

Prevalence of early postpartum health disorders in Holstein cows and associations with production, reproduction, and survival outcomes

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Why is this important?

The transition period, which is generally considered to be 3 weeks before to 3 weeks after calving, is a key time period for dairy cattle. Nearly all cows experience reduced feed intake, negative energy balance (the body uses more energy than it takes in), reduced immune function, and bacterial contamination of the uterus. One study found that 37.5% of cows were diagnosed with a clinical health disorder postpartum and 59% of cows were diagnosed with a subclinical disorder. With so many cows encountering health issues post calving, there is a major impact on both cow wellbeing and the bottom line of the farm. With respect to the latter, producers should consider the direct costs related to diagnosis, treatment, labour, and discarded milk, but also consider the losses related to reduced production, poor reproductive performance, and increased likelihood of death or culling.

Inflammatory diseases, such as retained placenta, mastitis, and uterine diseases, reduce pregnancy rates and increase embryo loss. Metabolic disorders, such as hypocalcaemia, ketosis, and displaced abomasum have a variable effect on fertility and milk production.

The objective of this study was to determine the prevalence and types of postpartum health disorders in early lactation cows and associations with production, reproduction, and survivability.

What did we do?

This study was conducted using field data collected between April 2015 and November 2015 on 11 commercial dairy farms in Alberta. Each herd had at least 100 lactating cows, free stall housing, and used either CanWest DHI or Dairy Comp 305 milk recording services. A total of 1096 Holstein cattle were enrolled in the study.

Cows were observed for retained placenta, metritis, displaced abomasum, hypocalcaemia (clinical and subclinical), ketosis (clinical and subclinical), and mastitis (clinical and subclinical) from calving to 60 DIM.



What did we find?

The average proportion of cows with at least 1 postpartum health disorder was 61%. The prevalence rates of specific disorders were: 6.9% retained placenta, 14.8% metritis, 0.9% displaced abomasum, 5.8% clinical ketosis, 9.5% subclinical ketosis, 3.0% clinical hypocalcaemia, 21.4% subclinical hypocalcaemia, 12.4% clinical mastitis, and 25.2% subclinical mastitis.

Parity, pre-calving body condition score, and calving season were not associated with postpartum disorders, but calving ease and calf outcome were. Cows with assisted calving had 1.7x increased odds of being diagnosed with a postpartum health disorder compared to unassisted calving. Giving birth to twins increased the odds of a health disorder by 5.1x.

Length of dry period was also associated with sickness, with cows with a dry period >60 days having 1.9x odds of being diagnosed with at least 1 postpartum health disorder compared to cows having a dry period of <60 days.

Cows diagnosed with 2 or more health disorders suffered reduced milk yield at 25 DIM and even 1 health disorder resulted in less milk yield than that of healthy cows. By 90 DIM the cumulative milk yield was greater for healthy cows compared to cows with 2 or more health disorders, but peak milk yield did not differ.

Cows diagnosed as healthy had greater pregnancy to 1st AI than cows diagnosed with 2 or more disorders. Further, cows diagnosed with 2 or more disorders had lower pregnancy at 150 DIM and increased days open.

Healthy cows had a reduced death rate by 90 DIM compared to cows diagnosed with any health disorder and cows diagnosed with 2 or more disorders were more likely to be culled by 90 DIM.

All milk production outcomes were greater in healthy and cows classified as having a metabolic health disorder compared to cows classified as having an inflammatory health disorder. Cow diagnosed with an inflammatory disorder tended to have reduced pregnancy at 150 DIM and a significant increase in days open compared to healthy cows and cows diagnosed with a metabolic health disorder. Additionally, cows classified as having a metabolic health disorder had increased death and selling rate by 90 DIM compared to healthy cows. Cows classified as having an inflammatory disorder were intermediate.

What does it mean?

An average of 61% of cows on commercial farms in Alberta were diagnosed with at least 1 postpartum health disorder and 25% had 2 or more. Of cows diagnosed with only 1 disorder, 71% were classified as having inflammatory disease and 29% as having a metabolic disorder. Milk production was reduced in cows having at least 1 postpartum health disorder, but cows with 2 or more disorders had lower milk production and impaired reproductive performance compared to healthy cows. Presence of a health disorder increased the likelihood of leaving the herd through culling or death.

Summary Points

- The development of a postpartum health disorder, especially more than 1, and development of an inflammatory disorder were associated with reduced milk production, decreased reproductive performance, and increased likelihood of leaving the herd.
- Cows diagnosed with a postpartum health disorder should be carefully managed to reduce the negative impact on performance during their lactation.