

Veterinarians' perspective on a voluntary Johne's disease prevention program in Ontario and western Canada

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Abstract — A survey was conducted to assess the beliefs of veterinarians on Johne's disease (JD) and their attitudes towards the Canadian, risk assessment based, JD prevention program. The veterinarians surveyed believed *Mycobacterium avium* subsp. *paratuberculosis* may have zoonotic potential, liked the risk assessment based program, and thought it could lead to the prevention of other on-farm diseases.

Résumé — **Perspective des vétérinaires à l'égard d'un programme volontaire de prévention de la maladie de Johne en Ontario et dans l'Ouest canadien.** Un sondage a été réalisé pour évaluer les croyances des vétérinaires à l'égard de la maladie de Johne (MJ) et leurs attitudes envers le programme de prévention canadien de la MJ qui se fonde sur l'évaluation des risques. Les vétérinaires interrogés croyaient que *Mycobacterium avium* ssp. *paratuberculosis* peut comporter un potentiel de zoonose, ils aimaient le programme fondé sur l'évaluation des risques et croyaient qu'il pouvait mener à la prévention d'autres maladies présentes à la ferme.

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Johne's disease (JD) is a slowly progressing, chronic wasting disease of ruminants that is caused by *Mycobacterium avium* subsp. *paratuberculosis* (MAP). It is estimated that approximately 30% of Canadian dairy farms have at least 2 seropositive cows (1). The within-herd seroprevalence is estimated at 3.6% (1). Reduced milk production and premature culling of test positive and sick cattle are responsible for much of the negative economic impact of the disease (2).

Subclinically affected, MAP-infected cows can shed the bacteria in feces, milk, and colostrum. Newborn calves, believed to have the highest susceptibility to becoming newly infected, are at risk of exposure around birth. Unfortunately, currently available tests are not sensitive enough to detect all subclinically infected animals, and therefore, "test-and-cull" programs are not economically effective in reducing the prevalence of JD (3). Instead, the use of best management practices on-farm is encouraged to interrupt the transmission of infection from dam to calf. Risk assessment (RA) based JD control programs use

questionnaires targeted at management practices that can potentially result in exposure of the young calf to the MAP organism. Responses are linked to a score; the higher the score, the higher the risk for transmission of MAP to susceptible animals. Risk assessments aid the veterinarian and producer in recognizing high risk practices, so that current farm management can be modified to decrease the spread of the disease. Risk assessments are currently used in some parts of the United States, Australia, and Europe (4–6). In Canada, a RA-based voluntary JD control program was introduced in 2005–2007 in Ontario, Manitoba, Saskatchewan, Alberta, and British Columbia by CanWest dairy herd improvement (DHI), the Ontario Ministry of Agriculture, Food and Rural Affairs, and the Ontario Veterinary College. The program was advertised in producer magazines and newsletters. Interested producers had to enroll voluntarily. Due to funding constraints, only a limited number of herds per province could be enrolled. The RAs were administered by private veterinary practitioners who had completed a prescribed training program.

Since the ultimate success of an RA-based control program is determined by the compliance of the producer with the suggested changes to management practices, it is crucial that the targeted producer perceives the change in management practices as necessary and believes that the benefits will outweigh the costs (7). Both cost and benefit can be measured on a monetary or emotional scale. Therefore, it is fundamental that the administering herd veterinarian, as a figure of trust, is comfortable with the program, is convinced of the necessity to act on the results of the RA, and can successfully articulate his/her convictions/beliefs and recommendations to the producer (7). The objectives of the current study were, first, to describe veterinarians' beliefs on the current status of JD in the dairy industry. Secondly, to describe veterinarians' experience with, and attitude

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towards, this JD RA program, and thirdly, to assess whether or not the veterinarians could apply the RA approach on farms beyond those in the initial JD control program.

In the summer of 2008, a questionnaire was developed and pre-tested on 15 individuals who were graduate students, veterinary students, practicing veterinarians, or dairy researchers. The questionnaire consisted of 29 multiple-choice, rating, ranking and open-ended questions and was 4 pages long. The questions explored veterinarians' perception of JD and its importance for the dairy industry as well as their own attitudes towards the RA-based control program (for example, the training process, the use of the program on-farm, and suggested changes to improve the program). The survey was sent to all 186 veterinarians in Ontario ($n = 118$), Manitoba ($n = 15$), Saskatchewan ($n = 12$), Alberta ($n = 28$), and British Columbia ($n = 13$) who had participated in the JD RA training program. Two months after initial contact, a reminder was sent out by e-mail to veterinarians or clinics, where e-mail addresses were available ($n = 69$).

The statistical analysis was conducted in SPSS 16.0 (SPSS for Windows, Release 16.0.1. 2007; SPSS, Chicago, Illinois, USA) and consisted of descriptive statistics, Spearman rank correlations, and Kruskal-Wallis, Mann-Whitney-U, or Chi-squared tests.

Of the 186 questionnaires sent out, 54 (29%) were returned. Only 4 of the 69 veterinarians who had received a reminder responded. Their answers were comparable to the answers of the other 50 respondents; therefore, all responses were combined. The response rate was roughly comparable across provinces. Return rates were 31% in Ontario, 20% in Manitoba, 33% in Saskatchewan, 25% in Alberta, and 30% in British Columbia. The responding veterinarians had practiced for an average of 19.8 y (range: 1 to 41 y), had conducted an average of 4 RAs (range: 1 to 16) and their clinics served an average of 58 dairy herds (range: 2 to 224).

The veterinarians estimated that 10% (34% of respondents) to 20% (23% of respondents) of their client's herds were affected with JD; however, one responding veterinarian assumed that 100% of his client's herds were likely affected, and two observed that none of their client's herds were affected by JD. Most ($n = 44$) of the responding veterinarians ranked JD as the least important disease among 6 possible conditions (mastitis, lameness, calf diseases, metabolic peri-parturient diseases, reproductive inefficiency, and Johne's disease). The 3 diseases ranked as most important were reproductive inefficiency ($n = 32$ for rank 1), metabolic peri-parturient diseases and mastitis ($n = 19$ and $n = 16$ for rank 2, respectively). Lameness and calf diseases were most often ranked 3rd ($n = 17$) and 5th ($n = 29$), respectively. The low ranking in importance of JD was apparent when the veterinarians were asked from which sources their clients were most likely to buy replacement heifers. Most veterinarians (46%) answered that to their knowledge producers would not ask about JD status of a source herd; however, if they did ask, less than half would give preference to purchasing replacements from herds where an RA and testing were done (41%). Herds conducting only an RA (without testing) were the least favored source of replacement heifers ($n = 1$).

Despite the low importance ranking of JD, most veterinarians (62%) supported mandatory testing for JD on farms, and 57% favored the payment of a premium for the milk from low prevalence herds ($a < 5\%$ within herd prevalence of JD). In spite of the low importance ranking of JD within their client's herds currently, almost all veterinarians felt that there was an association between Crohn's disease and MAP. A "weak" or "strong association" between JD in cattle and Crohn's disease in humans was perceived by 51% and 41% of respondents, respectively. Only 1 (2%) veterinarian felt there was no association between the two, while 3 (6%) veterinarians believed there was a definite causal link. It is interesting that the responding veterinarians, who rated their own knowledge of JD above average or excellent, reported that they believed MAP has zoonotic potential.

Additionally, the responding veterinarians regarded the training process for the JD prevention project as very helpful. Of the responders, 96% rated their knowledge of JD above average post-training compared with 35% before training. Most veterinarians (61%) thought a training update should be completed every 2 to 4 y. Veterinarians clearly preferred seminars with speakers and other veterinarians ($n = 21$ for rank 1) over self-directed online "tests" or printed newsletters (both $n = 20$ for rank 6). Furthermore, veterinarians who thought the training process had prepared them well were more likely to recommend the training to colleagues ($r = 0.692$, $P < 0.001$) and also felt they could market their services better because of the training ($r = 0.594$, $P < 0.001$).

Almost half the veterinarians (44%) completed RAs on client farms beyond those enrolled in the original JD prevention project. Yet 56% of all respondents had producer clients who declined their invitation to participate in the program. Of these, over half (56%) reported the declines were because the producer did not see JD as a problem for their farm or they felt that producers did not perceive that the benefits from the program would outweigh the costs in time and money to participate (53%). Still, 51% of veterinarians expected that producers would be willing to pay for a RA. Furthermore, all veterinarians felt that completing the RA and implementing the recommended management changes would also lead to the prevention of other diseases, and 85% felt it would increase their knowledge of calf management practices on their clients' farms. In addition, most (80%) found that the RA portrayed problem areas on their clients' farms accurately.

The veterinarians primarily targeted their recommendations for management changes to achieve reduction of JD on farm. General disease prevention, ease of implementation and economic feasibility followed in importance as drivers for prioritization of recommendations. With the exception of 1 respondent, all veterinarians observed that the producers implemented at least some of the suggested changes after the RA. In addition, producers were more likely to participate in a follow-up program the more accurately the problems on their farms were portrayed ($r = 0.359$, $P = 0.008$). To foster a continuing decrease in JD prevalence on farm, 50% of veterinarians suggested that a RA would need to be conducted every 2 to 3 y, 37% thought annually, and none thought longer than 7 y or never.

With respect to improving the RA, the veterinarians were asked if the RA questionnaire included unnecessary questions or was missing important areas or information. Most (80% and 91%, respectively) did not answer these questions, suggesting that they found it adequate. However, 10 veterinarians thought that the RA did not need to address the management of older heifers (breeding age and bred heifers), cows, or general manure management. On the other hand, 5 veterinarians suggested including questions on the purchase of replacement animals, ongoing JD control procedures or colostrum storage as well as an economic analysis. Further suggestions for the improvement of the RA process and implementation success were to simplify (2/19 suggestions) and to intensify (9/19 suggestions, for example, quicker follow-up, mandatory program, more herds involved) the RA program. Other suggestions were to increase the educational efforts to producers about the costs of JD and the sound management practices.

The relatively low response rate was disappointing and could have introduced bias. Therefore, the results described here should be interpreted with some caution. Since most answers were fairly homogeneous and positive towards the program, it is possible that veterinarians responded because they had a keen interest in promoting this program, while the non-responding veterinarians did not view the program as beneficial and therefore did not bother to answer.

In conclusion, the attitude of the responding veterinarians was generally positive towards all aspects of the JD RA. The respondents perceived the JD RA tool as a valuable program that portrayed problem areas on their clients' farms accurately. Although aimed to control and prevent JD on farms, in the

opinion of the responding veterinarians the RA program will also most likely lead to the prevention of other on-farm diseases.

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