

Improving the Health and Welfare of Dairy Calves

Investigates the effects of social contact, stockperson behaviour and transport on the health and welfare of dairy calves.

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Introduction

In the dairy farming industry close and frequent contact between stockpersons and cows is necessary to ensure health and welfare standards are met. The latest welfare research reveals that improvements can be made to calf-raising systems to promote ongoing productivity and profitability of the dairy herd. It has also identified the importance of social contact among calves, stockperson behaviour and transport as areas crucial to calf welfare.

Discussion

Calves raised in pairs or small groups show increased ability to regulate social interactions compared to calves raised individually. They respond less fearfully to unfamiliar calves and situations (Duve & Jensen, 2011; De Paula Vieira *et al.*, 2012) as well as increasing their intake of concentrate feed (De Paula Vieira *et al.*, 2010). This has implications for both welfare and production as calves are typically raised in individual pens or hutches, due to concerns that close contact among them could aid horizontal transmission of pathogens. Jensen & Larsent (2014) investigated what effect the level of social contact had on calf behaviour and health. Holstein calves (n=110) were paired and allocated a treatment with increasing levels of social contact, including auditory, visual, tactile and paired housing for a period of six weeks. They were then subjected to a novel social and environmental test. Calves raised in pairs had the shortest latency to approach and sniff an unfamiliar calf, and their mean heart rates were lower than those of individually housed calves in a novel environment. The most significant finding was that treatment had no effect on faecal or respiratory score, indicating that there is no advantage to the health of the calves by preventing social contact. Indeed, raising calves individually may lead to fear or aggression responses when calves are moved into a herd situation. The possible long-term effects of social contact in pre-weaned calves merits further investigation, as the life-long welfare of dairy cows may be improved by development of normal social behaviours.

A good human-animal relationship (HAR) is another factor that is not only essential for calf welfare but also for mature dairy cow welfare and production. Aversive handling results in decreased milk yield and increased residual milk yield; these factors are often associated with nervous or frightened cows or poor milking routines (Rushen *et al.*, 1999). Qualitative behavioural assessment (QBA) is a method that assesses animal welfare through the scrutiny of animal body language (Wemelsfelder *et al.*, 2001). However, this method has never been used to characterise stockperson behaviour. A study by Ellingsen *et al.* (2014) aimed to define stockperson behaviour through QBA and develop a model to determine if stockperson and calf behaviour correlate.

The assessments were performed in 2006-2008 by the same observer on 110 Norwegian dairy farms and involved monitoring the interactions between the stockpersons (n=110) and calves (n=550). Analysis of body language revealed four different stockperson handling styles. Individuals identified with management styles of "calm/patient" and "positive interactions" raise calves with a higher degree of positive mood, characterised by QBA descriptors such as content and sociable. In direct contrast, management styles identified as "insecure/nervous" and "dominating/aggressive" correlated with more negative calf moods, with QBA descriptors identifying fearfulness and frustration. More research is required on QBA of humans and this study could have been improved by the inclusion of calf physiological responses to reinforce QBA descriptors. Even though the stockperson was blind to the purpose of the study, the presence of the assessor may have curbed their normal interaction behaviours. While the QBA of stockperson behaviour has not been validated, this study shows potential to predict animal behaviour from stockperson QBA, and confirms a link between stockperson and calf behaviour.

Transport of bobby calves (unweaned vealers) remains a contentious animal welfare issue, partly because there is no law specifying the loading density for their transport. However, the Australian Animal Welfare Standards

(2012) do recommend that calves younger than 30 days should have sufficient room to lie on their sternum and should be provided with bedding. Jongman & Butler (2014) aimed to identify the minimum space allowance for transport and the effect of age and flooring to minimise risk to calf welfare. Male bobby calves 3, 5 and 10 days old were transported for 12 hours in a cattle truck in pens of 4 with space allocations of 0.2, 0.3 and 0.5m² per calf and flooring of either solid metal, metal mesh or straw bedding.

Jongman & Butler's (2014) results support previous studies, showing that if there is sufficient space, young calves prefer to lie down more than 60% of the time during transport (Knowles *et al.*, 1997). Smaller calves may find transport more exhausting than larger calves as they spend more time lying down both during transport (Atkinson, 1992). More than double the level of creatine kinase (CK) was recorded in animals transported at 0.2m² compared to other stocking densities suggesting muscle damage from exertion or direct trauma, such as bruising. The major finding was that the effect of space restriction was less pronounced when straw bedding was provided because it resulted in increased lying behaviour and decreased CK activity. This study indicates that minimum space allowance should be 0.3m² per calf, with greater benefits achieved by providing 0.5m² per calf. Bedding also alleviates the negative impacts of transport, and while straw bedding may not be practical in a commercial setting, further research into alternative flooring would be of great benefit to calf welfare.

Conclusions

Recent research has highlighted several areas with potential to improve health and welfare of dairy calves. Calves housed in pairs or small groups have an increased ability to regulate social behaviour and may be more able to cope with unfamiliar environments (De Paula Viera *et al.*, 2012). QBA of the stockperson confirms a link between stockperson and calf behaviour, hence better education and increased self-awareness of the stockperson may lead to more positive interactions with calves. Minimum space allowance and the importance of bedding during transport have been identified, which may strengthen the recommendations of the Australian Animal Welfare Standards.

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