

Likelihood Ratios for Multiple Levels of ELISA S/P Ratios in Dairy Herds Infected with *Mycobacterium avium* subsp. *paratuberculosis* (MAP)

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Several researchers have advocated the quantitative evaluation of ELISA S/P ratios rather than relying on a single cutoff value to classify test results. Here, we present likelihood ratios that evaluate the risk of MAP infection for multiple levels of ELISA S/P ratios for cows originating from MAP-infected dairy herds. Test records were obtained for nine southwestern Ohio dairy farms that completed whole-herd screening tests for Johne's disease approximately every six months (1994-1999) using both fecal culture and ELISA (IDEXX) concurrently. A total of 1323 S/P ratios, representing 567 cows, were included in the likelihood ratio calculations. Cows with a positive fecal culture at any time in their test history were classified as MAP-infected. Cows with three or more negative fecal cultures in their test history were considered non-infected. ELISA S/P ratios were assigned to one of 17 strata. The likelihood ratio

representing the odds that cows were identified as infected relative to classification as non-infected was calculated for each stratum of ELISA S/P ratios. As ELISA S/P ratios increased, cows were more likely to have MAP-infection confirmed during the observation period. Cows with ELISA S/P ratios ≥ 0.800 were 55 times more likely to be identified as infected rather than classified as non-infected. Although the potential for misclassification still exists with S/P ratios ≥ 0.800 , these likelihood ratios represent strong statistical evidence that these cows are likely to be truly infected. ELISA S/P ratios < 0.800 were of limited value in predicting the true infection status of cows in this study.

Comparison of Management Practices Between Ohio Dairy Herds Involved in Johne's Disease Testing Programs Versus Herds Not Involved in a Testing Program

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The purpose of this survey was to compare the adoption of management practices recommended for Johne's disease control between herds involved in whole-herd testing programs versus those that do not routinely

test for Johne's disease. Eight hundred-ten Ohio dairy herds were selected to participate in a mail survey, and a total of 266 questionnaires were returned (32.8% response rate). Because it is conceivable that only pro-

ducers who believed their herds were infected would be motivated to adopt recommended management practices, the relationships between testing status and various management practices and changes in management practices during the past five years were assessed using logistic regression modeling to control for producer-perceived infection status. Interestingly, even if a producer believed his/her herd was not infected, participation in a testing program was associated with certain management practices and the incorporation of specific changes to existing management practices.

These results suggest that herds participating in the Ohio Johnne's Disease Testing Program are more likely to comply with control recommendations than herds that are not involved. Although this study provides preliminary evidence confirming the value of Johnne's disease testing programs with respect to compliance with control recommendations, several opportunities for improvement were identified. Given the unique nature of the Ohio Johnne's Disease Testing Program and the possible biases that may exist with any mail survey, care should be taken when extrapolating these results.

Evaluation of Dry Cow Vaccination with a Killed Viral Vaccine on Post-colostral Antibody Titers in Calves

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Introduction

Respiratory disease in dairy calves remains a significant cause of morbidity and mortality in the first months of life. The effects of juvenile pneumonia are life-long and include decreased rate of gain, decreased milk production, and decreased survival in the herd. These effects are in addition to the cost of respiratory disease as a direct result of having to diagnose and treat pneumonia in calves. Maximizing passive transfer of antibodies from the dam is a significant management tool to reduce the effects of respiratory disease in dairy herds. Studies have shown that calves with low IgG have a two times greater risk of pneumonia when compared to calves with greater IgG. The duration of passive immunity appears to be approximately three-to-four months; however, statistically the risks of failure of passive transfer are evident as long as six months. Many Colorado dairies use an annual modified-live viral vaccine administered approximately 30 days after freshening to stimulate immunity to viral respiratory and reproductive disease in their cows and, subsequently, their calves. Killed viral vaccines offer the advantage of administration during pregnancy with a reduced risk of abortion due to abortogenic components of the vaccine. The administration of a vaccine shortly prior to parturition is believed to increase the titers of the cows at the time of calving, and potentially increase the amount of antibody available for passage to the calf via colostrum. The ob-

jective of this study was to evaluate the response of post-colostral agent specific titers in calves whose dams received a killed viral vaccine at dry-off.

Materials and Methods

Forty Holstein dairy cows were identified for enrollment in the study, selected from an 1100-head dry-lot dairy. All cows had previously been vaccinated with a modified live viral vaccine 30 days postpartum.¹ The cows were randomly assigned to four treatment groups and were processed as they were presented for pregnancy confirmation prior to dry-off. Group 1 cows received 5ml of 0.9% sterile NaCl, group 2 cows received 2ml of vaccine A,² group 3 cows received 5ml of vaccine B,³ and group 4 cows received 5ml of vaccine C.⁴ Blood samples were collected from each cow at the time of vaccination, approximately 30 days later during the dry period, at freshening, and from the calves between two and seven days of age. Serum samples were submitted for serum neutralization analysis for bovine herpesvirus-1, bovine viral diarrhea virus, bovine respiratory syncytial virus, and parainfluenza 3 virus. The resulting titers were converted to the Log₂ of the titer for statistical analysis.

Results

Geometric mean titers to the four viral respiratory agents examined were evaluated from the vaccination