyte concentration may have a prognosis and economical value in the evaluation of treatment options associated with the condition.

# Short interval from calving to milking is essential for high IgG content in colostrum

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## Introduction

Colostrum of good quality is pivotal for the health and growth of the newborn calf. In order to ensure enough mass of IgG fed to the calf, the recommendation is to feed 3 to 4 L of colostrum with an IgG concentration of  $>50$  g/L within 4 to 6 hours after parturition. However, the content of antibod-

ies in colostrum decreases as time passes from calving, and it is therefore important to milk as soon as possible after parturition. This is manageable to reach this goal on larger farms, where the milking system is used most of the time. However, at smaller farms, where milking is done in a few shorter periods each day, an extra effort must be made to milk fresh cows as soon as possible after calving. The aim of

this study was to investigate the effect of time passed from parturition to milking, and from these data propose a scheme that can be used at smaller farms to increase the likelihood of harvesting colostrum with a high content of antibodies.

### Materials and Methods

Twenty-one farms with 100 to 1250 dairy cows/farm participated in the study in September through November 2013, delivering between 1 and 23 colostrum samples from each farm. The included dairy farms were positioned <2 h drive from the University Laboratory (AU-Foulum, Denmark). Colostrum was harvested as the farmer would normally do it, and at the latest 24 h after calving. For each sample, the time for calving and milking was noted by the farmer; 92% of the samples were collected at latest 13 h after calving. Colostral IgG concentration was determined with ELISA (Bovine IgG ELISA quantitation Set, Cat. No. E10-118; Bethyl Laboratories Inc, Montgomery, TX). The results were expressed as IgG concentration in g/L.

### Results

The results showed that the IgG content decreased as time from calving to milking ( $R^2=0.15$ ) increased. Only 51%

of the colostrum collected later than 5 hours after calving contained more than 50 g IgG/L, whereas 82% of the samples harvested during the 5 hours following calving contained the recommended level of IgG (Lokke et al, 2016). In practice, however, it is difficult to milk all fresh cows within 5 hours of calving. To get around this, fresh cows can be milked right after startup of the milking system and cows that give birth during the milking period can be milked at the end. In the period after the milking system is turned off until 5 hours before next milking, a mobile milking unit can be used.

### Significance

The results emphasize the importance of milking as soon as possible after calving. By changing routines at the farm it is possible to milk most fresh cows within 5 hours after calving, thereby increasing the likelihood of collecting high-quality colostrum from 50% to around 80%.

### Reference

Lokke MM, Engelbrecht R, Wiking L. Covariance structures of fat and protein influence the estimation of IgG in bovine colostrum. *J Dairy Res* 2016; 83:58-66.

## Development and validation of the VetMAX-Gold MAP Detection Kit

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### Introduction

*Mycobacterium avium* subspecies *paratuberculosis* (MAP) is the causative agent for Johne's disease (chronic granulomatous enteritis of the small intestine) in cattle. Johne's disease causes severe economic losses in the cattle industry due to reduced productivity, reproductive losses, and the eventual death or culling of the infected animal. We have validated a MAP testing workflow consisting of high-throughput nucleic-acid purification and MAP detection from both individual and pooled bovine fecal samples. The VetMAX-Gold MAP Detection Kit is a real-time PCR assay for the rapid in vitro detection of MAP DNA purified from bovine feces. The assay targets a unique sequence element in the MAP genome to provide highly sensitive and specific results. The purpose of this study is to determine the performance characteristics of the VetMAX-Gold MAP Detection Kit in detecting MAP DNA from nucleic acid extracted from individual and pooled bovine fecal samples.

### Materials and Methods

The VetMAX-Gold MAP Detection Kit workflow was evaluated with 126 individual MAP-positive and 134 individual MAP-negative bovine fecal samples. The MAP status of each sample was confirmed with culture (MGIT culture system, Herrold's Egg Yolk (HEY), or TREK ESPTM Culture System II) prior to the start of the study. MAP samples were sourced from diverse geographic regions (9 states) and represented a range of MAP infectivity (19 to 21% heavy shedder, 10 to 13% moderate shedder, 10 to 27% light shedder). The feasibility of pooling up to 5 bovine fecal samples into a single nucleic-acid extraction and detection test was evaluated by testing 51 MAP-positive pools and 24 MAP-negative pools. All pools consisted of 5 individual fecal samples. Forty-nine positive pools were created by combining 1 MAP-positive sample with 4 MAP-negative samples. Two positive pools were created by combining 2 MAP-positive samples with 3 MAP-negative samples. For both individual and pooled