

When Calf Management Becomes a Welfare Standard

Alvaro Garcia, DVM, PhD
Global Farming Digest

What happens when a calf-management recommendation becomes a welfare requirement? New Zealand is providing an interesting example. In September 2026, the Ministry for Primary Industries released a revised *Code of Welfare: Dairy Cattle*, which will come into effect on April 19, 2027. Among the changes are specific requirements affecting how young dairy calves are fed, sheltered, managed, and transported.

These changes are relevant beyond New Zealand because they illustrate a broader transition in animal agriculture. Practices traditionally considered part of good calf management are increasingly becoming minimum expectations for animal care. This distinction is particularly important because regulations require observable and verifiable thresholds, while biology is rarely that simple.

The challenge, therefore, is not simply to understand what producers will be required to do, but whether meeting the requirement achieves the biological outcome it was intended to protect.



THE MINIMUM STANDARD

Milk or milk replacer

$\geq 2 \times$ daily

First 14 days of life

Feeding frequency alone does not define nutritional adequacy.

Feeding twice daily: a minimum, not a nutritional program

One of the most significant changes is also one of the easiest to understand. During their first two weeks of life, calves must receive milk or milk replacer at least twice daily. The requirement establishes a clear minimum and addresses an important welfare concern during a period when calves depend entirely on liquid feed.

The biological reasoning is sound. Young calves have high nutrient requirements relative to their body size and, under natural conditions, would consume several milk meals throughout the day. Feeding the entire daily milk allowance in one meal may be convenient, but convenience and calf biology are not necessarily the same thing.

The scientific evidence, however, suggests that feeding frequency is only one part of the equation. A systematic review published in the *Journal of Dairy Science* examined 94 studies addressing milk allowance, feeding method, and feeding frequency. Higher milk allowances generally improved preweaning growth, reduced behavioral indicators of hunger, and increased play behavior. Feeding milk through a teat also reduced cross-sucking and other abnormal oral behaviors. Feeding frequency itself produced less consistent effects on intake and growth, although there was evidence that calves fed less frequently may experience greater hunger.

This distinction is important. A calf can be fed twice daily and satisfy the new requirement while still receiving inadequate nutrients. Conversely, increasing feeding frequency does not automatically guarantee better growth, health, or welfare. Whether whole milk or milk replacer is used, nutrient density, digestibility, consistency, hygiene, and total daily intake determine the nutritional value of the liquid feeding program (Garcia, 2025).

The review provides useful perspective on the relative importance of these factors. Ninety percent of the studies evaluating average daily gain during the preweaning period reported improved growth with greater milk allowance. At the same time, higher milk allowances reduced starter intake before weaning, reinforcing the importance of a gradual and properly managed transition from milk to solid feed.

For the producer: Feeding milk or milk replacer at least twice daily during the first 14 days will establish the regulatory minimum, but the feeding program should also provide enough nutrients to support appropriate growth without prolonged hunger. Knowing how much milk and milk solids calves actually consume is therefore more informative than feeding frequency alone.

For the consultant: Asking how many times calves are fed is only the beginning. Evaluate daily milk allowance, solids concentration, feeding method, growth rate, starter and water availability, morbidity, sanitation, and the weaning program. With automated feeders, actual intake and visit patterns can provide more information than the programmed allowance.

Shelter, health, and automated feeding

Nutrition is only one part of early calf management. The revised New Zealand standards also reinforce requirements for appropriate shelter, particularly for newborn calves removed from their mothers and for sick animals. This reflects a basic biological reality. Young calves have limited ability to cope with environmental extremes, particularly when they are wet, exposed to wind, inadequately nourished, or already experiencing disease.

Providing shelter, however, involves more than placing a calf under a roof. Bedding condition, drainage, ventilation, stocking density, drafts at calf level, and the ability to remain dry all influence the environment experienced by the animal. A facility can therefore satisfy a structural definition of shelter while still providing a poor environment for the calf.

Automated feeding introduces another dimension. The revised code requires automated feeding systems to be checked at least every 24 hours and problems corrected promptly. This is increasingly relevant as larger calf-rearing operations rely on automated milk feeders to manage groups of animals.

Automation can improve consistency and provide information that would be difficult to collect manually, including milk intake, drinking speed, meal frequency, and feeder visits. At the same time, it concentrates risk. A feeding error in an individual bucket affects one calf; a malfunctioning automated system can affect an entire group.

This makes the information generated by the feeder particularly valuable. Changes in milk intake or feeding behavior may provide an early indication that a calf requires attention, sometimes before obvious clinical signs develop. The objective should therefore not be simply to confirm once every 24 hours that the machine is operating, but to use the information it generates to determine whether the calves themselves are behaving and consuming normally.

For the producer: Check the calves as well as the equipment. Confirm that milk is being delivered at the correct concentration and temperature, nipples and lines are functioning and clean, calves can access the feeder, and the housing environment remains dry and appropriate. An operating machine does not necessarily mean that every calf is consuming what she should.

For the consultant: Review the system rather than the feeder alone. Look at milk intake, visit patterns, drinking behavior, growth, morbidity, stocking pressure, hygiene, and how quickly deviations are investigated. Also determine what contingency exists if the automated feeder fails. A welfare standard requiring a daily equipment check should be viewed as the minimum level of oversight, not the endpoint.

Transport begins with the calf, not the truck.

Another key area concerns calves leaving the farm for sale or slaughter. The revised standards include requirements involving minimum age and fitness for transport. A calf must be at least four full days, or 96 hours, old and meet physical criteria indicating that it is capable of tolerating the journey.

Age provides a practical threshold, but again it cannot describe the entire animal. Two calves of exactly 96 hours of age may differ in vigor, hydration, nutritional status, disease exposure, ability to stand and walk, and capacity to cope with transportation.

This is why fitness for transport needs to remain an individual-animal assessment rather than becoming simply a calculation of hours since birth. The presence of a dry, dried-up navel, firm and worn hooves, normal movement, and the ability to stand are useful observable criteria because they complement chronological age with evidence of physical development.

Management before transport is equally important. A calf that technically meets the age requirement but has been inadequately fed, is dehydrated, weak, or developing diarrhea is biologically different from a healthy, vigorous calf of the same age. The regulation can establish when transport may begin, but management determines the condition of the calf when that moment arrives.

For the producer: Do not use 96 hours as an automatic authorization to ship. Evaluate each calf individually before transport, including vigor, hydration, ability to stand and move normally, navel condition, hoof development, feeding history, and signs of disease. If there is doubt about fitness, age alone should not determine the decision.

For the consultant: Examine what happens during the days leading to transport. Review colostrum management, milk feeding, health records, morbidity, calf identification, criteria used to determine fitness, and the interval between the last milk feeding and departure. A transport problem may originate well before the calf reaches the loading area.

The difference between meeting the rule and managing the calf.

New Zealand's revised standards provide a useful example of the challenge involved in converting animal science into welfare requirements. Regulations need thresholds. Producers and inspectors need to know whether a requirement has been met. Calves, however, respond to the entire management system rather than to individual regulatory thresholds.

Feeding twice daily is measurable, but it does not by itself demonstrate adequate nutrition. Checking an automatic feeder every 24 hours is measurable, but the calves using it may provide evidence of a problem much earlier. Reaching 96 hours of age is measurable, but it does not guarantee that an individual calf is fit for transport.

This is where the roles of the producer and consultant complement one another. The producer observes and manages the calf every day. The consultant can examine the system, interpret the biological responses, and determine whether compliant management is actually producing the intended outcome.

Minimum welfare standards establish an important floor, but they should not become the management target. The real value of New Zealand's changes may therefore be the questions they encourage producers and consultants to ask. Are calves receiving enough nutrients rather than simply enough feedings? Are automated systems telling us which animals need attention? Are calves genuinely fit for transport rather than simply old enough? The objective should not be to manage calves at the minimum standard, but to manage them well enough that the minimum rarely becomes relevant.

Further reading

Garcia, A. 2025. "Impact of Milk Replacer vs. Whole Milk in Calf Feeding." Dellait Animal Nutrition & Health.

<https://dellait.com/impact-of-milk-replacer-whole-milk-in-calf-feeding/>

Ministry for Primary Industries. 2026. *Code of Welfare: Dairy Cattle*. New Zealand Government.

Welk, A., N. D. Otten, and M. B. Jensen. 2023. "Invited Review: The Effect of Milk Feeding Practices on Dairy Calf Behavior, Health, and Performance: A Systematic Review." *Journal of Dairy Science* 106:5853–5879. <https://doi.org/10.3168/jds.2022-22900>