Risk Factors Associated with Johne's Disease Infections and Seropositive Blood Titers

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A study was undertaken in Colorado to estimate the prevalence of Johne's Disease (JD) among adult dairy animals using a commercially available ELISA blood test[1]. Fifteen dairies were enrolled in the study and producers from each dairy had attended educational seminars provided by Colorado State University. On each of the dairies, blood samples were collected from all cattle older than 2 years of age that given birth to at least one calf. After the ELISA testing results were made known to the producers, the producers were asked to submit fecal samples for culture from all positive and suspect ELISA-cows. In addition, the producers were asked to send cull cows with suspected clinical signs of JD to the Veterinary Diagnostic Laboratory at CSU.

Specific herd management factors were targeted as the risk factors of concern. These risk factors were herd size, importation rate of new cattle over 20 months of age from the past 5 years, cows with clinical signs of JD, and the herd cull rate. The producer were asked if cows with a combination of chronic, unresponsive, normal-colored diarrhea; weight loss; and decreased milk production with continued appetite and no fever had been observed in the herd over the past 5 years. Dairies having cows with this combination of signs were considered to be JD dairies as were dairies with positive fecal cultures or typical pathological signs on necropsy. The culling rate was taken from the DHIA records.

During the study over 10,000 cows were ELISA tested representing almost 12% of the Colorado adult dairy cows. Over all, 4.12% of the tested cattle were categorized as JD positive which is in the lower range of reports from other states (5-17%). Herd importation rate and JD sero-prevalence were positively correlated as were importation rate and sero-prevalence. Based on the dairy records and recall, 9 of the dairies were classified as not having JD in the past five years and 6 were classed as JD. Interestingly, on 5 of the 9 dairies classed as non-JD, JD was found by culture or necropsy of JD ELISA positive or suspect cows.

The authors of the study felt that ELISA testing was an inexpensive means to identify some infected cows in low seroprevalent herds where owners had not recognized clinical signs of JD in their cattle. Once JD was detected in a dairy herd by ELISA testing, the owners maybe more likely to implement JD control measures to decreased transmission within the herd. In general, herds without a history of signs compatible with JD had seroprevalence rates of less than 2%, whereas herds with JD history had seroprevalence rates of greater than 2%.

Larger herds (>600 milking cows) were more likely to have seropositive cows than smaller herds. This may have been due to the increased likelihood of larger herds to import cattle compared to the smaller herds. In addition, herds that imported greater than 8% of the current herd size over the last 5 years were almost 3 times more likely to have seropositive cows compared to herds that imported less than 8%. Only 3 of the 12 herds that had imported cattle over the past 5 years had tested the cattle prior to purchase. It was strongly suggested that testing for JD in the source herds be done prior to purchase.

This report suggests that all large dairies that import adult cows into their herds and that see the combination of clinical signs that suggest JD, should be testing individual cows for JD using ELISA testing as these cows are likely to be JD positive.

[1]Hirst HL, Garry FB, Morley PS et al. Seroprevalence of *Mycobacterium avium* subsp *paratuberculosis* infection among dairy cows in Colorado and herd-level risk factors for seropositivity. *JAVMA* 225(1):97-101, 2004.