CARE4DAIRY

Calf Health

Good practice

Best practice

Best practice farms ensure their calves enjoy the best possible health by identifying risks, providing prophylactic health care management and ensuring responsive intervention, as soon as illness or injuries are identified.

Why is this important?

Calf diseases have a major impact on growth rates, physical and mental development and future performance of calves, and on farm sustainability. Respiratory diseases and diarrhoea are the most frequent health issues in calves under 12 weeks of age. These conditions are multi-factorial and can include a number of infectious agents (e.g. Bovine respiratory disease (BRD) virus, rotavirus, E. coli, Salmonella, etc.) and non-infectious predisposing factors (e.g. inadequate colostrum intake, failure in neonatal hygiene, environmental contamination, etc.). Ensuring that the diseases which can be prevented or controlled are well managed, and that plans are in place for when unavoidable illness or injury does occur, will improve the welfare of the calves and minimise risk for the farm.

All calves should be treated in the same way to ensure their welfare and health, whatever their economic value and future destination.

Good practice

- To ensure adequate passive transfer of antibodies, calves should consume colostrum following good and best practices as described in the **Calving Care - Calf factsheet**. Deficient colostrum intake results in reduced immunity and this cannot be compensated for at a later time.
- Proper management of feeding and watering is the foundation of good health and welfare. The good and best practice guidance for nutrition of calves are detailed in the **Calf Nutrition factsheet**

Nutrition

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Environment

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The conditions required to ensure the health of group-housed calves are specified in the **Calf Behaviour** and **Calf Environment factsheets**

- Providing appropriate environmental conditions and renewing the air regularly will promote comfort of the calves and will help reduce the risk of disease spread. See **Calf Environment factsheet**
- Indoor and outdoor calf environments should have fittings (e.g. floors, walls or fences) and equipment with smooth surfaces, which are easy to clean and disinfect when necessary. Holes or cracks should be repaired rapidly, as they provide a nidus for infection.
- Isolation of sick calves in a dedicated 'hospital area' allows close monitoring and treatment of animals whilst facilitating biosecurity measures. It should preferably be separate from healthy animals, however social contacts can support recovery and should be maintained where feasible. Where a dedicated hospital pen is not available, this can be set up within the home pen (either with calves or dam/foster cow). In pair-housing systems, two individual hutches can be positioned together with a dividing fence between them, maintaining social contact without interference for the compromised calf.

Best practice

- **Best practice** farms with cow-calf-contact systems, isolate a sick calf using a 'cuddle box', which can fulfil social needs while isolating the calf for treatment and monitoring.
- **Best practice** farms use a dedicated 'medical area' on the farm, that is distinct from the 'hospital area' and only used for medical and surgical procedures on healthy calves e.g. during elective procedures and post-operative recovery. This area will have clean, easily disinfected flooring (e.g. rubber mats) and lying areas, running water, electricity and heat sources available for recovering calves. It should be located where they maintain visual contact with other calves or cows, and tactile contact only with calves of a similar health status.

Health

Good practice

- Farmers should conduct regular health management planning and review, with input from both farming advisors and veterinarians, to safeguard the health status of all animals on the farm. This will ensure both preventative and responsive plans are in place. All health plans should comply with local regulation.
- Biosecurity should be promoted by limiting group sizes and intermingling with cows from other farms or sources. Calf enclosures should be separate from older animals (except dams or foster cows) and calves should be reared in homogenous groups (age, size/vitality, disease, vaccination). Biosecurity prevents transmission of diseases between calves and with other animals on the farm and this is vital if calves are to be group housed safely.
- The workflow for farm personnel should go "from clean to dirty" and consequently follow appropriate biosecurity routines. When handling sick animals, the use of specific protective equipment (clothes and boots or disposable clothes/boot covers, and disposable gloves), helps to limit disease spread between animals and risk of zoonoses. When administering treatments to calves, the equipment or consumables used (e.g. needles and syringes) must be single use and of an appropriate small size for use in calves.
- Calf environments should accommodate appropriate biosecurity: pen layouts and procedures that minimise the need to enter calf pens; compartmentalisation of different calf groups; separation from the main herd; use of dedicated equipment which is disinfected between uses and between different groups; and the wearing of clean clothes and disinfected boots before entry. An "all in/ all out" routine between groups of calves will facilitate cleaning and disinfection of pens.

Calf Health

- Promotion of a healthy immune system and antibody levels for calves can be achieved by utilising appropriate vaccination protocols for pregnant cows and good colostrum management.
- Where there are concerns about morbidity or mortality, samples of nasal discharge, faeces, blood or airborne bacteria should be collected to identify pathogens and target treatment based on collaboration with the veterinarian.
- Where calves have undergone surgical procedures, such as disbudding or castration, they should be moved to an isolation area for the recovery period, where they are kept warm (e.g. using heat lamps or rugs) and their position changed regularly if in sternal or lateral recumbency.
- Where painful procedures, such as castration or disbudding, are to be performed, ensure every care is taken to minimise the stress and pain experienced, as these impede recovery and accumulate with other stressors to negatively impact calf health and welfare. Use of appropriate medication (anaesthesia, sedatives and pain relief), reducing environmental stressors and using low-stress handling will help mitigate these risks.
- Staff engaged in administration of any medications to the calves should be trained by a veterinary practitioner or suitably qualified advisor to ensure appropriate implementation of the procedures and prescriptions defined by the veterinarian, such as appropriate drug, dosage, route of administration and assessment of technique.
- Stressful events should be spaced out to prevent calves from becoming overwhelmed and should never coincide with weaning. See **Calf Behaviour factsheet**
- In case of a bad prognosis, the practices and the decision tree defined in the **End of Career factsheet** are applicable to avoid undue suffering and to ensure a humane killing.

Best practice

- **Best practice** farms establish health strategies with a focus on preventive medicine, which include disease surveillance, strategic attention to risk factors, vaccination protocols and staff training to ensure correct diagnoses and treatment protocols are activated. Farms should have herd-health plans which include an effective written protocol for management of health issues such as treatment of sick calves, with instructions on when and how to intervene or contact a veterinarian, where relevant.
- Where complications occur during established protocols, **best practice** farms seek veterinary advice before revising the protocols used.
- **Best practice** farms select breeding stock with the best health parameters for the resultant calves: healthy birth weights without dystocia, physical and behavioural resilience, food-conversion and growth rates, polled to avoid disbudding, sexed semen to optimise the economic value of calves etc.
- **Best practice** farms leave a resting period of at least 2 weeks after disinfection of a calf pen before being used again.
- **Best practice** farms use validated pain scales for cattle to assess response to treatment and monitoring or either improvement or deterioration in levels of pain experienced by calves (0 = no pain to 4 = very severe pain). Training staff in observing, recording and responding to changes in pain scales will ensure efficient use of medications and improve calf welfare. See **Table 1**, and the Care4Dairy support materials on assessing pain in dairy animals.

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Health

Signs	PAIN LEVELS				
	No pain	**Mild**	**Moderate**	**Severe**	**Very severe**
General signs	• Content and quiet • Grazing or eating at feeder • Curious about surroundings • Moves away when approached • Normal interaction with herd and calf (if a cow)	• Mild posture change • Stiff or subtle lameness • Less interested in surroundings • May warn off herd mates by head shaking or bunting	• Away from herd • Quiet, dull eyes • Abnormal posture-stiff, not moving, arched back, lame • Rough hair coat • Decreased appetite • Calf at foot may be hungry or bawling	• Away from herd • Stiff, unwilling to move • Not eating • Unkempt appearance • Weight loss • Abnormal posture-head down, tucked tail, arched back, ears down	• Rapid shallow respirations • Open mouth breathing • bulging eyes • Depressed • Grunting • Teeth grinding • Not eating • Rigid posture or down
Reaction to palpation of affected site	Animal not bothered by palpation anywhere	Animal may or may not react to palpation of an affected site (wound, swelling, injury, surgical site etc): pull away, kick, vocalize	Animal reacts to palpation may try to run away or act aggressive when handled	Animal moves away from palpation may kick or bellow or be rigid	Animal is rigid or unresponsive

Table 1. Animal signs associated with pain levels
(adapted from IVAPM and Care4Dairy resources on assessment of pain in cattle, De Boyer & Ledoux 2023)

Behaviour

Good practice

- Calves should be left to suckle their dam for 24 hours after calving, to enable the calf to benefit from the physical support and colostrum provided by their dam. The exception is where there is a known risk of infectious disease transmission. See **Calving Care-Calf factsheet**
- The behaviour of individual calves should be monitored a minimum of twice daily, ideally by the same person. This will include their feeding motivation (drinking speed, milk intake, food consumption, visits to the feeder), their level of activity, their muscular tone, reflexes, respiration, the time spent lying down or isolated, their social interactions, and signs of lameness or other sources of pain (especially after surgical procedures such as disbudding). Behavioural observation is a useful indicator of both health and welfare.
- Low-stress handling requires handlers to behave calmly and patiently, ensuring that potential stressors (e.g. potentially scary noises, objects, lights or shadows) are minimised in the environment. Calves should be encouraged to move by harnessing their natural motivation (e.g. staying with the group, accessing pasture or food), rather than more stressful or painful methods. Positive reinforcement helps calves learn quickly and develop cognitive flexibility, enhancing their resilience.

Best practice

- **Best practice** farms may use automated techniques (automatic calf feeding systems, accelerometers) and video observations (thermal cameras) to help monitor calf activity and early detection of illness or pain, therefore improving both health and welfare. These techniques should be used as a support tool, not as a replacement for well-trained farm personnel.
- **Best practice** farms have personnel who are trained in the importance of good human-animal relationships and low stress handling techniques. They use positive reinforcement to undertake common farm practices e.g. handling, moving between areas or loading into trailers. Positive reinforcement can involve feeding or grooming (if calves are habituated to it), and treats (e.g. mashed or pieces of apples, pumpkin, banana or other sweet fruits and vegetables).

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Summary

Farm

A strategic health and welfare management plan is important to keep track of calf health status, enable proactive prophylactic and responsive care when illness or injury is identified.

Calves

By ensuring risk factors for poor health are minimised, calves can experience a high health status contributing to overall well-being.

Handler

Provision of training and documented planning for medical management of the calves in their care will make the working environment safer and less stressful for the farm personnel.

Take pride in all of your farm's good and best practices towards animal welfare!

Additional resources

Care4Dairy.eu

European Commission · IZS Teramo · UCD Dublin · ELGO-DIMITRA Hellenic Agricultural Organization-Dimitra · SLU · INRAE · phylum · Institut de l'Elevage idele