CaliBol®

Prevention of calcium deficiency post-calving

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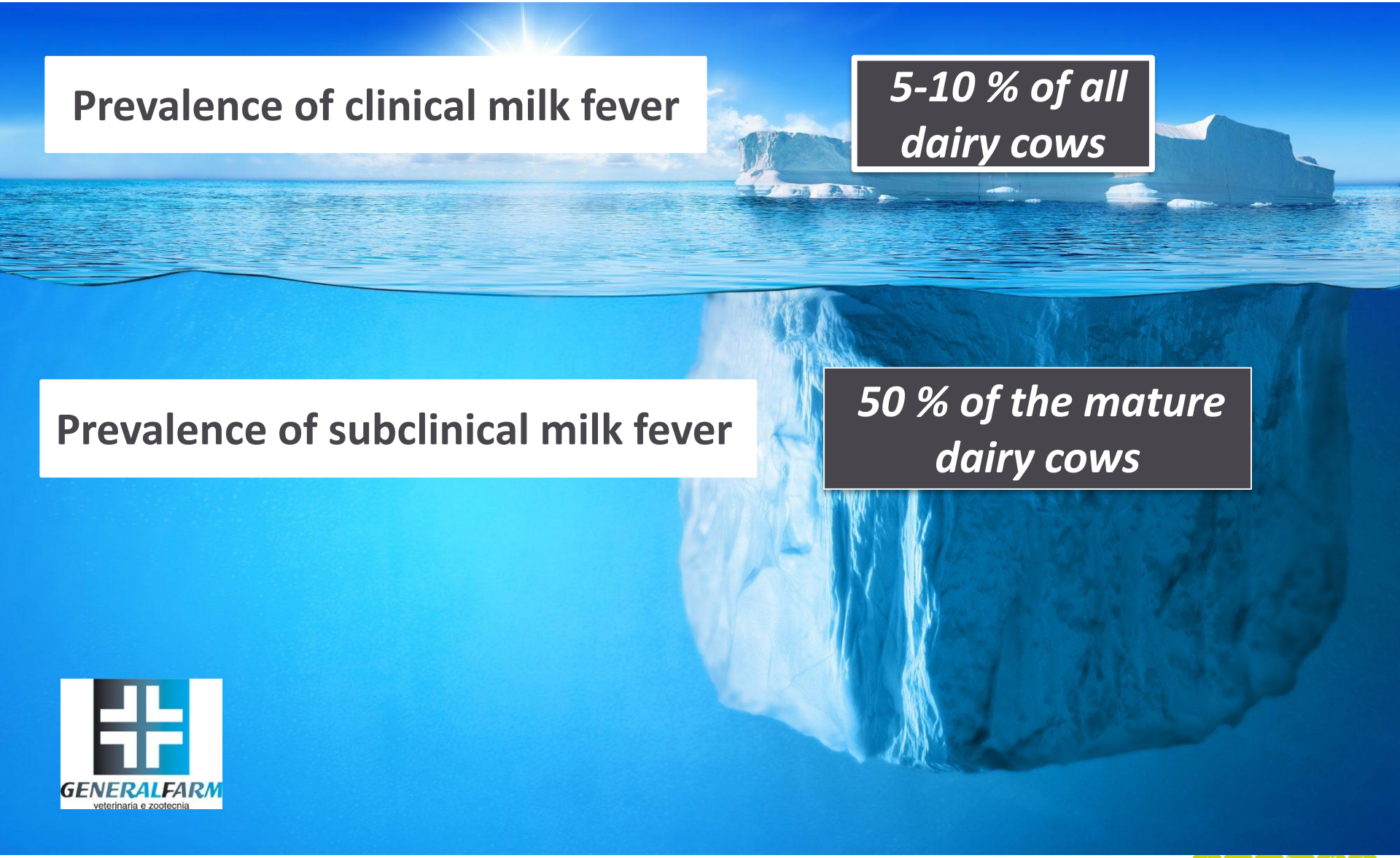
Clinical milk fever - The tip of the iceberg



Incidence of milk fever

- Content of calcium in plasma < 8.5 mg per dl (Or < 2.1 mmol/L) → Subclinical milk fever

German research, where blood are sampled from 1380 recently calved cows from 115 farms

Cows calving no.	Lactation 1	Lactation 2	Lactation 3	Lactation ≥ 4
No. of cows with treshold < 2.1	32/228a	158/355b	211/332c	331/456d
Cows with subcl. milk fever	14.0 %	44.5 %	63.6 %	75.6 %
Cows with clinical milk fever	0 %	1.4%	5.7%	16.1 %

a-d Different superscripts within the row differ significantly, P< 0.05
Source: Venjakob et al. 2017

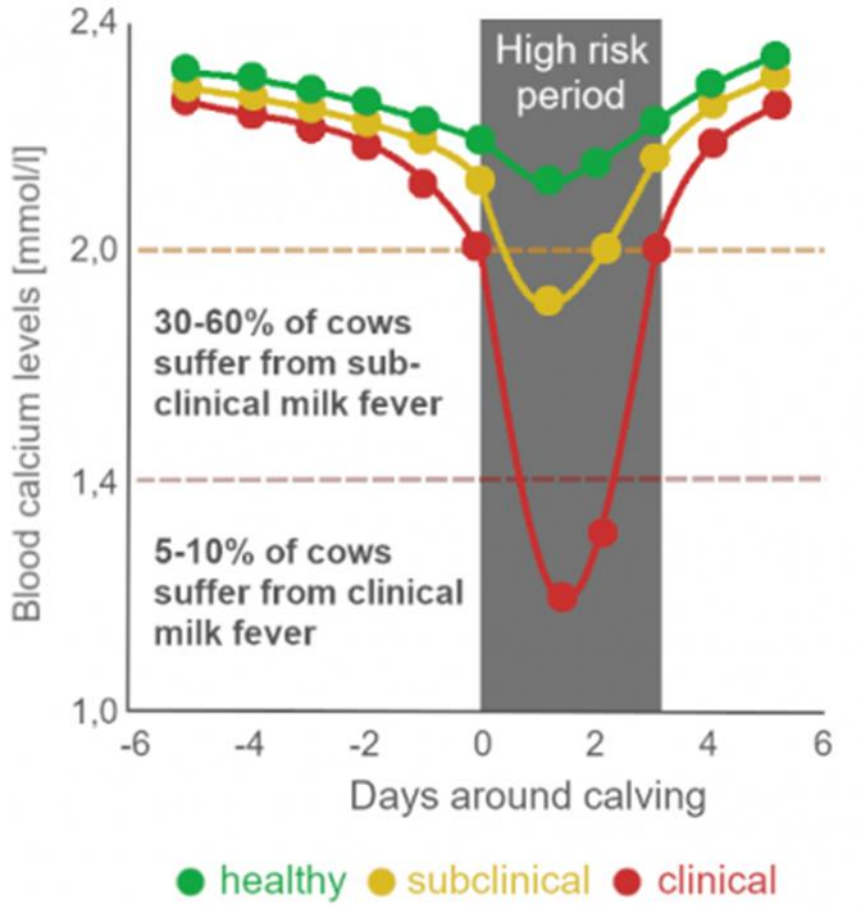
➢ **Prevention is better than cure**

Function of Calcium in the body

- Content of calcium in plasma < 8.0 mg per dl (Or < 2 mmol/L) → Subclinical milk fever
  - Recent research has found that dairy cows with a blood calcium level < 8.5 mg/dl (2.1 mmol/l) had subclinical milk fever = Several cows with calcium deficiency than previously assumed

- Calcium is essential for optimum muscle and nerve function
- Calcium is important for optimum immune function

Milk Fever



< 2 mmol/L (or < 8.0 mg per dl) → Subclinical milk fever

Consequences of calcium deficiency

Calcium deficiency

↓ **Muscle function**

↓ **Contractions in rumen and the intestinal system**

→ **Retained placenta** ↑

↓ **Feed intake**

↓ **Energy balance**

↑ **Risk of displaced abomasum**

↓ **Milk yield**

↑ **Risk of ketosis**

↑ **Risk of fatty liver**

↓ **Reproduction**

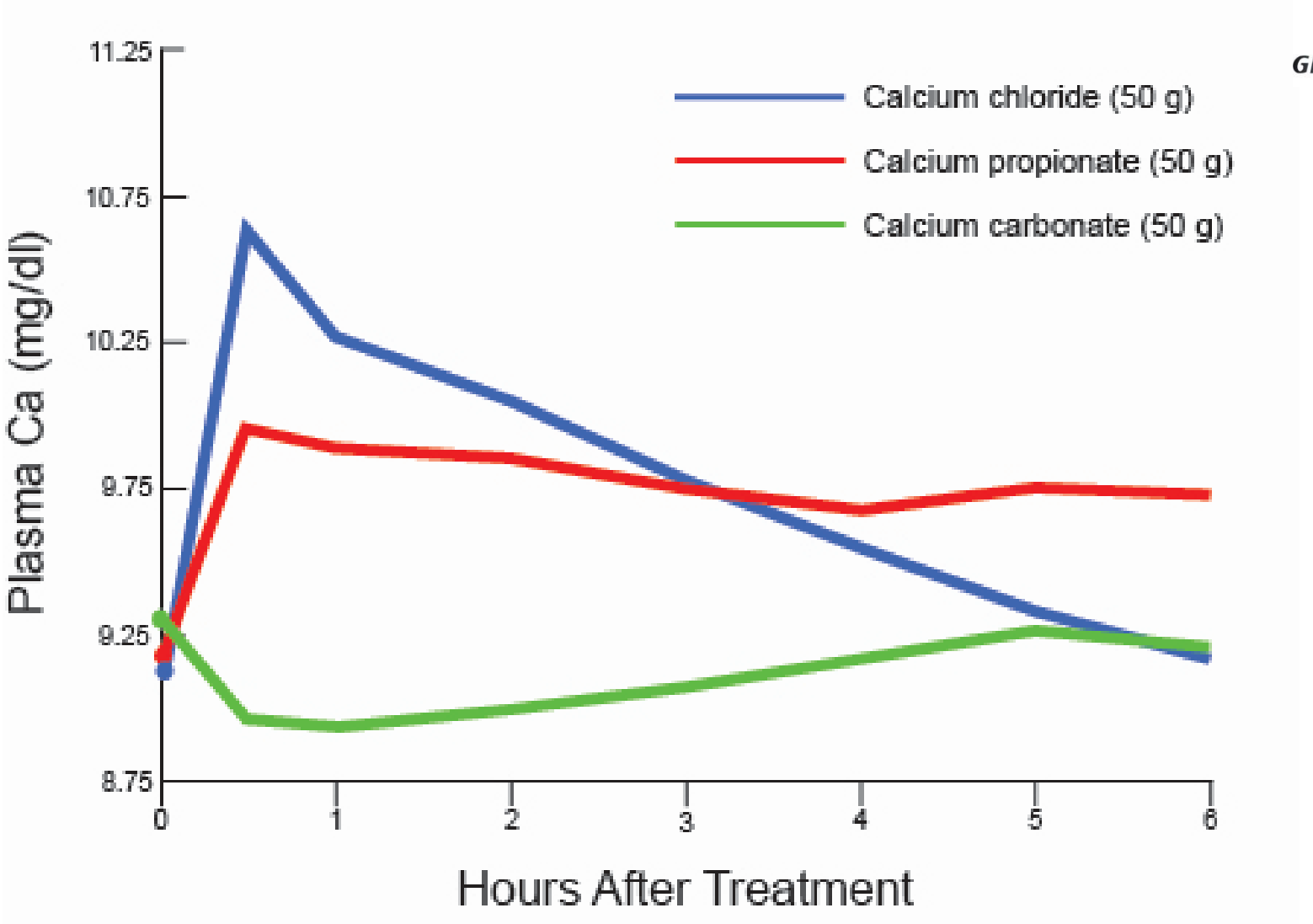
Cows with subclinical milk fever has:

- 9 x risk of getting ketosis
- 6 x risk of calving difficulties
- 4 x risk of left displaced abomasum
- 4 x risk of retained placenta

What is CaliBol?

- Bolus containing 40 grams of rapidly dissolving calcium per bolus
- Calcium chloride (quickly available)
- Calcium propionate (available several hours)
- Magnesium for calcium absorption/ mobilization

Mode of action - Calcium sources



Reference: 1993. J.P Goff & R.L. Horst. "Oral Administration of Calcium Salts for Treatment of Hypocalcaemia in Cattle" USDA Agriculture Research Service.

Sources of Calcium and solubility

Ca can be absorbed across the cattle rumen epithelium.

- Ca absorption appears to be key factor at the unset of lactation to reduce incidence of Milk fever.
- Providing highly soluble sources of oral Ca induces high concentrations of ionized Ca in the gastro-intestinal lumen, for rapidly increase of Ca concentration in blood.
- Calcium chloride and calcium propionate has a high solubility rate compared to other Ca sources and are also rapidly being absorbed to help reducing risk of Milk fever

Source: Zhang et al. 2020

Calcium sources used in animal feed	Solubility in cold water (g/100 ml water)	Solubility in hot water (g/100 ml water)
Calcium chloride	600	159100
Calcium propionate	49	55
Calcium acetate	34.7	29.7
Calcium formiate	16.1	18.4
Calcium lactate	4.8	7.9
Calcium gluconate	3.3	4.4
Calcium dihydrogen phosphate (monohydrate)	1.83	3.25
Calcium sulphate	0.213	0.161
Calcium citrate	0.085	0.095
Calcium phosphate	0.0225	0.075
Calcium carbonate	0.0014	0.0020

How to use CaliBol

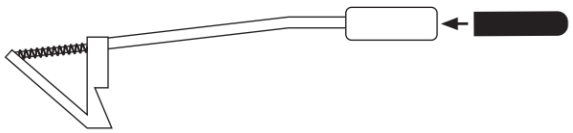
Time for treatment	CaliBol – 156 g Bolus
Preventative treatment	
Immediately after calving	X
10-14 hours after calving	X
Additional treatment for high-risk cows	
12-24 hours **before** calving	X
24 hours **after** calving	X
After Calcium infusion against acute milk fever	
After 2 hours	X
After 12 hours	X

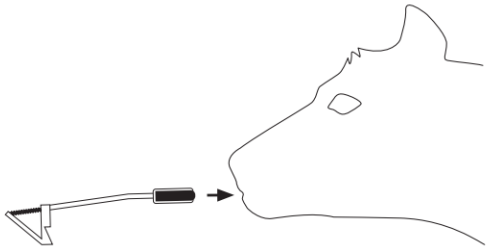
Packaging: 4 boluses of 156 grams per zip lock bag

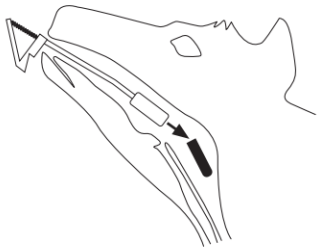
20 boluses per box

How to use CaliBol – bolus applicator

Minimum 57 cm
Length of applicator arm is important







Benefits and effects

- Fast releasing bolus – 25 minutes
- Combination of calcium sources
- Optimizes calcium blood level
  - Quickly available
  - Available for several hours

- Magnesium stimulates calcium absorption/mobilization
- No dossing mistakes

Generating Value

Number of cows	Milk fever level	Annual affected cows	Estimated cost / incidence	Total cost
100	Clinical	5 %	€ 670	€ 3.350
100	Subclinical	50 %	€ 268	€ 8.710*

References: *Alvaro Garcia, feedtstuff nr. 10, 2005, DK Knowledge center for Agriculture*

50 % annual incidence of subclinical milk fever in 3rd and greater parity (* assuming 65 % of the herd. (100 x 268) x 50% x 65%))

Costs of subclinical milk fever is more than twice as high as with clinical milk fever

R2 Agro

PERFECT SOLUTIONS

GENERALFARM
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CaliBol®

Prevent calcium deficiency at calving