

Timing of Transfer from Individual Boxes to Group Pens in Newly Weaned Holstein Calves: Matters?

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Abstract

The objective of this article was to propose a new practical transfer protocol from individual boxes to group pens to mitigate weaning distress and improve performance of Holstein calves in the post-weaning period. Transition from milk to solid feed is considered a stressful experience. Despite many efforts to reduce weaning stress, producers are still complaining about undesirable weaning consequences. Depressed feed intake, weight loss, and increased vocalization and activity are the common signs that can depress newly-weaned dairy calves' performance and welfare. Post-weaning, young calves are totally dependent on solid feed intake to meet their nutrient requirements. Therefore, rumen capacity to digest feeds and absorb substrates is a key factor determining weaning success. In individual rearing systems, the weaning time is coincident with moving to group pens, imposing additional stress to young calves. Such calves are more distressed and susceptible to infectious diseases such as pneumonia and diarrhea. Driven by our farm experience, we propose that the time at which the newly weaned calves are transferred from individual boxes to group pens should be postponed for about one week. This opportunity would allow calves to adapt to the new group conditions less stressfully. As a result, solid feed intake and growth-health would improve and stressors would lose potency.

Keywords: Weaning Stress; Dairy Calf; Solid Feed Intake; Welfare; Transfer

Philosophy, Discussion, and Protocol

This article aimed to provide a new practical transfer protocol from individual boxes to group pens to reduce weaning distress and improve growth and health of Holstein dairy calves in the post-weaning period. During the pre-weaning period, calves are mostly dependent on energy and protein supplied from milk and partly from solid feed. However, as a ruminant animal, calves should adapt effectively and healthily to solid feed intake (i.e., forage and concentrate) such that they can maintain highly competitive feed intake and growth and health in the post-weaning period. Transition from milk to solid feed requires nutritional and physiological adaptations because calves must meet their requirements solely from solid feed intake instead of the rich milk [1]. Weaning stress has tremendous effects on calves' welfare; causing distress, weight loss, and health issues. As a result, smooth transition from milk to solid feed with minimal effects on calf performance is a main goal.

Various weaning methods are used in dairy farms depending on farm facilities and management strategies. Some producers use abrupt or gradual methods to wean their calves and others may wean based on calf age or size as indicators of weaning time. Abrupt weaning induces more stress on calves, resulting in depressed feed intake and weight loss; thus it is not usually recommended. Gradual weaning is conducted based on solid feed intake of calves around weaning time [2]. It seems that increased feed intake before weaning is essential for mitigating weaning distress. It has been demonstrated that metabolic and physical adaptations in rumeno-intestinal nutrient assimilation and hepatic substrate metabolism are needed to effectively utilize fermentation products (e.g., volatile fatty acids) as a major source of energy instead of milk nutrients [3]. Hence, depressed growth and health in abruptly weaned calves can be attributed to lower solid feed intake as well as to limited digestive and absorptive capacity of gastrointestinal tract at the time of weaning. In a study comparing abrupt and gradual weaning, the gradually weaned calves had greater starter concentrate intake and weight gain than did those weaned abruptly [4].

A generally accepted guideline consists of consuming about 1.8 kg of starter concentrate for about 3 consecutive days for weaning to occur timely and successfully [5]. However, it seems that feed intake during days after weaning has been ignored in the literature. Feed intake of dairy calves should increase markedly immediately after weaning to meeting their subsequent growth requirements. According to our observations, the week after

weaning is as important as the last week of milk feeding. As such, the weaning period could be divided into two distinct phases including the week before weaning and the week after weaning. It can be hypothesized that increased starter feed intake immediately after weaning may contribute to further rumen development and gastro-intestinal tract adaptations to better utilize fermentation products. The importance of rumen development as a functional system for weaning and life-time productivity of dairy heifers has been reviewed recently [6].

Transport itself is one of the main stressors that affects welfare and growth of young calves. In individual rearing systems, usually, calves are moved to group pens immediately after weaning. Introducing to a new strange environment, interaction with other calves, and feeding from bunk instead of bucket are amongst the factors that could negatively impact on weaned calves' biology when they are placed suddenly in group pens. Therefore, minimizing these stressors would be an optimal management practice to successfully minimize the weaning stress. In our farm experience, calves transferred to group pens after one week of weaning (instead of immediately after weaning) are mostly less distressed. They are less vocalized and are able to locate and use feed bunk earlier and easier than their peers that are moved from individual boxes to group pens abruptly. Such calves could adapt more successfully and less stressfully to new conditions. Overall, therefore, allowing calves to gradually and effectively increase solid feed intake for about one week (after weaning) before transfer to group pens can be a useful strategy to reduce weaning stress around weaning. This 1-week opportunity before introduction to group pens should improve their post-weaning performance and welfare.

Conclusion

Experience-driven, the time of transfer from individual boxes to group pens at weaning is believed to affect post-weaning performance of dairy calves. Solid feed intake increases effectively after weaning in gradually weaned calves. As such, newly weaned calves should be allowed to optimally increase their feed intake before moving from individual boxes to group pens. It is proposed that weaned calves be kept in individual boxes for about one week before they are transferred to group pens. This opportunity would allow easier and less-stressful adaptations to forage and concentrate intake and peer interactions. As a result, growth and health of calves would improve.

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