CARE4DAIRY

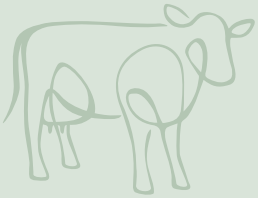
Cow Udder health

Good practice

Best practice

Best practice farms optimise the health and welfare of their cows through veterinary consultation, planning and documenting their prophylactic and responsive mastitis management protocols.

Why is this important?



This is important because healthy animals are more likely to perform well in both their reproductive performance and milk yield. Ensuring that prevention of mastitis is a priority and that farm personnel are appropriately trained will reduce both the risk and severity of mastitis for the herd. Mastitis, inflammation of the udder, is one of the biggest welfare issues for dairy cows. Mastitis can vary in severity from mild, if only local signs are observed, to severe, when it is accompanied by systemic symptoms which can result in septicaemia and death. Mastitis is associated with pain and result in abnormal behavioural and physiological signs, with a decrease in milk production. Mastitis can be contracted or exacerbated during milking from an infected udder or teat, or from environmental infection. Injuries to the teat, sunburn, cold (cracked skin) all increase risk of mastitis. Symptoms may be visible on inspection of the udder but sub- clinical mastitis can be identified from elevated somatic cell counts (SSC) in milk.

Nutrition

Good practice

Best practice

See the **Cow Nutrition factsheet** for more information

Environment

Good practice

- Cows should be discouraged from lying down after milking, e.g. by feeding them immediately after milking.
- Cows with severe mastitis, lameness or other conditions that make them vulnerable, must be isolated in a sick pen.

See the **Cow Environment factsheet** for more information

Best practice

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Milking practices

- Cows should be milked in order of decreasing risk of mastitis: firstly healthy and newly introduced cows, secondly cows with high somatic cell counts, and lastly cows known to be suffering mastitis. If cows currently affected by mastitis cannot be milked last, the teat cups must be fully disinfected after they have been milked.
- Hands and forearms should be thoroughly cleaned before milking, wounds on hands or arms should be covered with a waterproof dressing and clothing worn should be clean on and easily kept clean during milking (waterproof). Hands, gloves and clothing must be kept clean throughout the milking session.
- Cow teats should be cleaned and wiped e.g. with single-use or individual washable wipes, for at least 15 seconds per cow (even if it seems clean), paying close attention to the end of the teat. Washable wipes must be cleaned and disinfected after each milking.
- Before starting to milk the cow the appearance of the milk should be checked by hand- milking the initial stream, using a dark surface. If the milk is considered doubtful (watery or containing flakes or clots), it should be stripped and then discarded. Mastitis indicators on robots can also be used.
- Milk rising from teat cups (generally due to intakes of air) should be avoided.
- Measures should be put in place to prevent overmilking (continuing suction after the flow of milk has stopped), for example, by adjusting the threshold for removal of teat cups.
- Cow teats must be dry and without lesions (constriction ring or keratosis or congestion) after milking.
- Teats should be disinfected, as soon as possible after removal of teat cups, by dipping or spraying with a suitable product. Cows with mastitis should be treated with a dedicated dip cup.
- Where dipping is utilised, each teat should be dipped in a veterinary-approved teat dip, ensuring that 3/4 of the teat is immersed in the dip.

Cleaning and maintenance of the milking machine and parlour

- Any faeces in the milking parlour should be removed immediately, avoiding spread of any droplets. The parlour floor should be easily cleaned, not slippery and washed between milking batches.
- The milking machine and parlour should be cleaned and disinfected after each milking session. A deep clean of the parlour should be carried out 2-3 times each year.
- Milking equipment should be serviced regularly (minimum once a year) by a qualified person. This includes renewing the liners and any defective elements; checking and adjusting milking parameters (vacuum level, 45-49 kPa; pulsation, 55-65 cycles/min; suction/massage ratio, 60/40; automatic removal, 250-300 g milk/min). A storage of key spare parts should be available to ensure a continuous maintenance. Rubber liners and other spare parts should be replaced according to the maintenance plan defined by the manufacturer.
- Flies should be controlled on the farm, paying particular attention to the milking parlour. Flies carry bacteria which can contaminate the udder. Stress from flies agitating the cows can also negatively affect milking hygiene.

Management of mastitis

- If injury or trauma to the udder has occurred, remedial action should be taken immediately to help prevent deterioration.
- Each quarter should be checked for signs of mastitis at each milking (lactating cows) and at regular intervals for dry cows (by hand milking). Signs of clinical mastitis are the appearance of the milk (watery, flakes, clots), swelling, heat, hardness, redness and lesions of the udder. If milking robots are used their mastitis monitoring data should be checked daily.

Cow Udder health

- Cows should be observed for physical indicators of mastitis, including restlessness during milking (kicking), increased hock-to-hock distance when standing, reduction of time spent lying down and a drop in milk yield.
- Cows should be observed for signs of fever including elevated body temperature, increased heart and respiratory rate, dehydration or reduced appetite and rumination.
- Observation for signs of mastitis should be continued for the dry cows, particularly to ensure identification of sub- clinical mastitis. This requires visual observation in the dry cow environment and possibly hand "milking" to test udder discharges.
- Somatic cell count (SCC) should be checked at individual levels at least once a month and whenever there is a suspicion of mastitis.
- Individual cows with elevated SCC should be investigated for mastitis. The suggested limit for first lactation cows is 150,000 cells/ml and second lactation upwards 250,000 cells/ml on 2 consecutive month. Beyond these values and with no clinical signs, the cow is considered in subclinical mastitis.
- Farms with SCC higher than 250,000 cells/ml over more than 4 months per year or with a single test with more than 400,000 cells/ml, should closely monitor for mastitis.
- Clinically mild or moderate mastitis should be treated as soon as it is detected, using a protocol prescribed by the veterinarian.
- The veterinarian should be consulted for all cases of severe mastitis.
- The decision to be taken in case of subclinical and clinical mastitis is summarised in **Figure 1**

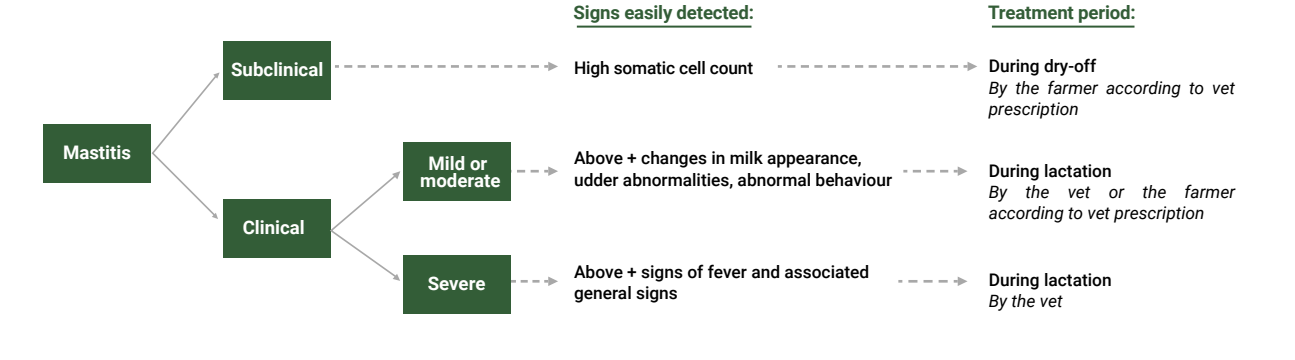

Figure 1. Classification of mastitis types and decision to be taken

- Samples should be taken to identify pathogens associated with individual mastitis cases, and ensure selection of appropriate and effective antibiotics is essential to reduce antimicrobial resistance.
- Records should be kept, identifying all cases of mastitis, use of antibiotic medications or other interventions, specific to which teat(s) are involved for each animal. Efficacy of interventions used should also be recorded to allow adjustment of future treatments.
- Where medications have been administered to treat mastitis, and for the duration of the withdrawal period, the milk should be discarded. It is not suitable for consumption by calves. Cows receiving treatment should be identified e.g. with foot or tail tape of specific colour, to avoid mistakes during milking.
- During the dry-off period, an intramammary antibiotic can be administered to cows with high somatic cell counts (if prescribed by your veterinarian) and an internal teat sealant may be indicated, to limit bacterial entry into the teat after the last milking.

See the **Managing the Dry Period factsheet** for more information

Health

Cow Udder health

- Cows with chronic (or recurrent) infectious mastitis after treatment failure(s) in lactation or at dry-off should be removed from the milking herd.
- Udder health should be routinely monitored using both the incidence rate of clinical mastitis and individual cow somatic cell counts in order to take prompt management decisions.
- Pain management should be provided including the use of anti- inflammatory medications, to minimise the detrimental effects on the cow's welfare. This will also reduce the impact on restricted movement, food or water intake and immune suppression caused by the stress associated with pain.

Best practice

- **Best practice** farms will have a dedicated section of their herd health plan on prevention and management of mastitis which consists of observation and recording of signs, decision trees for management practices, responsible use of disinfectants and antibiotic use.
- **Best practice** farms ensure farm personnel are trained in, and familiar with use of pain scoring in cows to inform the use of pain relieving medications and/ or the need to seek veterinary intervention.
  See **Table 1** a pain scoring guide for dairy cows.

	PAIN LEVELS				
Signs	**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)

- **Best practice** farms regularly monitor the somatic cell count (SCC) for each individual cow. This allows comparison against the predefined thresholds set within the farm's health plan.
- **Best practice** farms milk lactating animals affected by mastitis more than twice a day to help relieve udder pressure.

Health

Cow Udder health

Good practice

- Observation of cows to ensure they can lie down and stand up comfortably, and without risking injury or contamination of their udder, is vital. If difficulties are identified remedial action should be taken immediately.

See the **Cow Behaviour and Human-Animal interactions factsheet** for more information

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Summary

Time invested in minimising risks of mastitis and careful planning for management of unavoidable illness, will help protect health and maximise the productivity and overall performance of the cow herd.

Farm

Healthy cows are more likely to perform well for the farm, improving their cost effectiveness and reducing the cost of losses from mastitis.

Cows

Ensuring their environment is safe and the risks from mastitis are minimised, will significantly improve cow health and welfare.

Handler

Training, planning and support from farming and veterinary advisors will improve the confidence of those caring for the cows and support their own health, job satisfaction and resilience at work.

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