Giving calves ‘the best start’: Perceptions of colostrum management on dairy farms in England

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Abstract

Good colostrum management can confer protective immunity to newborn calves, making calves less susceptible to infectious disease, and fundamentally improving both their short- and long-term health, welfare and productivity. Industry recommendations commonly refer to ‘The Three ‘Q’s’ of colostrum management: the need for calves to receive sufficient ‘Quantity’ of high ‘Quality’ colostrum ‘Quickly’ after birth; some also include ‘sQueaky clean’ and ‘Quantification of passive transfer’. However, research to date suggests that the failure of passive transfer of colostral antibodies is common on commercial dairy farms, contributing to sub-optimal calf health and mortality. This paper explores why this may be the case by investigating stakeholder perceptions of colostrum management and how these perceptions might affect the practice of ensuring adequate colostrum administration to newborn calves. Calf rearing and youngstock management practices on English dairy farms were investigated using 40 in-depth semi-structured interviews: 26 with dairy farmers and 14 with advisors (including veterinarians, feed and pharmaceutical company representatives). Interviews were audio-recorded, transcribed and thematically coded for analysis. ‘The Three ‘Q’s’ were found to act as useful reminders about the goals of colostrum management, and a case can be made for further publicising the inclusion of ‘sQueaky clean’ and ‘Quantification of passive transfer’ as there remains a lack of focus on colostrum hygiene and measurement of successful antibody transfer. Knowledge of the ‘Q’s’ did not guarantee implementation, and time and labour constraints alongside farmer misconceptions must be addressed when offering professional advice on improving calf health. Further research to encourage on-farm collection and analysis of monitoring data including rates of passive transfer is particularly needed. Advisors must not overlook the importance of colostrum management when assessing farm practices and ensure that they promote evidence-based recommendations if dairy calf morbidity and mortality is to be reduced.

Keywords: animal welfare, colostrum, dairy calf health, dairy calf welfare, qualitative research, stakeholder perceptions

Introduction

The ingestion of colostrum is of great importance to bovine neonates as it provides nutritive and non-nutritive components that influence the development of the gastrointestinal tract and the nutritional, metabolic and immune status of calves (Blum 2003). Of particular importance are the high levels of immunoglobulin (mainly IgG) in colostrum (Godden 2008). Calves are born agamaglobulinaemic so depend on the absorption of maternal colostral immunoglobulins through the wall of the small intestine in the first 24 h of life (Weaver et al 2000; Godden 2008). Failure of passive transfer from colostrum is diagnosed when calf serum levels of IgG or total protein are less than 10 or 50 g L⁻¹, respectively (Patel et al 2014). Failure of passive transfer increases calves’ susceptibility to infectious disease and mortality (Wittum & Perino 1995; Raboisson et al 2016), reduces growth rates (Robison et al 1988), and has been linked to lower milk yield during their first lactation (DeNise et al 1989). The total cost related to failure of passive transfer has been estimated as €60 per calf in European dairy systems, including costs related to mortality, morbidity and reduced average daily weight gain (Raboisson et al 2016). Current industry recommendations for colostrum management to promote successful passive transfer are based around principles commonly referred to as ‘The Three ‘Q’s’: ‘Quantity’, ‘Quickly’ and ‘Quality’ (Patel et al 2014; Agriculture and Horticulture Development Board [AHDB] Dairy 2018). Calves should consume a volume of colostrum equating to at least 10% of their bodyweight (3–4 L for a 30–40 kg calf) (Godden 2008). It is a legal requirement in England for calves to receive colostrum within 6 h of birth.