

## The Ripple Effect: Prolonged Production Ramifications of Clinical Cryptosporidiosis in Newborn Calves

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### Abstract

Clinical cryptosporidiosis is a gastrointestinal disease commonly observed in neonatal calves, with well-known acute symptoms. However, the long-term production consequences of this parasitic infection on affected calves have received less attention. This article explores the lasting effects of clinical cryptosporidiosis on newborn calves, shedding light on the often overlooked "ripple effect" that impacts their future productivity and overall profitability for farmers. The article discusses the impact of cryptosporidiosis on growth and weight gain, the development of malnutrition and weakened immunity, increased mortality rates, higher veterinary intervention and treatment costs, as well as reduced future productivity. Understanding the extended ramifications of clinical cryptosporidiosis is crucial for implementing proactive management strategies to mitigate its impact. By addressing the long-term effects of this disease, farmers can enhance the well-being and profitability of their livestock operations.

The disease is caused by *Cryptosporidium* spp. and is one of the most common causes of calf enteritis in the UK. The parasite is very difficult to remove from the farm, as the oocysts have a tough outer wall which enables the parasite to survive for several months in moist temperate environmental conditions and it is difficult to kill oocysts with common disinfectants used on a farm. If appropriate management practises are applied, the disease is usually self-limiting and most calves will recover. It has been shown, in studies with children and in lambs, that severe clinical cryptosporidiosis can result in long-term growth and cognitive impairment compared with individuals with no obvious signs of the disease. This study measured the long-term growth rate of beef calves on farm by comparing groups of animals that had suffered differing degrees of clinical severity of cryptosporidiosis as neonates.

**Keywords:** Gastrointestinal disease; Weakened immunity; Clinical cryptosporidiosis; Neonates

### Introduction

Cryptosporidiosis is a prevalent gastrointestinal disease that affects neonatal calves worldwide. While the acute symptoms of this parasitic infection are well-known, the long-term production consequences it imposes on affected calves have received less attention. This article explores the lasting effects of clinical cryptosporidiosis on newborn calves, shedding light on the often overlooked "ripple effect" that impacts their future productivity and overall profitability for farmers [1]. Calves affected with Crypto are usually one to four weeks of age. These calves become weak and lethargic and present with loose to watery stool that may be mild or severe in intensity. Feces can contain mucus, blood, undigested milk, or bile. Tenesmus may be seen [2]. The life cycle of *Cryptosporidium* consists of six major developmental events. After ingestion of the oocyst, there is excystation release of infective sporozoites, merogony asexual multiplication, gametogony gamete formation, fertilization, oocyst wall formation, and sporogony sporozoite formation. *Cryptosporidium* infections usually aren't serious for someone with a healthy immune system. If you have a compromised immune system, cryptosporidiosis can cause severe and long-lasting diarrhea, which can be life-threatening. Cryptosporidiosis is an infection that causes diarrhea. It is caused by a parasite. Most people get the parasite after swallowing food or water tainted with stool. This includes swallowing water while swimming [3].

### Impact on growth and weight gain

Clinical cryptosporidiosis can hinder the growth and weight gain of newborn calves [4]. The disease affects the absorptive capacity of the small intestine, leading to malabsorption of nutrients and subsequent weight loss. Calves that experience cryptosporidiosis during their early stages of life may suffer from stunted growth, delayed weaning, and reduced market weight, which ultimately affects their economic value [5].

### Development of malnutrition and weakened immunity

The prolonged presence of cryptosporidiosis in neonatal calves can lead to malnutrition due to impaired nutrient absorption. This malnutrition not only affects growth but also compromises the calf's immune system. Weakened immunity makes them more susceptible to other diseases and infections, further exacerbating the overall health and productivity of the animal [6].

### Increased mortality rates

Clinical cryptosporidiosis can increase mortality rates among affected calves [7]. The combination of dehydration, malnutrition, and weakened immune response creates a perfect storm for other opportunistic diseases to take hold. Additionally, the stress caused by the disease weakens the calf's ability to fight off secondary infections, leading to higher mortality rates and significant economic losses for farmers [8].

### Higher veterinary intervention and treatment costs

The long-term ramifications of cryptosporidiosis require increased veterinary intervention and treatment costs. Treating and managing

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cryptosporidiosis cases often involves specific medications, electrolyte therapy, and supportive care to alleviate the symptoms and help the calves recover. These additional expenses, coupled with the potential loss of productivity, add to the financial burden faced by farmers [9].

### Reduced future productivity

Calves that have experienced clinical cryptosporidiosis during their neonatal stage may face long-lasting consequences on their overall productivity as adult animals. Studies have shown that these individuals may exhibit reduced milk production, lower fertility rates, and increased susceptibility to other diseases throughout their lives. The impact of cryptosporidiosis extends beyond the initial infection, creating a ripple effect that affects the animal's long-term value and profitability [10].

### Conclusion

Understanding the prolonged production ramifications of clinical cryptosporidiosis in newborn calves is crucial for farmers and veterinarians alike. Recognizing the "ripple effect" that this disease has on the growth, health, and future productivity of affected calves enables proactive management strategies to mitigate its impact. Implementing preventative measures, such as improved hygiene, proper colostrum management, and early detection of infected calves, can contribute to reducing the prevalence of cryptosporidiosis and minimizing its detrimental consequences. By addressing the long-term effects of this disease, farmers can enhance the well-being and profitability of their livestock operations. However, further costs such as increased feed and husbandry costs to get cattle to their market weights, additional labour involved in looking after sick calves, together with veterinary and treatment costs, make cryptosporidiosis a significant economic burden to the cattle industry. Management strategies to help reduce the impact

of cryptosporidiosis should be applied to improve the health and welfare of cattle, increase production efficiency and reduce contamination of the farm environment with infectious *Cryptosporidium* oocysts.

### References

1. Bennet R, Ijpeelaar J (2005) Updated estimates of the costs associated with thirty four endemic livestock diseases in Great Britain: a note. *J Agric Econ* 56:135–144.
2. Blanchard PC (2012) Diagnostics of dairy and beef cattle diarrhea. *Vet Clin N America Food Anim Prac* 28:443–464
3. Bouzid M, Hunter P R, Chalmers R M, Tyler KM (2013) *Cryptosporidium* pathogenicity and virulence. *Clin Microbiol Rev* 26:115–134
4. Casemore D P (1990) Epidemiological aspects of human cryptosporidiosis. *Epidemiol Infect* 104:1–28.
5. Castro-Hermida JA, González-Losada YA, Ares-Mazás E (2002) Prevalence of and risk factors involved in the spread of neonatal bovine cryptosporidiosis in Galicia (NW Spain). *Vet Parasitol* 106:1–10.
6. Chavatte-Palmer P, Velazquez MA, Jammes H, Duranthon V (2018) Review: epigenetics, developmental programming and nutrition in herbivores. *Animal* 12:363–71.
7. Wu G, Bazer FW, Wallace JM, Spencer TE (2006) Board-invited review: intrauterine growth retardation: implications for the animal sciences. *J Anim Sci* 84:2316–37.
8. Wu Y, Cheng Z, Bai Y, Ma X (2019) Epigenetic mechanisms of maternal dietary protein and amino acids affecting growth and development of offspring. *Curr Protein Pept Sci* 20:727–35.
9. Tao S, Dahl GE (2013) Invited review: heat stress effects during late gestation on dry cows and their calves. *J Dairy Sci* 96(7):4079–93.
10. Alharthi AS, Lopreiato V, Dai H, Bucktrout R, Abdelmegeid M, et al. (2019) Short communication: supply of methionine during late pregnancy enhances whole-blood innate immune response of Holstein calves partly through changes in mRNA abundance in polymorphonuclear leukocytes. *J Dairy Sci* 102:10599–605.