

Dialing into your Best Dairy: Reaching your Herd's Genetic Potential, Neonate Phase

By: Casey Havekes and Alycia Drwencke

Many years of research have demonstrated that from birth to weaning is a critical period in the dairy animal's life and the management decisions made during this time could have long term effects on that calf's future performance, health, and productivity. Several key management tips have been highlighted here which should be considered to maximize the success of the neonate period.

Calving Ease

While difficult calvings are unavoidable at times, it is important to consider the toll it may have on not only the mother, but also on the newborn calf. Utilizing the [VIGOR scoring system](#) can be an effective strategy in assessing the status of newborn calves. This scoring chart focuses on 5 areas: visual appearance, initiation of movement, general responsiveness, oxygenation, and heart and respiration rates. The chart walks you through a series of observations and assigns the calf a score – the higher the score, the less vigorous the calf is. Calves that are deemed less vigorous should be monitored, and at times, offering less vigorous calves an NSAID has been shown to improve success in early life.

Colostrum Management & Nutrition

In addition to basic colostrum management and getting high quality colostrum into the calf quickly, there are some additional considerations grounded in recent research. A few key takeaways include:

- Feeding 1 gallon of colostrum resulted in higher average daily gain, greater chance of survival through their second lactation, and higher milk yield through their second lactation compared to calves fed half a gallon.
- With strong colostrum management, two separate, smaller colostrum feedings within a 12-hour window can be utilized. This approach does not reduce total serum protein levels; however, please note that high quality colostrum must be used for both feedings, not the second milking from the cow.
- Collecting and feeding transition milk (the 2nd to 4th milking after parturition) is nutritious and beneficial to the newborn calf following the initial colostrum feedings, and contributes to improved intestinal development. An alternative strategy is to mix colostrum with milk or milk replacer as a transition to take advantage of these benefits.
- Calves can handle larger meals! When calves are fed with automated feeders they prefer to consume ~1.5 gallons per meal, with some calves consuming up to ~2 gallons per meal.
- With the right plane of nutrition, calves should have no problem achieving an ADG of 2.2 pounds per day.
- Providing feed and water by 3 days of age is now a requirement as per FARM 4.0.
- When feeding whole milk, keep in mind that calves need consistency. Check the solids content periodically to make sure the levels are adequate and consistent. Adding a balancer/enhancer could be beneficial if you run into issues with solids being out of line.

Cleanliness & Calf Comfort

- Maintaining a clean, dry, and comfortable maternity pen for the calf and the cow will help reduce the risk of naval infections for the calf and contaminant exposure for the cow.
- Keeping the calf dry in the winter will help with proper body temperature regulation.
- All feeding equipment, including bottles, buckets, nipples, tube feeders, etc., should be sanitized between each use. The same applies for birthing equipment such as calf jacks, chains, and so on.
- Using an appropriate washing detergent with hot water at 120 degrees Fahrenheit followed by proper drying of equipment is essential to reduce pathogen growth.
- Ventilation is important for calf health. Calves require 4 air exchanges per hour in the winter, and 60 air exchanges per hour in the summer. There has also been an increased amount of literature showing the benefits of providing heat abatement of fans and a shade source to calves.
- Socially housing calves can be beneficial, including improvements in their ability to learn and cope with change. If calves are socially housed, group size should ideally be kept around 8, but can increase up to 15 with appropriately sized pens and management. The Ontario Ministry of Agriculture, Food and Rural Affairs has a minimum suggestion that calves less than 6 weeks of age receive 2.0 m²/calf, and this allotment increases to 3.5 m² after that, until weaning. Grouping early in life and maintaining consistent social structures can reduce stress. When regrouping is necessary, try to keep each calf with at least one familiar pen mate to further reduce the stress associated with the group change.

Weaning

- Weaning is a stressful period so limiting the number of changes that occur during this time period is essential (i.e. pen changes, regrouping, disbudding, further nutrition changes).
- Consider weaning based on starter intake rather than age. In order to avoid post-weaning growth slumps, calves should be consuming 4.5lbs of starter per day by the time they are fully weaned. This means calves should be consuming upwards of that at the time the weaning process starts.
- If weaning is solely based on age, research has shown that calves have better post-weaning growth if they are weaned at 8 weeks compared to 6 weeks.
- Gradual or step down weaning over a 2-week period is favorable from a behavioral standpoint and helps avoid post-weaning growth slumps.

Overall, this early life period is a vulnerable time and there are many additional considerations beyond what has been discussed here. Implementing these strategies can help maximize success early in the calf's life. Careful monitoring of the calf at birth, colostrum management, nutrition, comfort and ventilation, cleanliness, and weaning are all areas that require attention to detail. For help on these topics or for additional considerations, reach out to your local Cornell Cooperative Extension Dairy Management Specialist.