

- A number of products are available either as boluses (eg. Bovikalc, Agrimin 24-7 Calcium boluses), drenches (eg. Maxacare Reviva, BoviCal), gels or in-feed products (eg. Mike Lemmy's Easy Calver).
- Use products as directed by the manufacturer, usually as close to calving as possible.
- Giving all older cows a bottle of calcium under the skin at calving is short-acting, and may be counter-productive as it will switch off hormone mechanisms that control blood calcium levels just when needed.

Avoid excessive drain on calcium reserves immediately after calving

- Once the cow calves, her calcium requirements increase by 2-3 fold due to high calcium levels in milk. Excessive or inappropriate milk withdrawal can drain too much calcium from the system resulting in milk fevers – especially if cases occur 24 hours or more after calving, or cows require multiple treatments.
- Do not milk cows precalving.
- Remove calf at birth, and only remove sufficient colostrum for the calf in the first 24 hours.
- Consider reduced/not milking high risk cows for 3-4 days after calving. Check cow regularly for mastitis.

Phosphate

- Some milk fever cases do not respond to calcium alone, but also require phosphorous injections.
- These cows are often described as “creeper” or “crawler” cows as they frequently attempt to get up.
- Phosphorous is intrinsically linked with calcium in the bone stores, and so prevention of such cases involves the standard approach to milk fevers and highlighted above.
- Too much phosphorous can also cause problems. Do not feed over 0.5% phosphorous in the dry cow diet.

Milk fevers during lactation

- Milk fevers may rarely occur during lactation, sometimes in bulling cows due to high oestrogen levels.
- More serious cases may occur in certain situations if the milking cow diet has not been providing sufficient calcium. Such cases are often difficult to treat, and become downer cows.
- Ensure that the milking cow diet contains enough calcium. Add limestone flour as appropriate.

Discuss prevention of milk fevers with your vet and nutritional advisor

If you would like more information contact our office or visit our website.



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MILK FEVER (HYPOCALCAEMIA)



What is it?

- Milk fever is caused by a reduction in blood calcium levels at calving, which causes muscle weakness.
- Annual incidence of milk fever in UK dairy cows is around 5%.
- Although simple cases will respond quickly to calcium injections, milk fevers may result in calving problems, uterine prolapses, retained cleansings and downer cows. Average cost is around £200 per case.

Clinical signs

- Majority of cases occur around calving.
- Older cows and Channel Island breeds are predisposed.
- Initially cows will be uncoordinated and weak.
- This progresses to recumbency with head tucked around to side.
- If untreated, signs will progress over 8 – 24 hours, cows lie on their side.
- Cows will eventually die due to bloat and/or breathing paralysis.

What causes it?

- Calcium is abundant in the body, but unfortunately 99% of it is locked up in the bones.
- Blood calcium levels are maintained by complex hormone mechanisms that mobilise calcium from the bones and gut. These mechanisms require magnesium to work properly.
- Due to the calcium content in milk, calcium requirements increase by 2-3 fold at calving.
- This requires the complex hormone mechanisms to respond to maintain blood calcium levels, and if they do not respond quickly enough then blood calcium levels drop and milk fever occurs.
- Milk fever is therefore not caused by a lack of calcium in the diet.

Diagnosis

- Clinical signs, occurrence around calving and response to calcium injections are usually diagnostic.
- Your vet can take a blood sample to measure blood calcium levels if cows fail to respond to treatment.

TREATMENT

- Injection of a bottle of calcium either in the vein or under the skin is the standard treatment.
- If injecting in the vein, use the jugular. Do not use the milk vein as it is prone to becoming infected.
- If injecting under the skin, warm the bottle up first and use 3-4 sites to ensure quicker absorption.
- Prop the cow up and allow her to belch. Provide a firm footing using sand or straw.
- If the cow does not get up within 6 hours seek veterinary advice. There could be more serious injuries.
- Downer cows require careful nursing – deep bedding, food and water, and regular turning every 2 to 3 hours or as often as possible.

PREVENTION

- Milk fever problems usually stem from the mineral content of the “close up” dry cow diet.

“Traditional method” – restriction of dietary calcium.

- Aim to limit calcium intakes to below 30 – 50 grams per cow per day in last 3 weeks precalving.
- Impossible to do if significant amounts of either grazed grass or grass silage in dry cow diet.
- May be possible if levels of maize silage, wholecrop or straw are high as they contain less calcium.
- Watch when feeding milking cow rations to “close up” dry cows, as levels of calcium will be high.
- Alternative is to use calcium binders such as zeolite (X-Zelit™) to limit calcium absorption.

Supplement with magnesium in the “close up” dry cow diet

- Magnesium is needed for the calcium hormone mechanisms to work effectively around calving.
- Supplement with at least 40 grams of magnesium per cow per day.
- Usually supplied via magnesium chloride (feed 70 – 80 grams per day) in the TMR; also good for Dietary Cation Anion Balance (DCAB).
- Magnesium chloride can also be provided via the water. Coarse flakes in a permeable bag in the balltap compartment of the water trough, or putting a 25 kg bag in the bottom of the trough with two small holes punched in to it are the cheapest ways to do this. It is essential that access to all other sources of water is prevented because cows will choose to drink unmedicated water given the chance. Check the water supply each day, as if it fails the cows will drink concentrated magnesium solution with fatal results.

Reduce Dietary Cation Anion Balance (DCAB)

- Acid-base status in the cow affects the calcium hormone mechanisms, and this is influenced by DCAB.
- The aim is to acidify the diet by increasing levels of anions (chloride and sulphate) and reducing levels of cations (potassium and sodium) in the “close up” dry cow diet, which will help reduce milk fevers.
- Main problems come from high levels of potassium from use of potash fertilisers and/ or slurry on grazing and grass silage, and high levels of sodium from feeds such as caustic wheat or sodium bicarbonate.
- **Changing the forage source in the “close dry” cow ration** will often help due to changes in DCAB and/ or calcium levels. Move the cows into another field; introduce a conserved forage to those at grass; house cows for the last 3 weeks of pregnancy; use silage from a different clamp/field; increase the proportion of maize or wholecrop in relation to grass silage. A change can sometimes stop an epidemic totally. Sometimes grazing a particular field or

using silage from it is always associated with milk fever.

- **“Full DCAB”** involves mineral analyses of all feedstuffs, followed by correct balancing of mineral levels in the ration by inclusion of anionic salts in the “close up” dry cow diet. Do not restrict calcium. Monitoring is performed by urine analysis (aim to get urine pH to 5.5-6.5). Anionic salts are unpalatable, and such an approach requires excellent management to monitor feed intakes and urine pH regularly.
- **“Partial DCAB”** systems take advantage of the theory by altering the “close up” dry cow diet to:
 - ✓ Reduce levels of forages high in potassium or sodium – mainly lower inclusion levels of grass or grass silage
 - ✓ If including grass silage in “close up” dry cow diet, make from pasture that is not heavily fertilised using either potash fertiliser or slurry. If unsure of DCAB value, perform a forage mineral analysis.
 - ✓ Feed a greater proportion of forages with a lower DCAB value – maize silage, wholecrop and straw
 - ✓ Include 70 – 80 grams per cow per day of magnesium chloride in the diet. Similar effects can be obtained using commercially available DCAB products such as Biochlor, Advance DCAB or CAB Corrector. Such anionic salts can also be supplied via proprietary dry cow concentrates.
 - ✓ Note that urine pH monitoring will not work in partial DCAB systems (urine pH will be 7.0 – 8.0).

Supplementation with calcium by mouth at calving

- The Scandinavian approach to milk fever control has been to give “at risk” cows a large dose of calcium at calving, which supplies a readily available source of calcium just when the cow needs it most.
- Such an approach can work well in small herds, where altering the “close up” dry cow diet is impractical.