TFS-Ruminants-Equines-2025-01-EN
Version 1 – October 2025
https://doi.org/10.5281/zenodo.17226448

Group housing of calves

Introduction

Under natural conditions, the mother-calf pair reintegrates with the herd a few days after calving. Thereafter, interactions between calves increase and mother-calf distance increases gradually. During this period, calves establish long-lasting bonds with conspecifics.

On most dairy farms, calves are separated from their mother shortly after birth and often kept in individual pens or hutches, mainly to reduce the risk of disease transmission. The early dam-calf separation followed by social isolation are known to have negative impacts on calf welfare: such conditions increase calf reactivity and decrease social and cognitive abilities.

Group housing of calves has benefits for health, behaviour, welfare and performance, compared to individual housing. Nevertheless, if not managed adequately, this practice presents some risks e.g. risk of disease transmission and competition between calves.

Legal requirements

Council Directive 2008/119/EC of 18 December 2008 lays down minimum standards for the protection of calves.

> 'no calf shall be confined in an individual pen after the age of eight weeks'
> (Article 3, Paragraph 1)

Method for inspection

When calves are group housed, it is necessary to monitor risks by observations of calves, their environment and asking information from the farmer.

Animal-based indicators for calves:

- Body condition score
- Injuries
- Behaviour (e.g. social play, stereotypies)
- Clinical signs of diseases

Environment-based indicators:

- Cleanliness of the pen and equipment
- Quality of the bedding
- Food and water access

Information to ask the farmer includes:

- Cleaning protocol
- Mixing and weaning practices
- Feeding practices
- Calf mortality records

In the present ***Thematic factsheet***, the benefits of group housing on calf behaviour, health and production are described. Recommendations for successful group housing are then presented. The indicators to be used during inspections are described in ***Indicator factsheet 'Group housing of calves'.***

For more information about individual housing of calves see ***Thematic and Indicator factsheets 'Visual and tactile contact in individually housed calves'.***

For more details about feeding practices see ***Thematic and Indicator factsheets 'Frequency and quantity of milk feeding to dairy calves'*** and ***'Colostrum provision to calves'.***

Benefits of group housing

The main benefit of group housing is the opportunity to express social behaviour with other calves – including social play. It helps calves to develop their social skills and build long-lasting bonds with conspecifics. Group housing also prepares calves for future challenges (e.g. facing novel situations) and improves their cognitive abilities (e.g. learning abilities). Moreover, group housing decreases the occurrence of some abnormal behaviours, such as tongue rolling.

Group housing improves calf welfare without impairing production aspects (e.g. growth rate) and can even improve it. Scientific studies report either an increase or decrease in the prevalence of diseases, or no impact. One study found that group housing strengthens the immune system of calves compared to individual housing.

Recommendations for successful group housing

Reduction of the risk of disease transmission

Group housing may increase the risk of disease transmission. The risk to calf health can be mitigated by good hygiene of the environment. For instance, comfortable, clean, dry and dust-free bedding must be provided and biosecurity measures (e.g. footbath) must be applied to avoid contaminating the facilities from external sources. Group instability (addition and removal of calves to the group) as well as mixing calves of different ages, increases disease prevalence, thus, stable groups with calves of similar age are recommended. Moreover, group size is also of importance to mitigate disease transmission risks. Indeed, respiratory disorders are more frequent in large groups. Groups constituted by more than 7 calves are estimated to present a higher prevalence of respiratory disorders and mortality associated with respiratory disease than smaller groups. It is thus recommended to not exceed 7 calves per group before 6 weeks of age. In addition, food (colostrum, milk) and water must be provided in adequate quantity and quality to ensure calves' vigour.

Reduction of the risk of competition and promotion of group cohesiveness

Group housing can also lead to resource competition among calves, making the access to resources difficult for some calves. This is manifested by aggressive interactions. Resources such as food, teat dispensers, water, bedding, and enrichments must be provided in sufficient quantity to avoid competition. For instance, adequate access to food can be managed by providing milk, or milk replacer, to all calves in the group at the same time. For that, one teat dispenser or one bucket must be available per calf and barriers between teats/buckets could be used. Moreover, the resources must be placed so that the accessibility cannot be blocked by individual animals (e.g. no water bowl in a pen corner). Space allowance also plays a crucial role for successful group housing in preventing competition (e.g. for access to the lying area) and promoting locomotor play. A space allowance of 3m²/calf allows calves to lie in a relaxed posture, but 20m² is highly recommended to allow calves to fully express locomotor play behaviours. Group stability should also be favoured over mixing to facilitate group cohesiveness.

Reduction of the risk of cross-sucking and fulfilment of sucking needs

Cross-sucking is also a risk of group housing calves (Figure 1). Cross-sucking is defined as *"sucking the udder-region or the scrotal area or any other body part of another calf, which may reflect frustrated motivation, lead e.g. to umbilical infections or be continued after weaning."* (Größbacher et al., 2018). Again, providing calves with milk and water in adequate quantity is a prerequisite to avoid cross-sucking. Teat dispensers are also highly recommended over buckets to deliver milk, or milk replacer, with several meals per day, allowing calves to express their natural sucking behaviour. Dry teats can also be provided but their effect to reduce cross-sucking is less clear and still needs investigation.

Table 1 details the benefits and risks of group compared to individual housing of calves and gives recommendations for successful group housing.

Figure 1: Cross-sucking behaviour in calves. © BOKU/GRÖSSBACHER, Verena

Table 1: Benefits and risks of group compared to individual housing of calves and recommendations for successful group housing.

	Benefits of group vs. individual housing	Risks of group housing	Recommendations for successful group housing
Health	More effective immune system	Disease transmission between calves	Clean pens and feeding equipment Clean water Good quality and adequate quantity of milk/colostrum[1] Comfortable, clean, dry and dust-free bedding Biosecurity measures (e.g. footbath) Stable groups
Social behaviour	Social interactions, social playing and long-lasting social bonding Promotion of social skills	Competition for access to resources, aggression	Adequate space per calf Homogenous age groups At least one teat dispenser/bucket per calf Barriers between teat dispensers Providing several milk meals/day[1] Providing adequate quantity of milk[1] Stable groups
Abnormal behaviour	Decreased prevalence of abnormal behaviours (tongue rolling and non-nutritive sucking), if milk is provided in an adequate quantity and at an adequate frequency	Cross-sucking	Adequate quantity of milk (20% of calves weight until 6–8 weeks) Providing milk through teat dispensers *Ad libitum* access to water Several milk meals/day (ideally ≥4) Gradual weaning (e.g. milk meal size and number of meals gradually reduced during at least 2 weeks) preferably after 12 weeks of age Homogenous age groups
Cognition	Increased cognitive abilities	None	Provide environmental enrichment[2]
Reactivity	Lower reactivity to novelty (food, environment and conspecifics) Decreased emotional reactions at mixing, weaning and during restraining	None	Provide environmental enrichment[2]
Production	Neutral or positive impact on feed intake and growth	Weight variation between calves due to food competition	Adequate quantity and quality of food[1] and no competition for food access Stable groups

[1]For more details about feeding practices see ***Thematic and Indicator factsheets 'Frequency and quantity of milk feeding to dairy calves'*** and ***'Colostrum provision to calves'***

[2]For more details about environmental enrichment see ***Thematic factsheets 'Environmental enrichment for ruminants and equines: the basics' and 'Environmental enrichment for cattle' and Indicator factsheet 'Environmental enrichment for ruminants and equines'***.

Legal requirements

The legal requirements referred to are based on EU legislation. National regulations in EU Member States may exceed these requirements.

Council Directive 2008/119/EC of 18 December 2008 laying down minimum standards for the protection of calves.

'(…) 'calf' means a bovine animal up to six months old'
(Article 2, Paragraph 1.)

'From 1 January 1998, the following provisions shall apply on all newly built or rebuilt holdings and on all those brought into use after that date:
(a) no calf shall be confined in an individual pen after the age of eight weeks, unless a veterinarian certifies that its health or behaviour requires it to be isolated in order to receive treatment. (…)
(b) for calves kept in groups, the unobstructed space allowance available to each calf shall be at least equal to 1,5 m^2 for each calf of a live weight of less than 150 kilograms, at least equal to 1,7 m^2 for each calf of a live weight of 150 kilograms or more but less than 220 kilograms, and at least equal to 1,8 m^2 for each calf of a live weight of 220 kilograms or more.
However, the provisions of the first subparagraph shall not apply to:
(a) holdings with fewer than six calves;
(b) calves kept with their mothers for suckling.'
(Article 3, Paragraph 1.)

'Materials used for the construction of calf accommodation and in particular of boxes and equipment with which calves may come into contact must not be harmful to the calves and must be capable of being thoroughly cleaned and disinfected.'
(Annex I, Paragraph 1.)

'The accommodation for calves must be constructed in such a way as to allow each calf to lie down, rest, stand up and groom itself without difficulty.'
(Annex I, Paragraph 7.)

'Calves must not be tethered, with the exception of group-housed calves which may be tethered for periods of not more than one hour at the time of feeding milk or milk substitute. Where tethers are used, they must not cause injury to the calves and must be inspected regularly and adjusted as necessary to ensure a comfortable fit. Each tether must be designed to avoid the risk of strangulation or injury and to allow the calf to move in accordance with point 7.
(Annex I, Paragraph 8.)

'Housing, pens, equipment and utensils used for calves must be properly cleaned and disinfected to prevent cross-infection and the build-up of disease-carrying organisms. Faeces, urine and uneaten or spilt food must be removed as often as necessary to minimise smell and avoid attracting flies or rodents.'
(Annex I, Paragraph 9.)

(…) 'The lying area must be comfortable, clean, and adequately drained and must not adversely affect the calves. Appropriate bedding must be provided for all calves less than two weeks old.'
(Annex I, Paragraph 10.)

'All calves must be fed at least twice a day. Where calves are housed in groups and not fed *ad libitum* or by an automatic feeding system, each calf must have access to the food at the same time as the others in the group.'
(Annex I, Paragraph 12.)

'All calves over two weeks of age must have access to a sufficient quantity of fresh water or be able to satisfy their fluid intake needs by drinking other liquids. However, in hot weather conditions or for calves which are ill, fresh drinking water must be available at all times.'
(Annex I, Paragraph 13.)

'Feeding and watering equipment must be designed, constructed, placed and maintained so that contamination of the calves' feed and water is minimised'
(Annex I, Paragraph 14.)

References

EFSA AHAW Panel (EFSA Panel on Animal Health and Animal Welfare), Nielsen S.S., Alvarez J., Bicout D.J., Calistri P., Canali E., Drewe J.A., Garin-Bastuji B., Gonzales Rojas J.L., Schmidt C.G., Herskin M., Michel V., Miranda Chueca M.A., Padalino B., Pasquali P., Roberts H.C., Spoolder H., Stahl K., Velarde A., Viltrop A., Jensen M.B., Waiblinger S., Candiani D., Lima E., Mosbach-Schulz O., Van der Stede Y.,Vitali M. & Winckler C. (2023). Scientific Opinion on the welfare of calves. EFSA Journal 2023;21(3):7896, 197 pp. https://doi.org/10.2903/j.efsa.2023.7896

Lesimple, C., & Veissier, I. (2024). Mini-review - Group housing of calves. *Care4dairy*. https://doi.org/10.5281/zenodo.10514348

Größbacher, V., Winckler, C., & Leeb, C. (2018). On-farm factors associated with cross-sucking in group-housed organic Simmental dairy calves. Applied Animal Behaviour Science, 206, 18-24. https://doi.org/10.1016/j.applanim.2018.05.030

Mounier, L., Veissier, I., Andanson, S., Delval, E., & Boissy, A. (2006). Mixing at the beginning of fattening moderates social buffering in beef bulls. Applied Animal Behaviour Science, 96(3), 185-200. https://doi.org/10.1016/j.applanim.2005.06.015

Nielsen, P. P., Jensen, M. B., & Lidfors, L. (2008). Milk allowance and weaning method affect the use of a computer controlled milk feeder and the development of cross-sucking in dairy calves. Applied Animal Behaviour Science, 109(2), 223-237. https://doi.org/10.1016/j.applanim.2007.01.015

Welk, A., Otten, N. D., & Jensen, M. B. (2023). Invited review: The effect of milk feeding practices on dairy calf behavior, health, and performance—A systematic review. Journal of Dairy Science, 106(9), 5853-5879. https://doi.org/10.3168/jds.2022-22900