

Effect of Reproductive Disorders and Parity on Repeat Breeder Status and Culling in Quebec Dairy Cows

Ariane Bonneville-Hébert, DVM; Émile Bouchard, DVM; Denis Du Tremblay, DVM;
Réjean Lefebvre, DVM

Faculté de Médecine Vétérinaire, Université de Montréal, Québec H3C 3T5

Introduction

Cows that fail to conceive on several attempts are a problem for the producer. Repeat breeder (RB) cows fall into this category. The economic losses associated with RB cows are considerable: increased veterinary expenses, increased insemination costs, reduced productivity and losses due to involuntary culling. Diseases of the reproductive system lead to a reduction in fertility. The magnitude of the effect on reproductive performance depends on the severity of the condition, the timing of the condition and herd control practices. The large number of uterine problems and the great variation in their clinical presentation complicates diagnosis. One way of simplifying the classification of conditions is to view clinical metritis, endometritis and pyometritis as variations of the same disease and to combine them into one diagnostic category: metritis complex. Dystocia, retained placenta (RP), metritis, and endometritis result from mechanical and/or functional damage to the uterus and significantly decrease fertility.

Materials and Methods

The objective of this study was to quantify the effect of postpartum reproductive disorders and parity on repeat breeder status (three or more inseminations to become pregnant) and involuntary culling. Reproductive data for 418,383 lactations were taken from a computerized databank of health records for dairy cows. We used a logistic regression model with dystocia, retained placenta, metritis complex, and parity as the risk factors and herd as the random effect.

Results

Of the postpartum problems studied, dystocia had the greatest effect on future fertility. Dystocia increased

the odds of a cow being a repeat breeder by 44% (CI: 37-51%). Compared to first-parity cows, cows in second, third, and fourth parities had significantly higher odds of being a repeat breeder: 18% (CI: 16-20%), 24% (CI: 21-26%), and 42% (CI: 39-45%), respectively. The odds for second-, third-, or fourth-parity repeat breeders being culled were 24% (CI: 20-28%), 39% (CI: 35-43%), and 67% (CI: 62-71%), respectively, while postpartum reproductive problems had less of an effect. Based on our data, there is a high baseline risk of becoming a RB in cows that are not exposed to postpartum disorders: 20.4% (76,715/376,307) of cows with no postpartum disorders became RB versus 26.4% (11,108/42,076) of cows with postpartum disorders. Given the overall lactational incidence of postpartum disorders (total PPP) is 10%, the population attributable risk for RB cows associated with uterine disorders is only 0.6% ((26.4% - 20.4%) * 10%).

Significance

Postpartum uterine status is critical for a cow's reproduction and, indirectly, survival in the herd. Our results show that postpartum disorders negatively affect the fertility of dairy cows and increase their odds of requiring multiple inseminations (4 and more) and of eventually being culled. Despite the importance of the effects of dystocia, RP, and metritis complex on reproduction, there were in fact many cows in the repeat breeder group who did not have postpartum uterine disorders. The other causes of repeat breeding need to be investigated. Finally, parity number is an important risk factor for being categorized a RB and for being culled. A variety of factors associated with advanced age are associated with reproductive inefficiency and involuntary culling.