

Passive immunity and colostrum management practices on Ontario dairy farms and auction facilities: A cross-sectional study

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Introduction

Failure of transfer of passive immunity (FTPI) in dairy calves has substantial health consequences, impacting well-being and performance. There have been no recent estimates of the prevalence of FTPI on Ontario dairy farms. The objectives of this cross-sectional study were to determine the level of FTPI in both male and female dairy calves across the province of Ontario, as well as determine colostrum management practices through an in-person questionnaire.

Materials and Methods

A total of 109 dairy farms and 4 auction facilities in Ontario were visited in 2019. Dairy farms were solicited through the membership of a provincial veterinary association, including farms throughout the province with no geographical restriction. Dairy farms were visited using 2 trained research assistants who collected information using a mobile device. Questions were pre-tested to ensure clarity and consistency. Calves at auction facilities were sampled by a registered veterinary technician.

Results

From the auction facilities, 386 male dairy calves were sampled and had a mean serum total protein (STP) of 5.79 g/dL (SD = 0.83). Using a cutpoint of 5.2 g/dL, 91 calves (24%) had FTPI. Of the 440 calves (201 male, 239 female) sampled on Ontario dairy farms between 24 h and 10 d of age, mean STP was 5.69 g/dL (SD = 0.78) and 107 calves (24%) had

FPTI. The likelihood of FPTI was not associated with sex (female vs male, RR = 0.89, 95% CI = 0.64-1.24), age (per day, RR = 1.02, 95% CI = 0.94-1.11), or weight (per kg, RR = 0.98, 95% CI = 0.96-1.01). For first feeding of colostrum, median time to providing colostrum was 2.5 hr (range = 0 to 12 h). Ninety-one farms (83 %) fed colostrum from the dam of the calf as their predominant source of colostrum. The predominant feeding method for the first feeding of colostrum was a nipple bottle (89 farms, 82%). Twenty-seven farms (25%) reported managing colostrum differently for male calves, which included a different colostrum source (7 farms), use of poorer quality colostrum (3 farms), a smaller quantity of colostrum (3 farms), a longer time from birth to feeding (1 farm), and generally having a lower focus on colostrum management for male calves (9 farms).

Significance

While the prevalence of FTPI on Ontario dairy farms appears to have improved since previous estimates, there remains substantial room for improvement. Although no overall differences were found in FTPI between male and female calves, differential reported colostrum management by sex indicates this may be a risk for male calves on a proportion of Ontario dairy farms.