Transition Cow Management workshop

ReproRight, CSU, Wagga Wagga,
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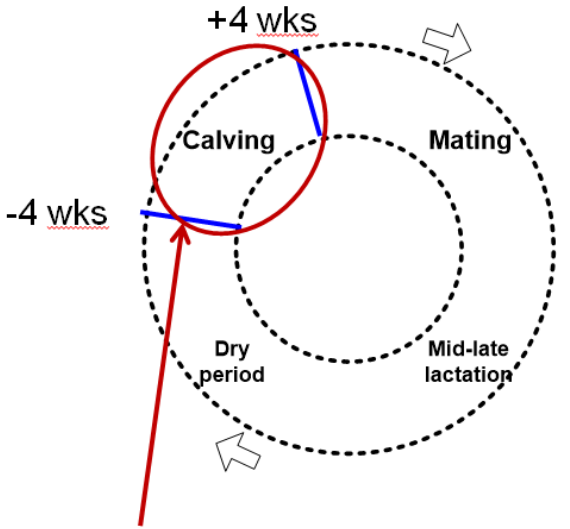
Capacity+ Ag Consulting

THIS WORKSHOP

1	Introduction
2	Aims and benefits of transition cow management
3	Managing milk fever risk
4	Making it work on farm
5	Monitoring and troubleshooting
6	How to engage and advise farmers on TCM
7	Managing freshly calved cows
8	Your assignment

SESSION 1
INTRODUCTION

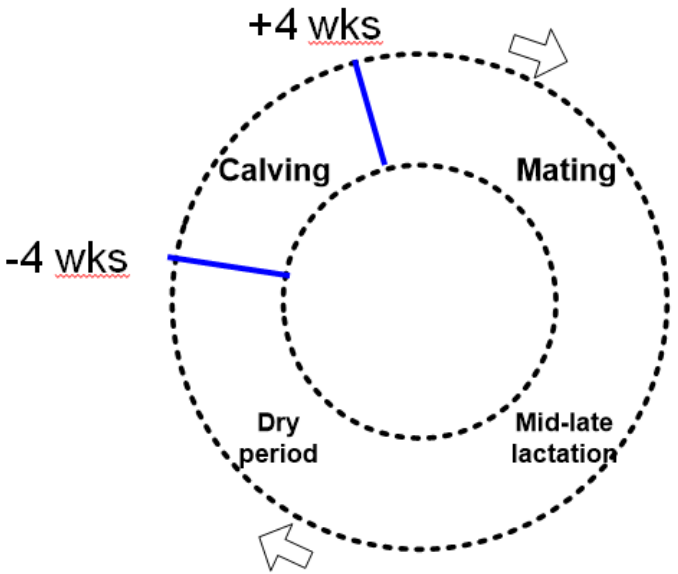
How cows are managed and fed during the ‘transition period’ determines the success or failure of their lactation



- 80% of disease costs
- Peak period for deaths and involuntary culling

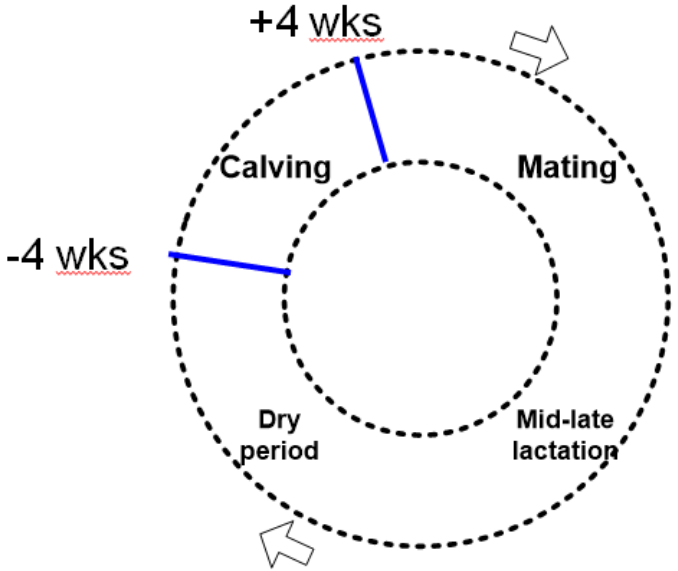
WHAT DO WE MEAN BY ESTABLISHING A SUCCESSFUL LACTATION?

- Live calf is delivered
- ?
- ?
- ?



WHAT DO WE MEAN BY ESTABLISHING A SUCCESSFUL LACTATION?

- Live calf is delivered
- Cow does not suffer milk fever or other cow health problems common after calving
- Cow steadily increases feed intake and milk production to achieve peak lactation target
- Cow is set to get back in-calf quickly when mating begins



This can be achieved by feeding the transition cow a well integrated diet pre-calving which supports her:

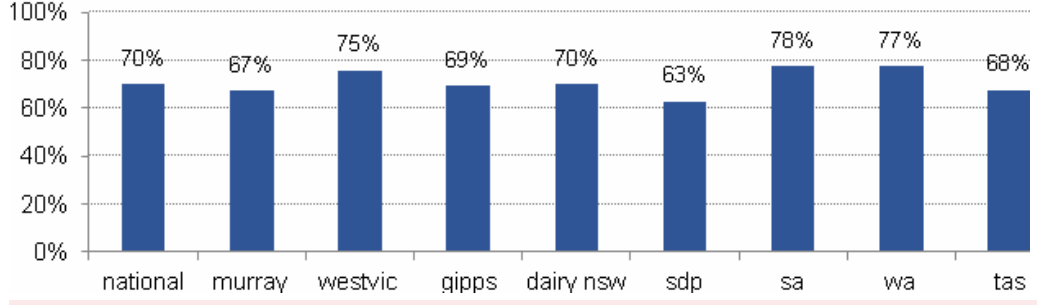
- rumen function
- calcium metabolism
- energy and protein metabolism
- immune function

as she adapts to lactation

Transition cow management practices on Australian farms

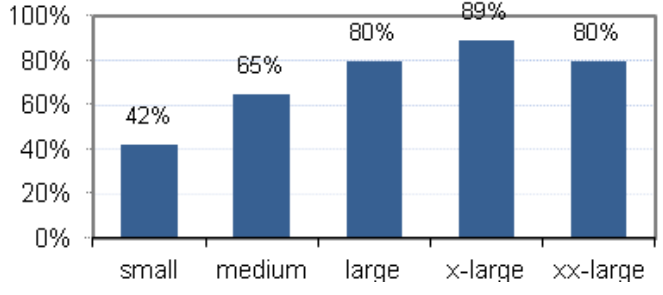
% farmers transition feeding nationally and by region

(Dairy Aust. survey, 2014. 400 respondents)



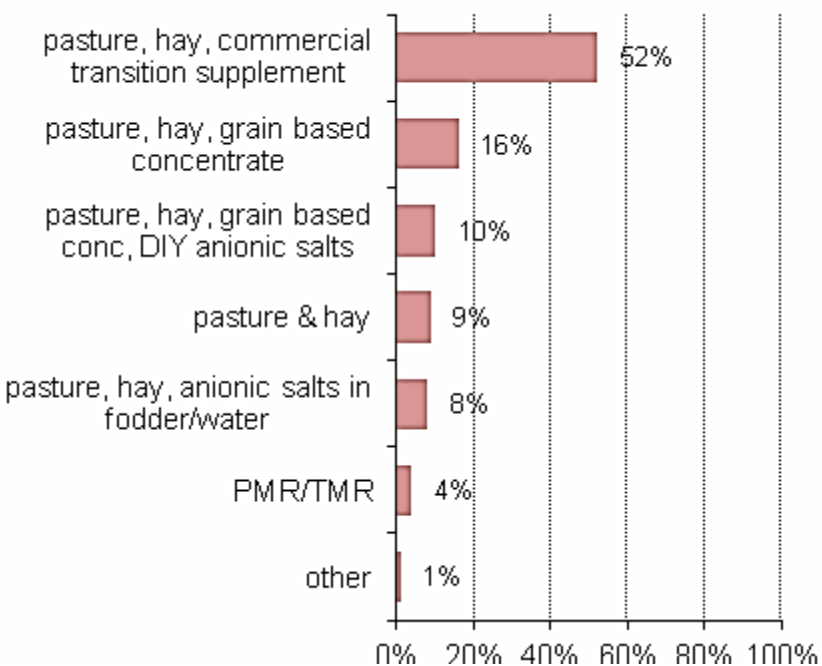
% farmers transition feeding by herd size

(Dairy Aust. survey, 2011. 650 respondents)

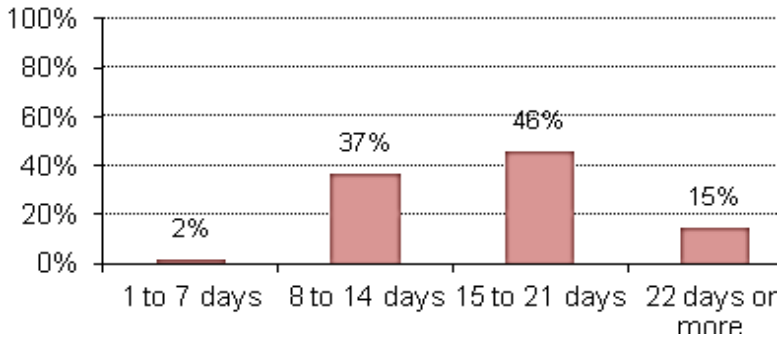


Transition cow management practices on Australian farms

Transition feeding approaches used
(base: those lead feeding)



Time cows fed diet
(base: those lead feeding)

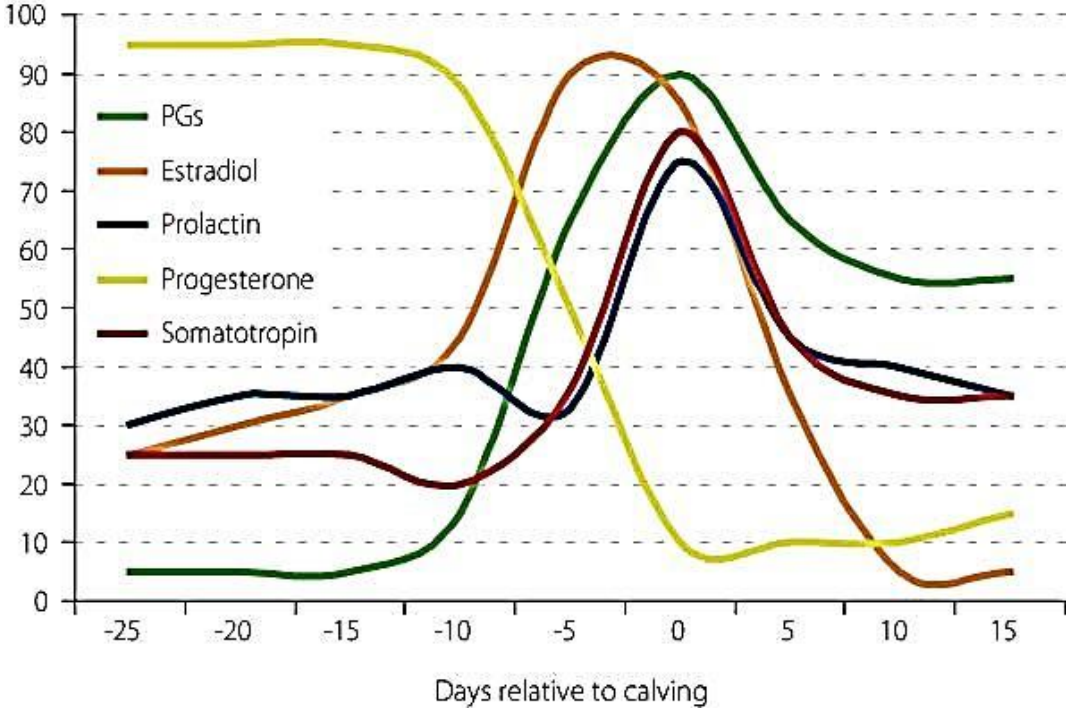


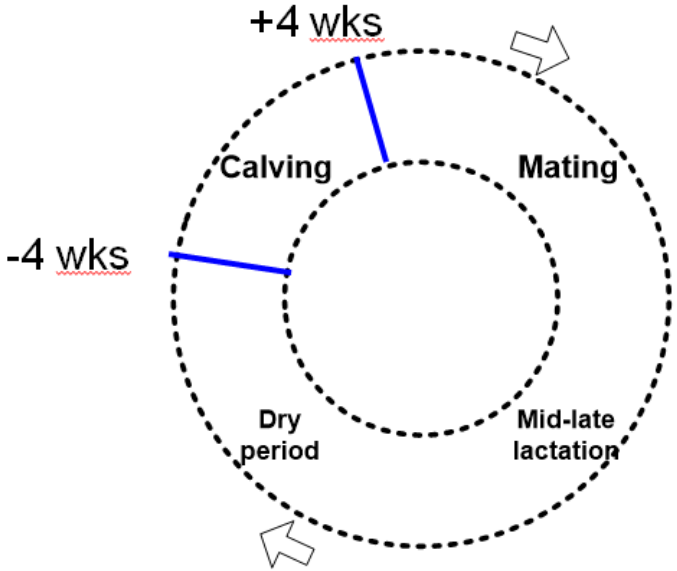
AIMS OF TODAY'S WORKSHOP

- Deepen your understanding of the key technical aspects of transition cow management and fully integrated transition diets
- Increase your capability to help farmers design and implement transition feeding programs and troubleshoot problems
- Know who you can call on if you need help dealing with a farm's transition cow management

SESSION 2
AIMS AND BENEFITS OF TRANSITION COW MANAGEMENT

Adaptive hormonal changes to lactation





5 challenges to establishing a successful lactation

1. Rumen adaptation
2. Reduced dry matter intake
3. Higher demands for calcium
4. Impact of lipid mobilisation on liver function
5. Demands of the foetus and udder for nutrients

5 challenges to establishing a successful lactation

1. Rumen adaptation

Before adaptation

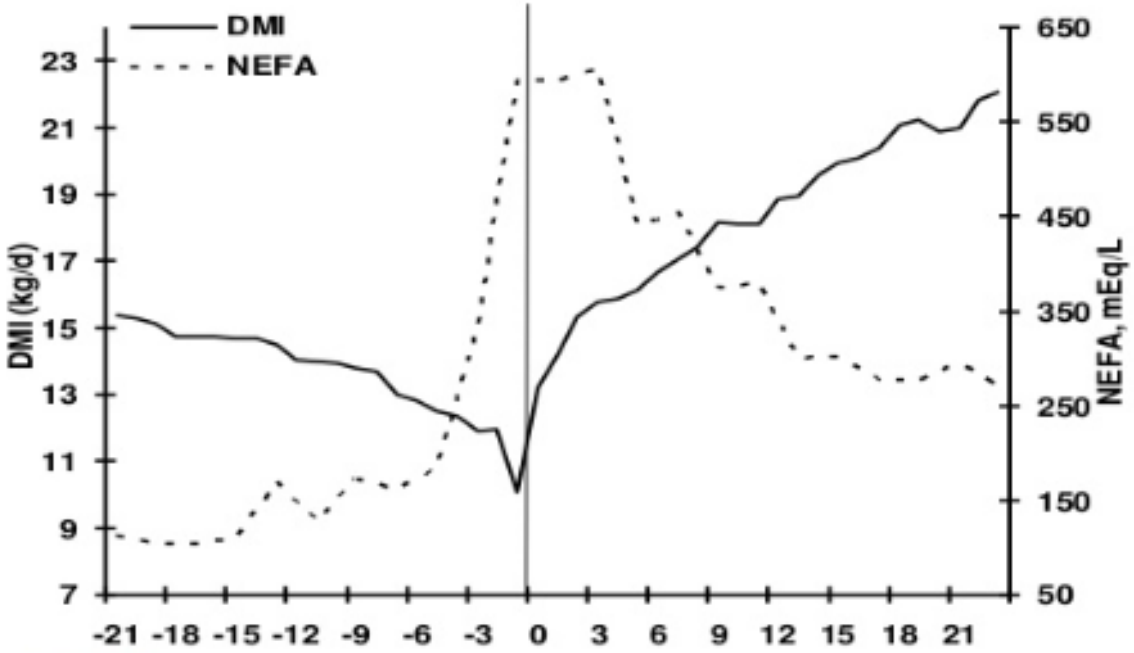
After adaptation

(University of Melbourne)

Dairy Australia

2. Reduced dry matter intake

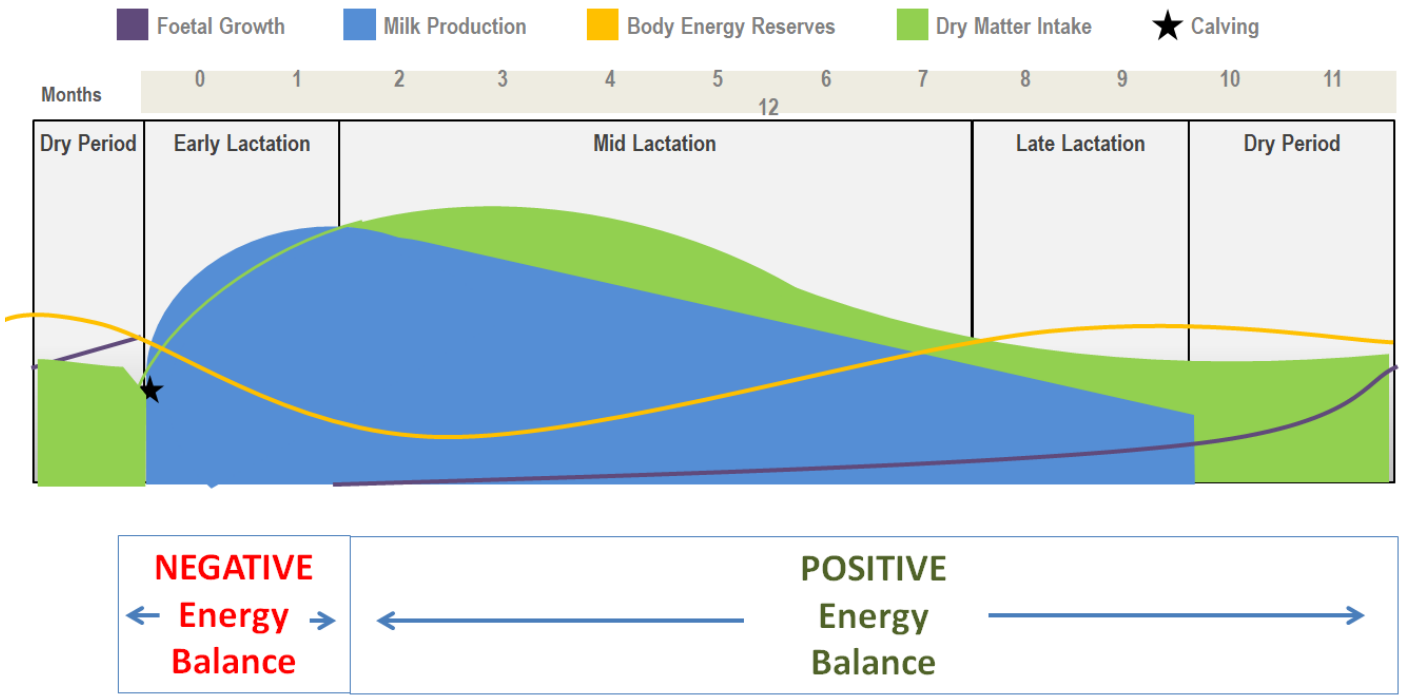
Feed intake is decreased by up to 30% during the week before calving (especially if feeding poor quality hay)



(Elanco)

5 challenges to establishing a successful lactation

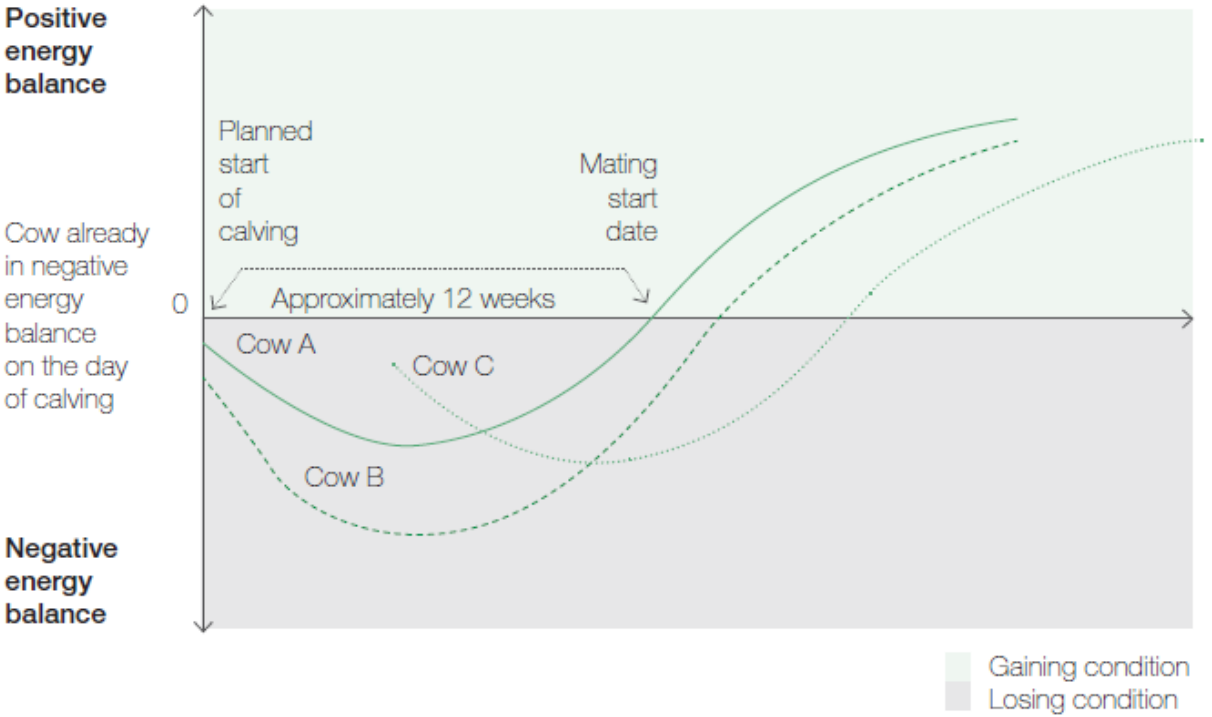
Energy balance



5 challenges to establishing a successful lactation

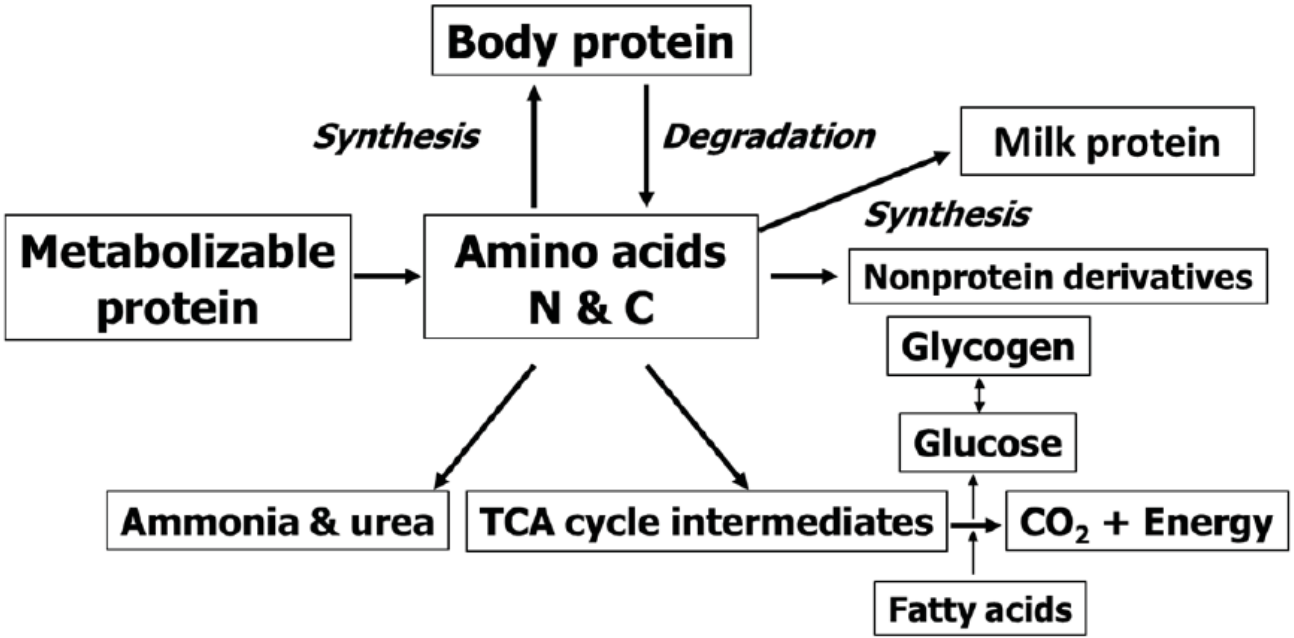
Energy balance

Consider 3 cows in a seasonal calving herd:



Protein balance

Dynamics of protein and amino acid metabolism in the cow

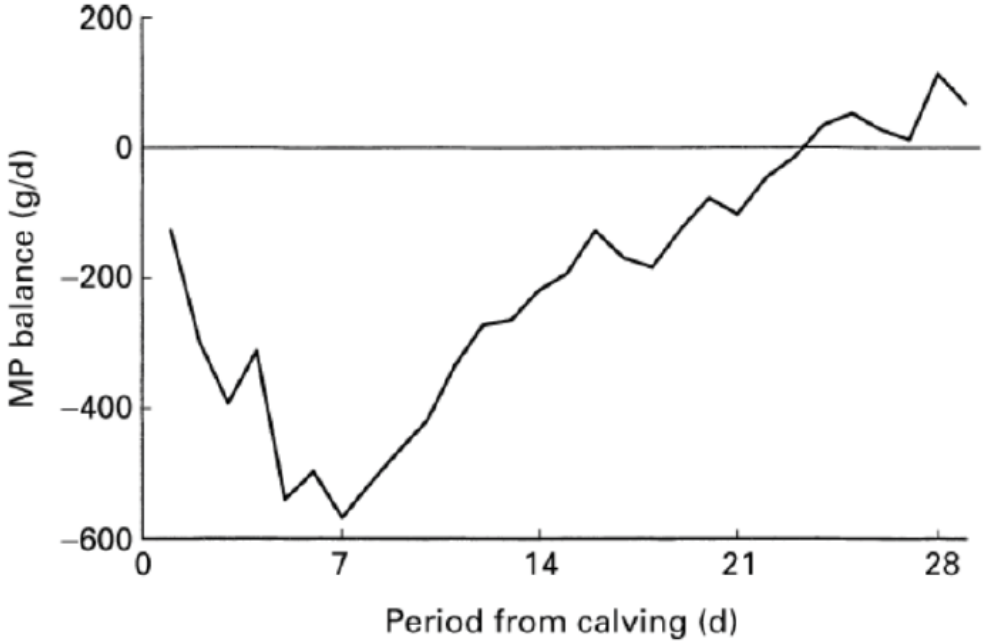


(Overton and Burhans, 2013)

5 challenges to establishing a successful lactation

Protein balance

Calculated Metabolisable Protein (MP) balance of 80 post-calving cows on diet containing 17.8% CP and 1.7 Mcal/kg of NE_L



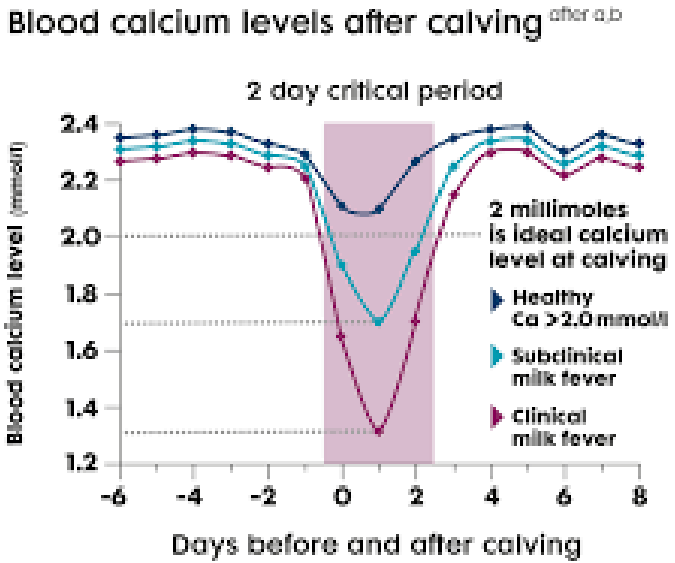
Dairy Australia

3. Higher demands for calcium

Blood calcium must be maintained within a narrow range

Onset of lactation increases the cow's daily calcium requirement by 2 to 4 fold!

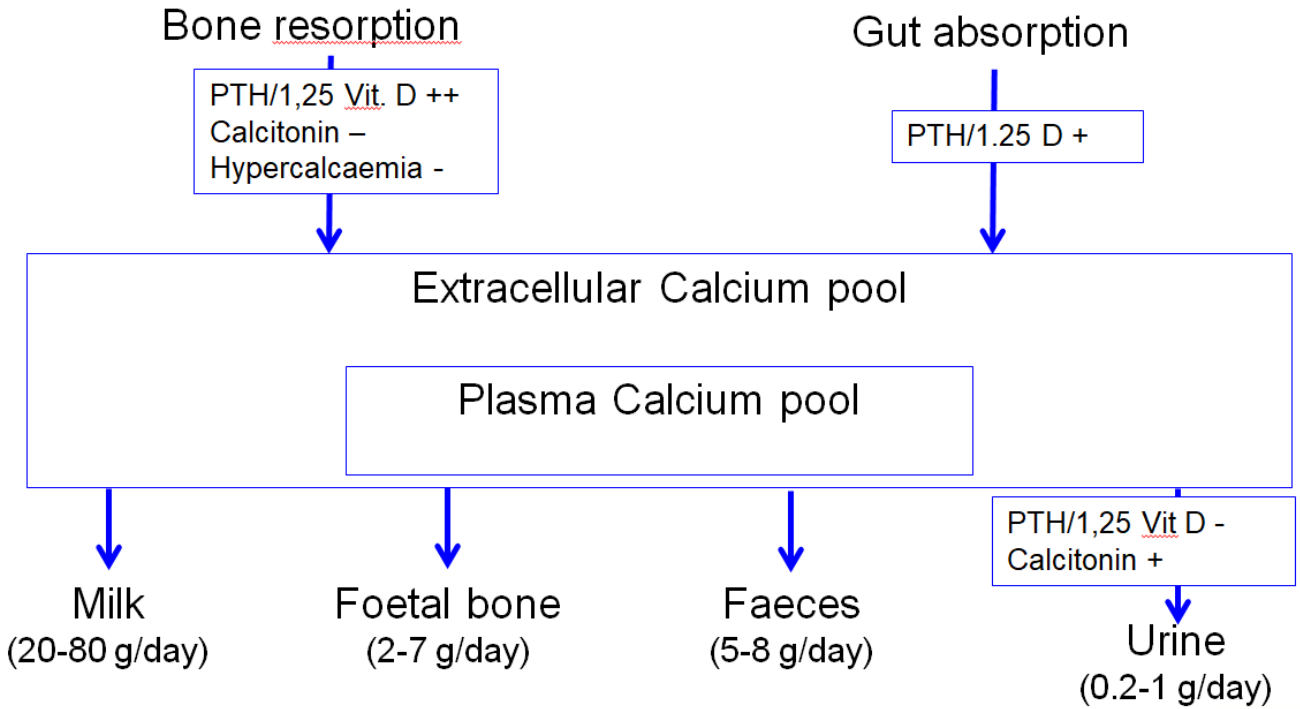
This extra calcium must come from mobilisation of bone storage and increased rate of calcium absorption from the gut



5 challenges to establishing a successful lactation

Calcium balance

Dynamics of calcium metabolism in the cow



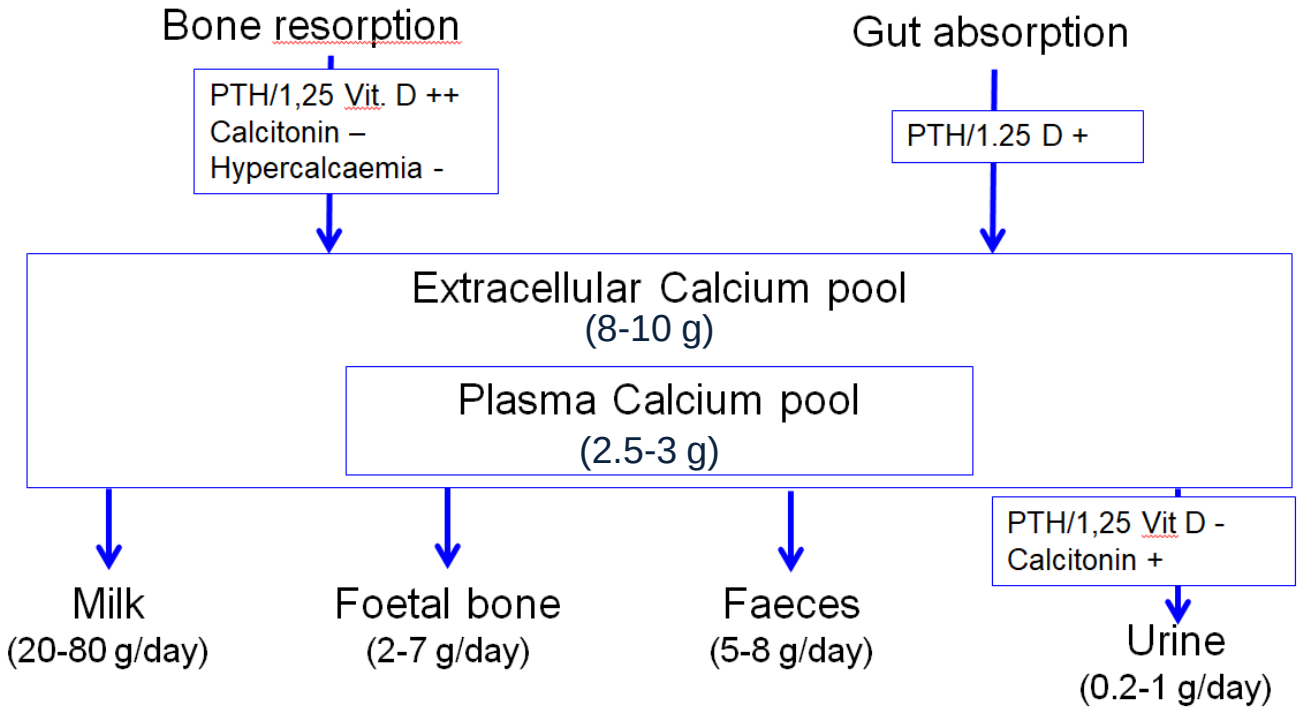
(Horst, 1994)

5 challenges to establishing a successful lactation

Dairy Australia

Calcium balance

Dynamics of calcium metabolism in the cow



(Horst, 1994)

Dairy Australia

Calcium balance

Dynamics of calcium metabolism in the cow

Questions:

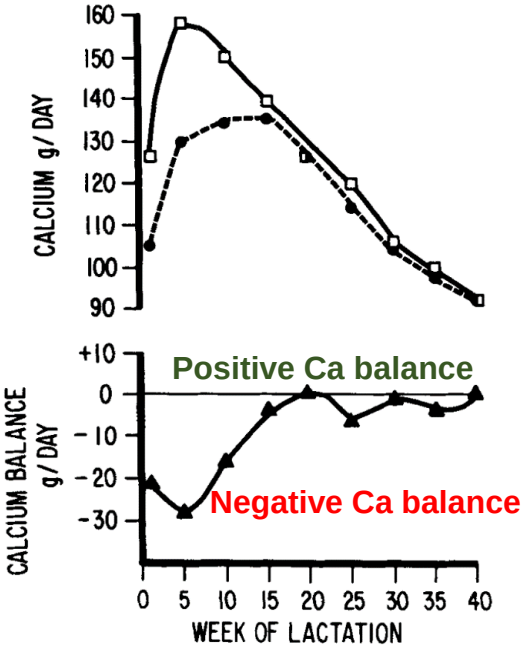
- Do cows go into negative Calcium balance after calving, and if so, for how long?

- Are cows able to replenish their body Calcium stores before they calve again?

5 challenges to establishing a successful lactation

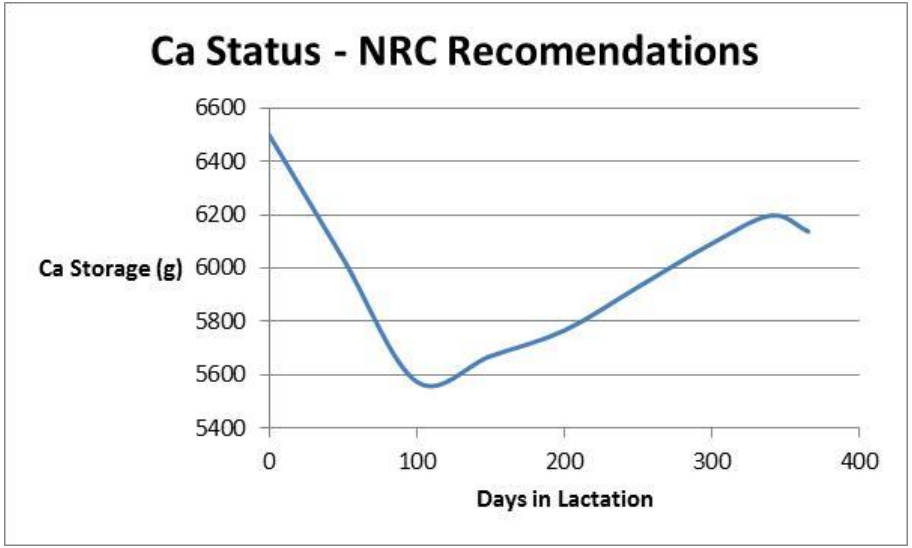
Calcium balance

Dynamics of calcium metabolism in the cow



(Horst, 1986)

600kg cow, fed ryegrass pasture & concentrate, peak at 32L, 20kg DM, 0.6% Ca

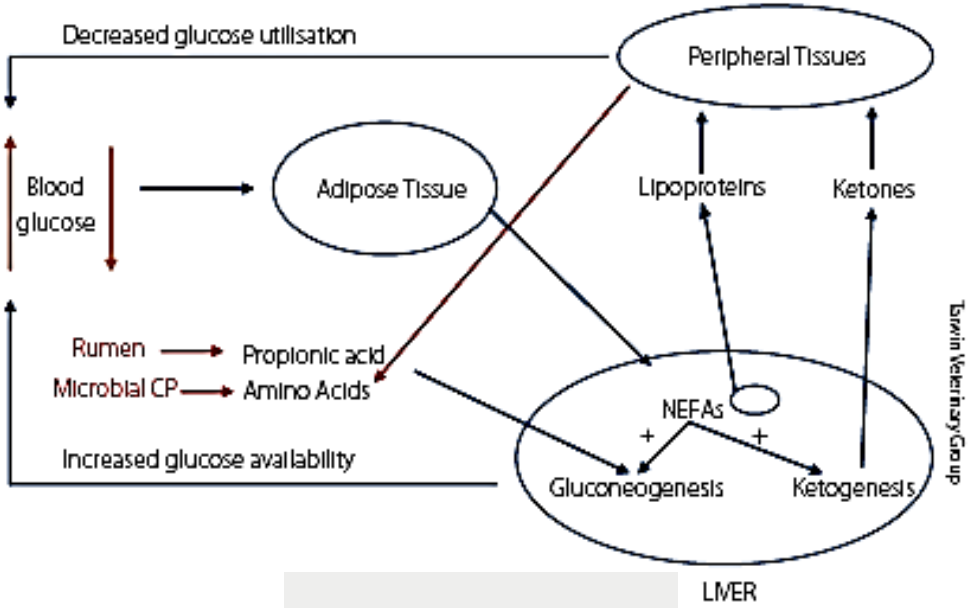


(McGrath, 2016)

Dairy Australia

4. Impact of lipid mobilisation on liver function

Liver must handle increased flow of free fatty acids (FFA's), and re-export as ketones to avoid accumulation of FFA's in liver



Dairy Australia

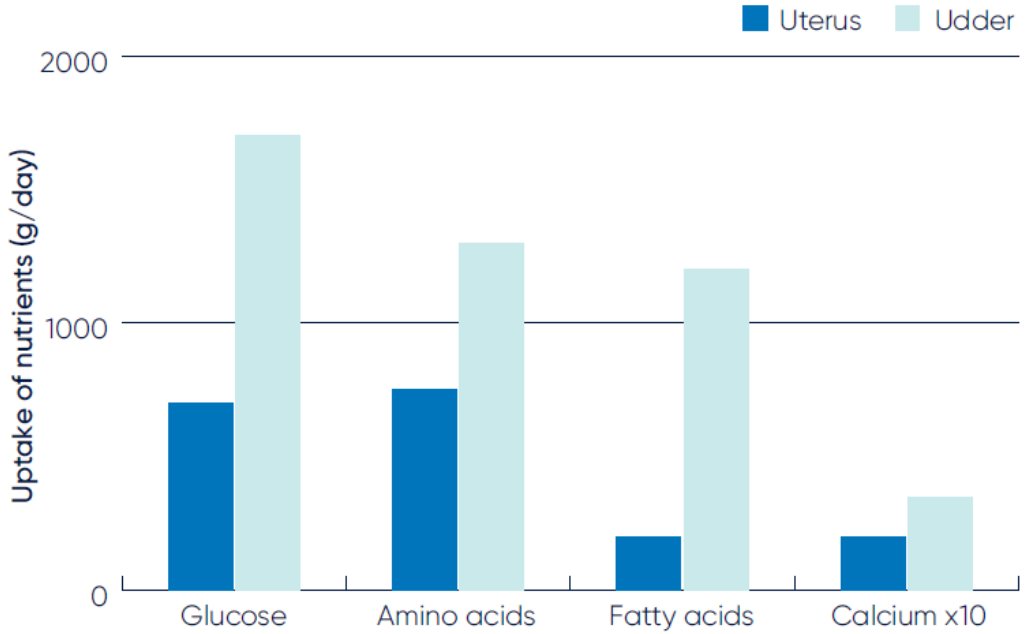
4. Impact of lipid mobilisation on liver function

Feed additives with evidence of preventive effects on ketosis/fatty liver syndrome

Additive	Monensin	Propylene Glycol	Chromium	Choline
Inclusion rate	240 to 400 milligrams per day	200 to 300 millilitres twice a day	20 grams per cow per day of 0.04% or 2 grams per cow per day of 0.4%	Source dependent – often ~ 15 grams per cow per day
Mode of action	Inhibits gram positive bacteria in the rumen	Supply of propionate precursor	Reduced insulin resistance	Increased export of non-esterified fatty acids (NEFA) from liver
Benefit	Increases propionate in the rumen leading to increased glucose, reduced NEFA and beta hydroxybutyrate (BHB) in blood	Increased milk yield in early lactation n and reduced duration of illness	Reduced NEFA, increased dry matter intake (DMI), increased milk yield in early lactation	Reduced liver fat content, reduced clinical ketosis, improved milk yield in early lactation
Feeding period	From -21 to 305 days in milk (DIM)	From diagnosis of ketosis to resolution	-21 to 30 DIM, depending on feeding management	-21 to 21 DIM

5. Demands of the foetus and udder for nutrients

Uptake of nutrients by the foetus and mammary gland
(modified from Bell 1995)



5 challenges to establishing a successful lactation

1. Rumen adaptation
2. Reduced dry matter intake
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BENEFITS

A diet that provides the transition cow with all the nutritional components necessary to support these metabolic processes:

rumen function

calcium metabolism

energy and protein metabolism

immune function

as she adapts to lactation will provide substantial benefits

BENEFITS

An integrated approach to transition nutrition helps springers:

- adapt their rumens to high energy feeds
- maintain higher DMI and control body condition loss in early lactation
- avoid milk fever and other health problems around calving

Achievable targets for cow health problems expressed as percentage of cases of calving cows within 14 days of calving unless otherwise specified. Based on data sets from Morton, Curtis, Beckett, Moss and Stevenson.

Indicator	Target performance	Seek help if
Milk fever	1% (8 years of age or less) 2% (greater than 8 years of age)	Greater than 3%
Pregnancy toxaemia	No cases	One or more cases
Clinical ketosis	Less than 1%	Greater than 2%
Abomasal displacements (left or right)	Less than 1%	Greater than 2%
Clinical mastitis	Less than 5% in the first 14 days after calving	Greater than 5% in the first 14 days after calving
Lameness (Sprecher et al., 1997 scale 1-5)	Less than 2% (greater than Score 2)	Greater than 4% (greater than Score 2)
Hypomagnesaemia	No cases	One or more cases
Retained foetal membranes greater than 12 hrs after calving	Less than 3%	Greater than 6%
Endometritis – infected after 21 days	Less than 3%	Greater than 10%
Calving difficulty	Less than 2%	Greater than 3%
Lactic acidosis	Less than 1%	Greater than 1%

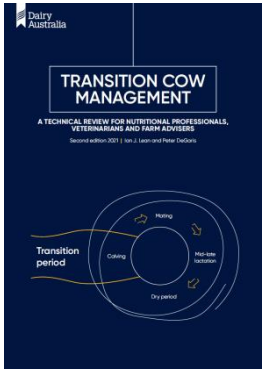
BENEFITS

An integrated approach to transition nutrition helps springers:

- adapt their rumens to high energy feeds
- maintain higher DMI and control body condition loss in early lactation
- avoid milk fever and other health problems around calving

Ultimately, this results in:

- **Better use of labour**
- **Lower culling and death rates**
- **More milk over lactation**
- **Higher in-calf rates**



Relative <u>net</u> benefits up to $200+ / cow / year

BENEFITS

An integrated approach to transition nutrition helps springers:

- adapt their rumens to high energy feeds
- maintain higher DMI and control body condition loss in early lactation
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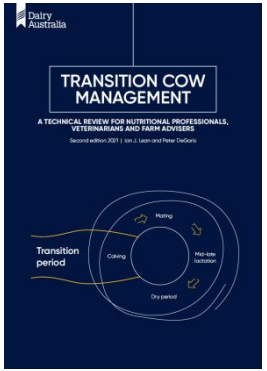
Potential negative effects of improved transition

- ↑ **Mastitis?**
- ↓ **Colostrum quality?**
- ↑ **Calf birth weight and dystocia**



Relative <u>net</u> benefits up to $200+ / cow / year

COMPONENTS OF AN INTEGRATED TRANSITION DIET

Energy and protein

- Body condition score at calving
- Post-calving feed intakes
- Amino acids
- Fat supplements

Macrominerals and DCAD

Microminerals

Rumen modifiers

Buffers and other possible additives

WHAT DIFFERENT TRANSITION FEEDING OPTIONS ARE BEING USED ON AUSTRALIAN FARMS?

Dairy Australia

Different transition feeding options and their relative effectiveness

				Provides for needs of transition cow								
Description	Applicable production systems (1 to 5)*	Ease of use	Effectiveness (1 to 4)**	Milk fever control	Other metabolic disease control	Improved animal health	Improved production	Improved reproduction	Rumen adaptation	Positive metabolisable protein balance	Positive metabolisable energy balance	Comments
Pasture and hay	1 & 2	✓✓✓✓✓	1	✓	✓	✓	✓	✓	✓	✓	✓	Does not address needs of the cow
Pasture, hay, acidogenic salts	1 & 2	✓✓✓✓	2	✓✓	✓	✓✓	✓✓	✓	✓	✓	✓	Acidogenic salts delivered in water may reduce water and feed intakes
Pasture, hay, concentrate	1 & 2	✓✓✓	2	✓	✓✓	✓✓	✓✓	✓	✓✓✓	✓	✓✓✓	Does not address control of macromineral disorders
Pasture, hay, concentrate, zeolite A	1, 2, 3 & 4	✓✓✓	2 to 3	✓✓✓✓	?	✓✓✓	✓✓✓	✓✓	✓✓✓✓	✓✓	✓✓✓✓	Impact on production, reproduction and health not currently understood.
Pasture, hay, grain, acidogenic salts	1, 2 & 3	✓✓✓	2 to 3	✓✓✓	✓✓✓✓	✓✓✓	✓✓✓	✓✓	✓✓✓✓	✓✓	✓✓✓✓	Can be difficult to control macromineral disorders
Pasture, hay, commercial lead feed	1, 2, 3 & 4	✓✓✓	3 to 4	✓✓✓✓✓	✓✓✓✓✓	✓✓✓✓	✓✓✓✓	✓✓✓	✓✓✓✓✓	✓✓✓	✓✓✓✓	Can be a highly effective strategy
TMR/PMR (fully integrated transition diet)	3, 4 & 5	✓✓✓	4	✓✓✓✓✓	✓✓✓✓✓	✓✓✓✓✓	✓✓✓✓✓	✓✓✓✓✓	✓✓✓✓✓	✓✓✓✓✓	✓✓✓✓✓	Highly effective strategy

* Production systems: 1. Pasture, other forages and low grain/concentrate feeding in bail; 2. Pasture plus other forages and moderate to high grain/concentrate feeding in bail; 3. Pasture plus PMR with or without grain/concentrate feeding in bail; 4. Hybrid system; 5. Total mixed ration (TMR) system.

** Effectiveness: 1. Does not address any of the needs of the transition cow. 2. Addresses some of the needs of the transition cow. 3. May address all the needs of the transition cow. 4. Addresses all the needs of the transition cow.

TRANSITION FEEDING PROGRAMS - pluses and minuses

Area of farm performance	Disadvantage	Advantage
Labour use/costs	Increased planning including structured time taken to feed cows and plan diets ahead of time.	Reduced labour and markedly less time spent on treating cows. Time is freed up during calving periods for other tasks such as colostrum management.
Animal health	Potential to increase mastitis.	Other diseases controlled and culling reduced. Increased reproductive performance.
Milk production	Need to feed well post-calving to support increased performance.	Milk and milk protein production (kg) is increased.
Profit	Need to allocate funds to transition costs (up to $3 per cow per day or $60 per cow or a $30 increase over basic costs (poor forage plus grain) needed to meet maintenance.	Literature suggests returns may be 10:1 profit markedly increased.

Est. costs of disease in transition period

Disease	Estimated cost/case	Range
Milk fever	$400	$249–$408
Subclinical hypocalcaemia	$125	
Clinical ketosis	$240	$138–$348
Left displaced abomasum	$650	$375–$650
Lameness	$200	$180–$500
Retained foetal membranes/metritis	$300	$263–$472

Reproduction and milk production benefits

2.5 to 5% improvement in 6-week in-calf rate and 21-week not-in-calf rate (DeGaris et al., 2010) which, according to InCalf figures, equates to approx. $2,400 to $4,800 per 100 cows

Milk production gains from a low DCAD transition cow program:

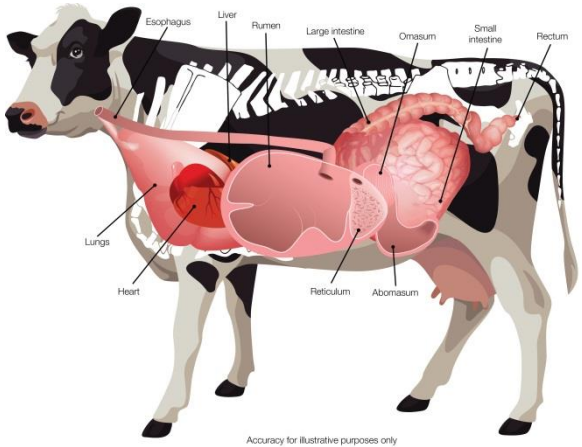
- 1.1-1.7 L/day (Lean et al., 2019 and Santos et al., 2019).
- should be recouped in 40 to 60 days excluding any consideration of improvements in animal health or reproduction

SESSION 3
MANAGING MILK FEVER RISK

(Dr J Malmo, Maffra Veterinary Centre)

MILK FEVER – A GATEWAY DISEASE

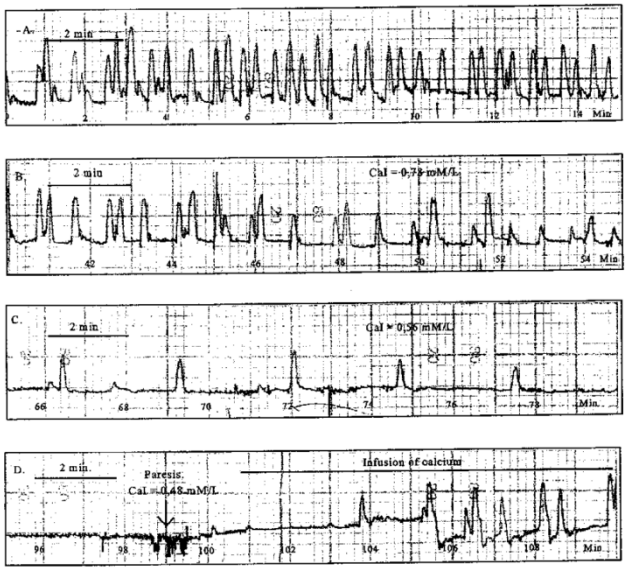
Dairy Australia



Hypocalcaemia

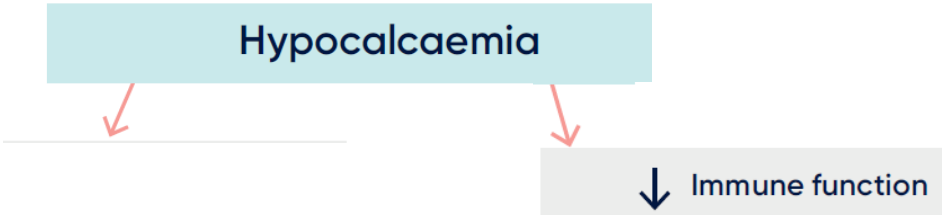
↓ Smooth muscle function

Reduction of rumen contractility with increasingly severe hypocalcaemia
(extracted from Jorgenson et al., 1998)

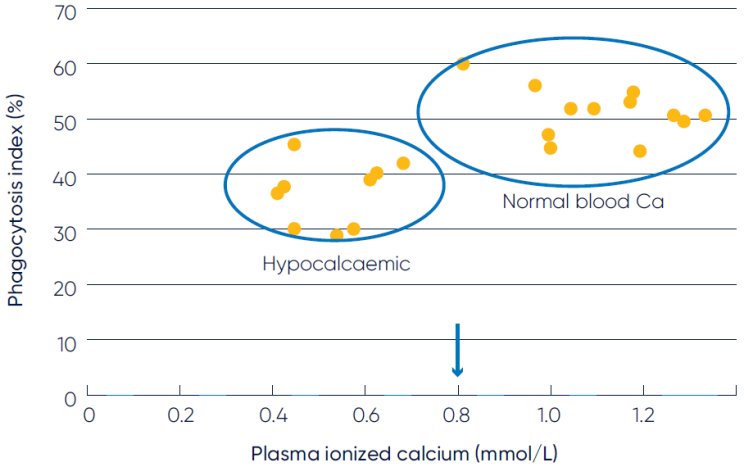


MILK FEVER – A GATEWAY DISEASE

Dairy Australia



Reduced % of neutrophils phagocytosing fluorescent particles in cows with normal blood calcium versus low blood calcium (Adapted from Ducuscin et al., 2003)



MILK FEVER – A GATEWAY DISEASE

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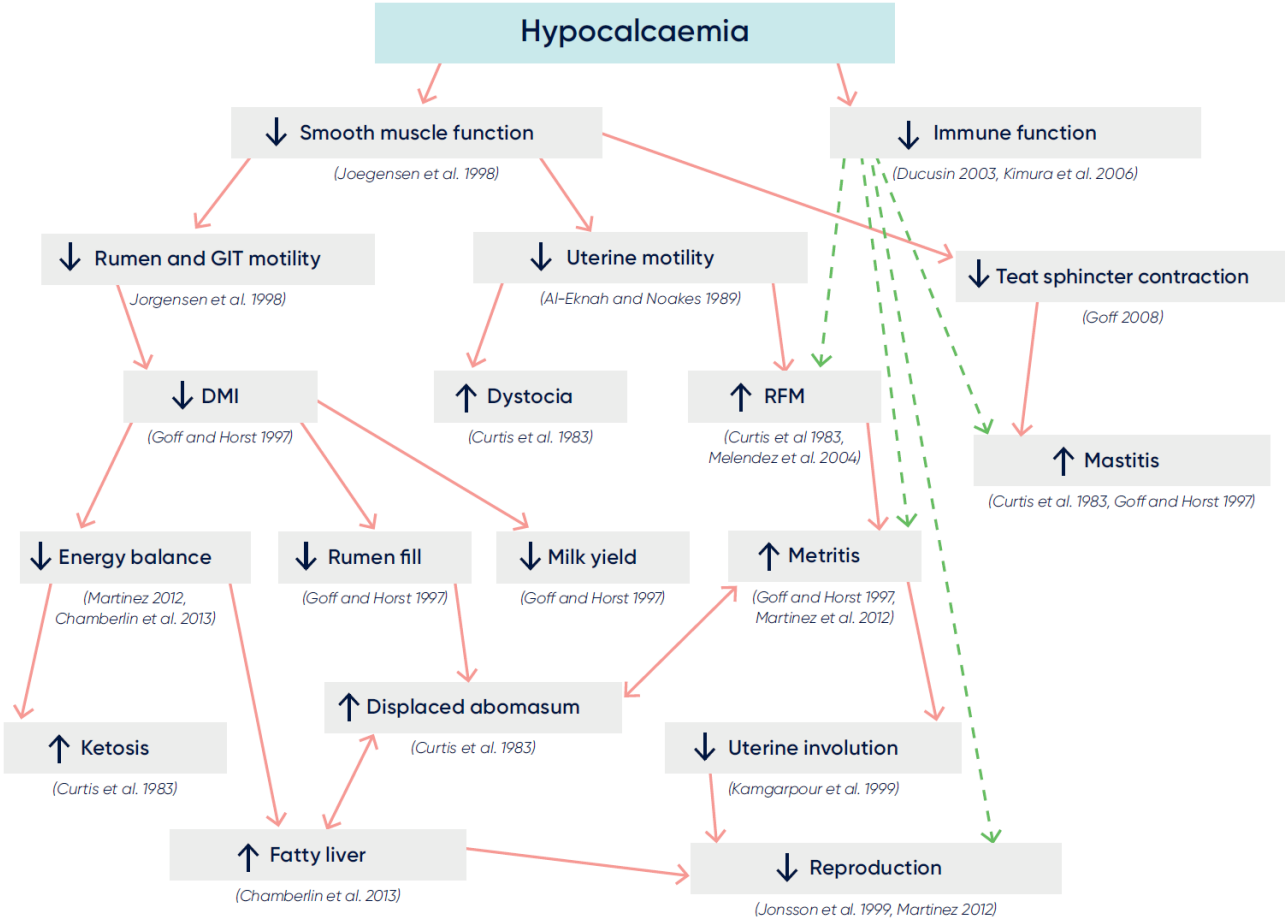


MILK FEVER – A GATEWAY DISEASE

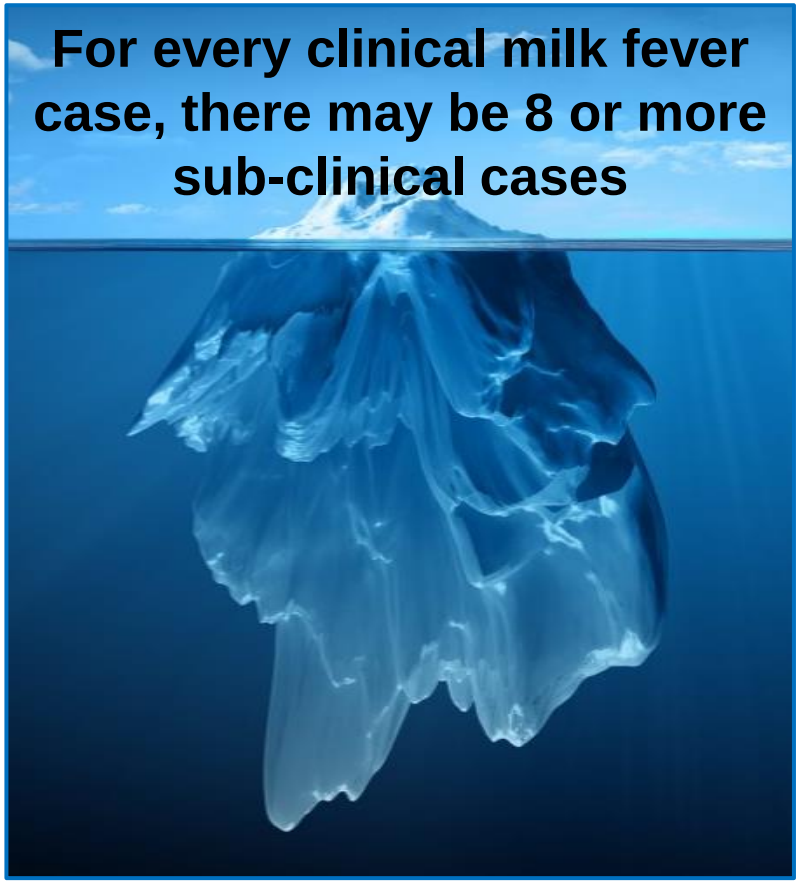
Cows that suffer milk fever (hypocalcaemia) are:

- 8 times more likely to get mastitis
- 3 times more likely to have a difficult calving
- 2 to 3 times more likely to have retained foetal membranes
- 2 to 4 times more likely to develop a displaced abomasum
- Likely to have a longer calving to conception interval
  (12 days longer)
- Likely to require more services per conception
  (40 – 50% more services per conception)

Dairy Australia

The freshly calved cow exports milk containing approx. 10 times its plasma blood calcium pool every day (2.5-3 grams)

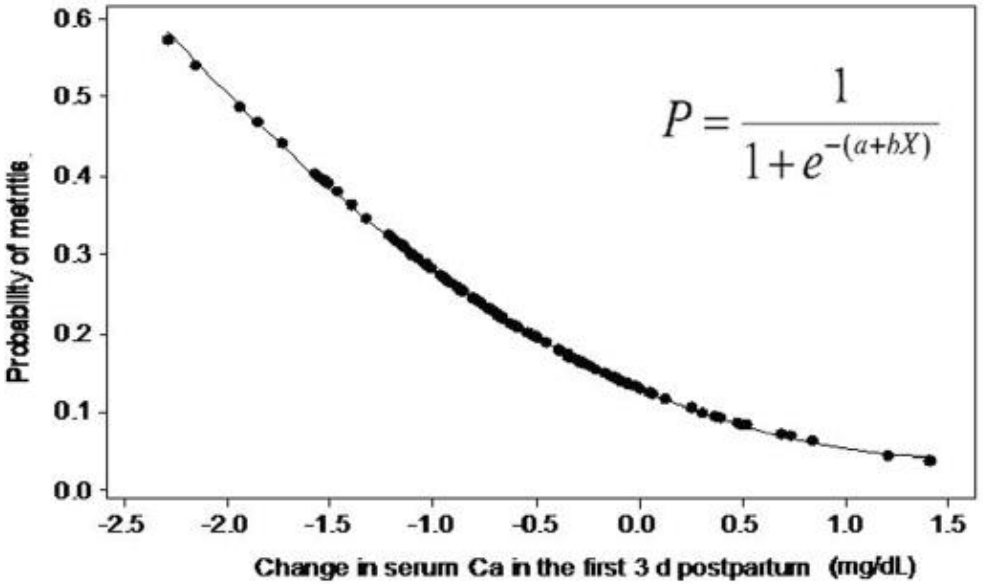
For every clinical milk fever case, there may be 8 or more sub-clinical cases



NUTRIENT BALANCE: CALCIUM

- The ability to maintain blood Ca level in the first 3 days post calving appears to be more important than the absolute blood Ca level
- The greater the drop in blood Ca in the first 3 days post calving, the greater the probability of developing metritis later in lactation

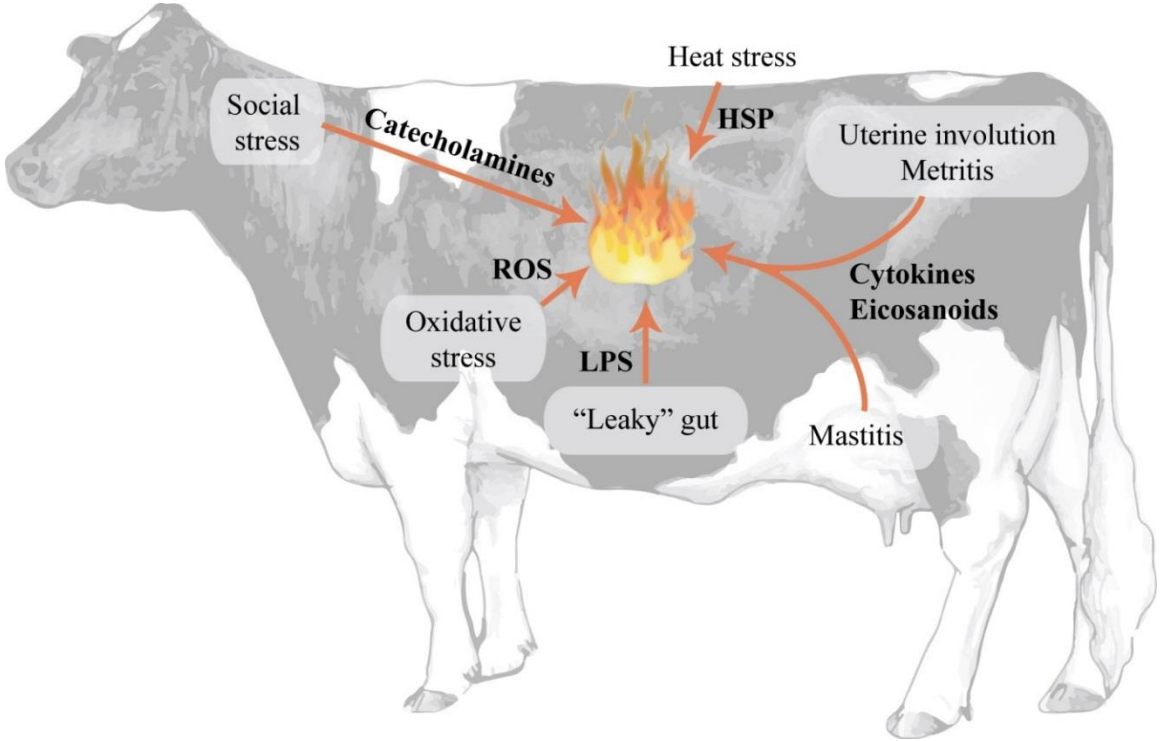
Effect of calcium change in the first 3 days postpartum on the probability of development of metritis in the first 2 weeks post calving



(Martinez-Patino, 2011)

Cows experience systemic inflammation after calving

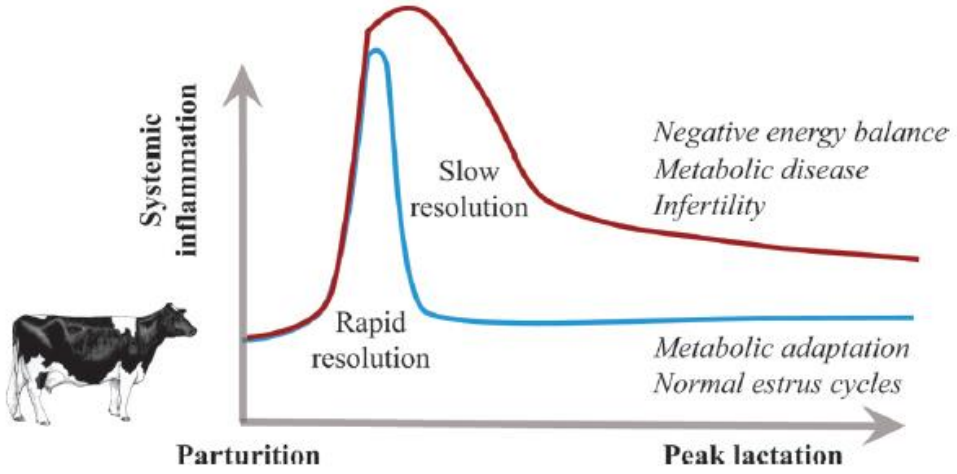
Many stressors contribute to this systemic inflammation

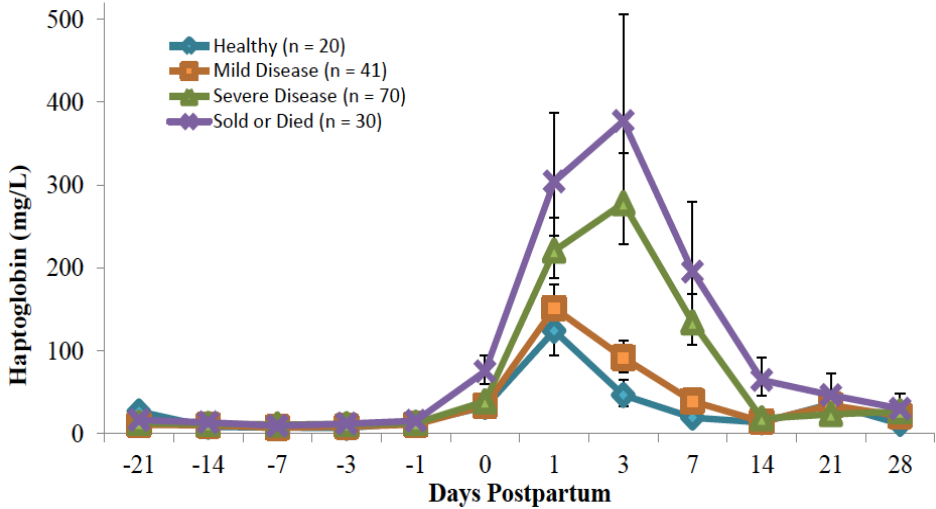


(Bradford et al., 2015)

Cows experience systemic inflammation after calving

If this post-calving systemic inflammation does not resolve rapidly, cow is at greater risk of health, production and fertility problems





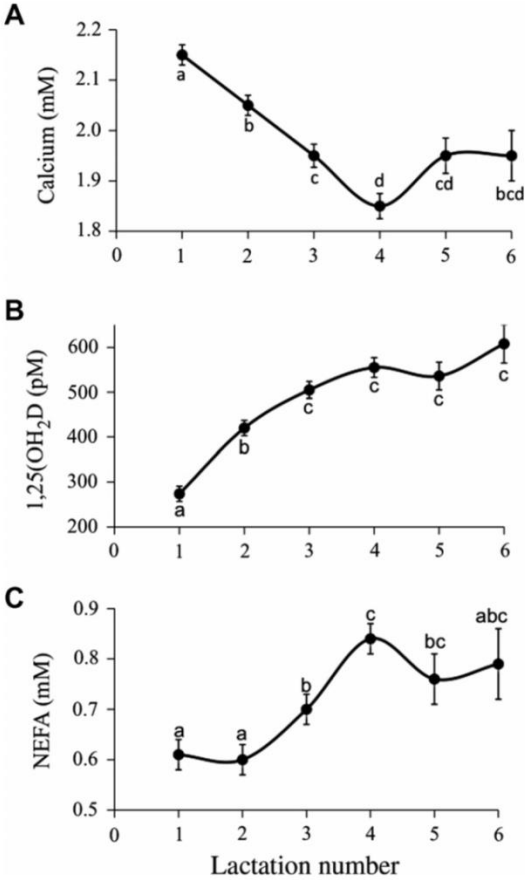
(Bradford et al., 2015)

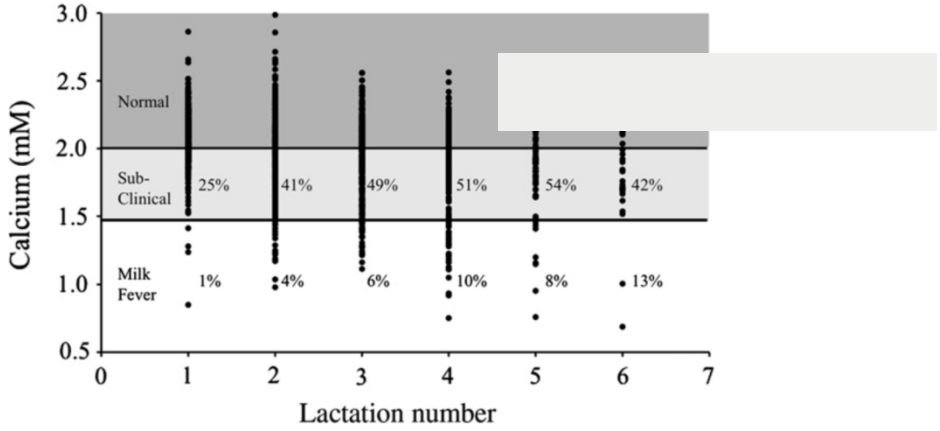
MILK FEVER RISK IS NOT ONLY RELATED TO % CALCIUM IN DIET

Factors

- Age and breed
- Calcium
- Magnesium
- Phosphorus
- Dietary Cation Anion Difference (DCAD)

Milk fever risk increases with age

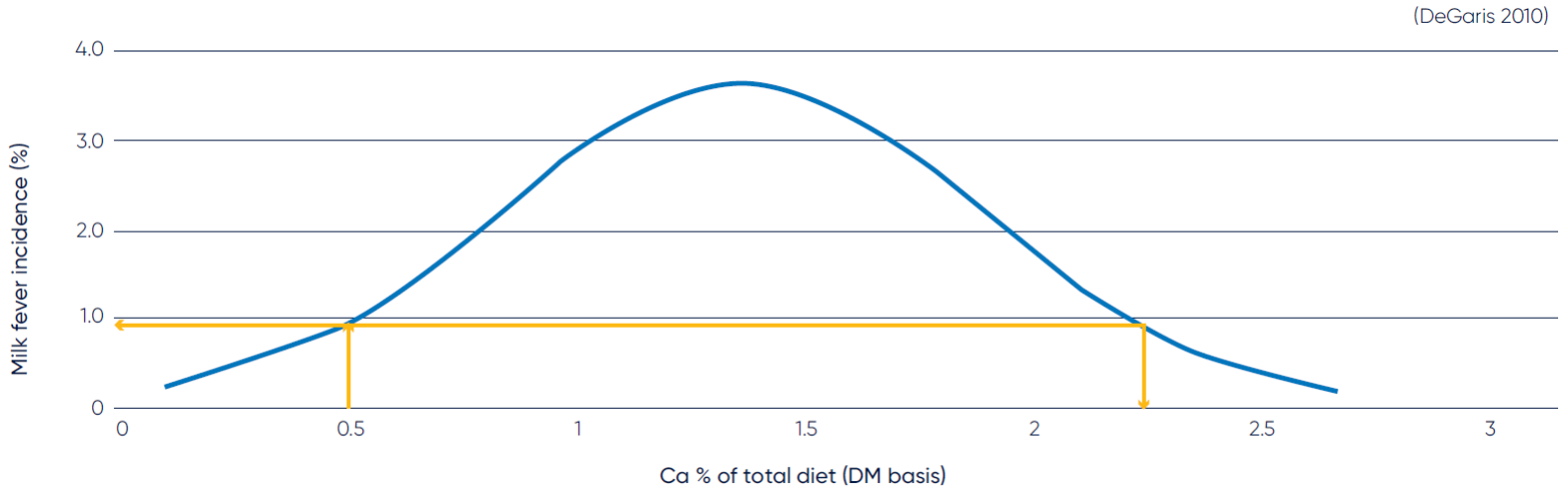




The risk of milk fever increases with age, by approximately 9% per lactation

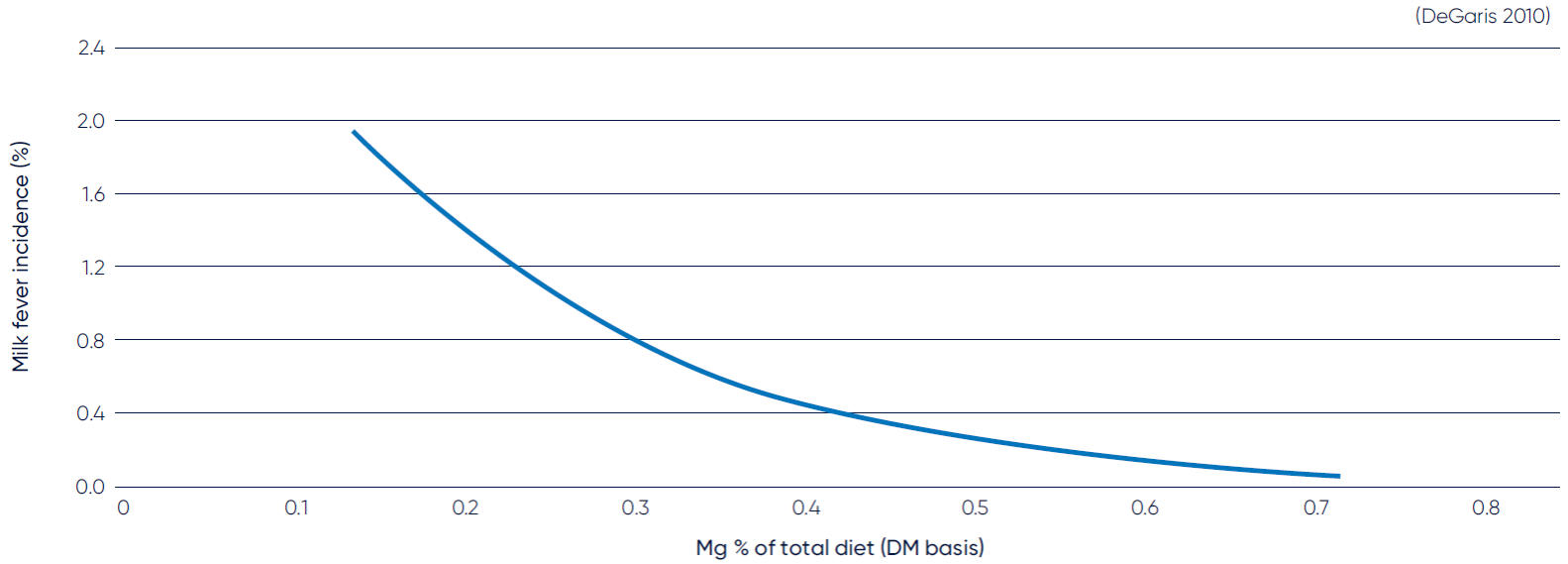
Jerseys have about twice the risk of hypocalcaemia compared to Holsteins

Effect of **Calcium** on milk fever risk



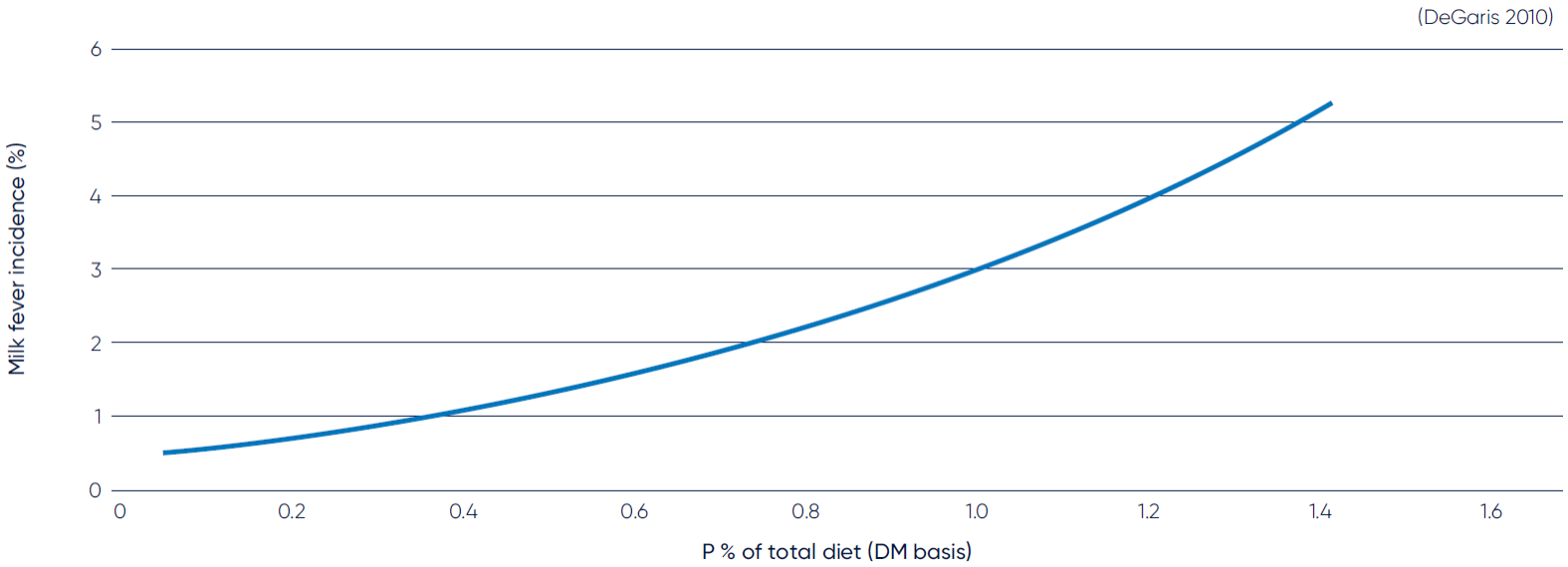
Reco. for pre-calving transition diet: between 0.5 & 0.7% Ca (DM)

Effect of **Magnesium** on milk fever risk



Reco. for pre-calving transition diet: at least 0.45% Mg (DM)

Effect of **Phosphorus** on milk fever risk

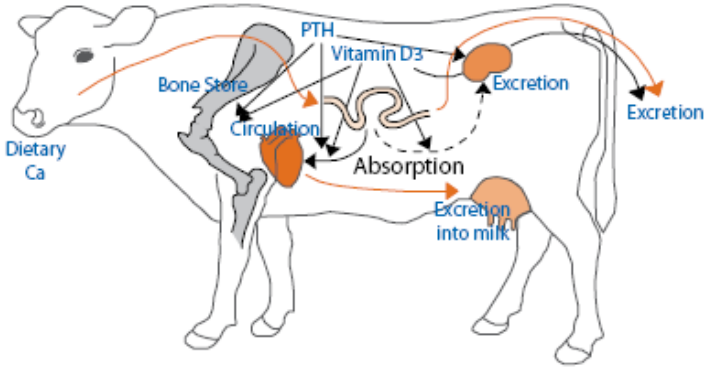


Reco. for pre-calving transition diet: 0.25 to 0.4% P (DM)

Dietary Cation Anion Difference (DCAD)

Feeding ‘anionic salts’ lowers the cow’s blood pH, which triggers:

- More active bone mobilisation and gut absorption of Calcium
- Calcium excretion in urine



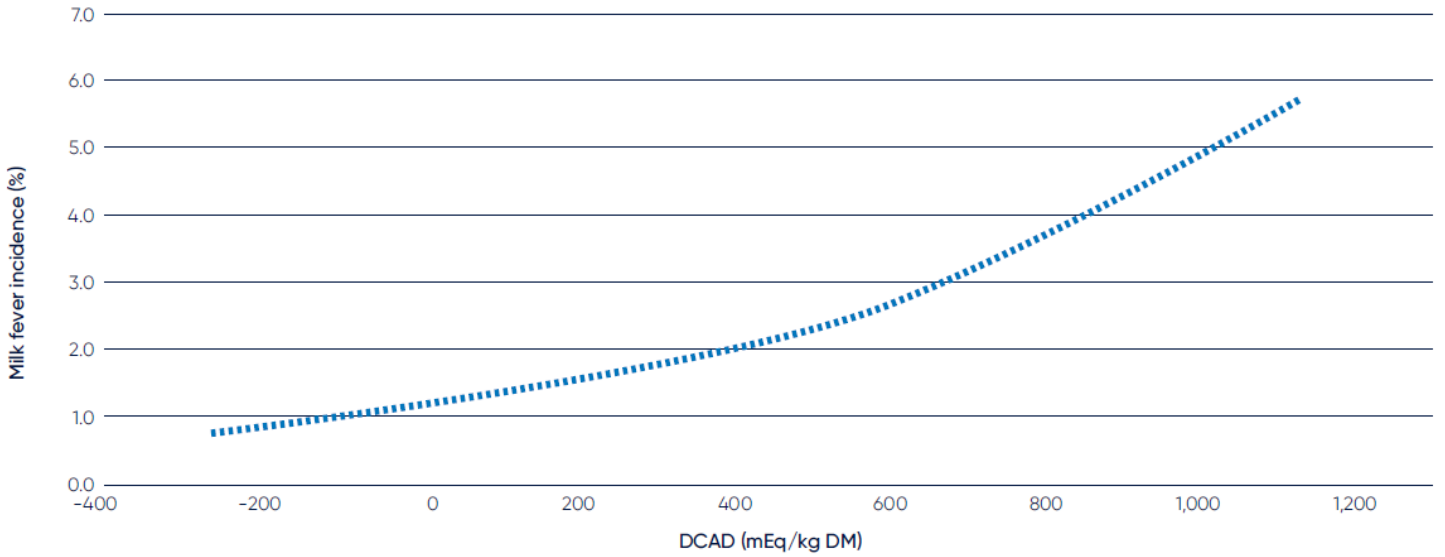
PTH and vitamin D3 as regulators of Ca metabolism
(adapted from Diseases of Cattle in Australasia, 2010*).*

The most widely adopted equation that best predicts hypocalcaemia, milk fever, milk production and health is:

$DCAD = (Na^+ + K^+) – (Cl^- + S^{2-})$ (Units: mEq/kg DM)

Dietary Cation Anion Difference (DCAD)

(Lean et al., 2006)



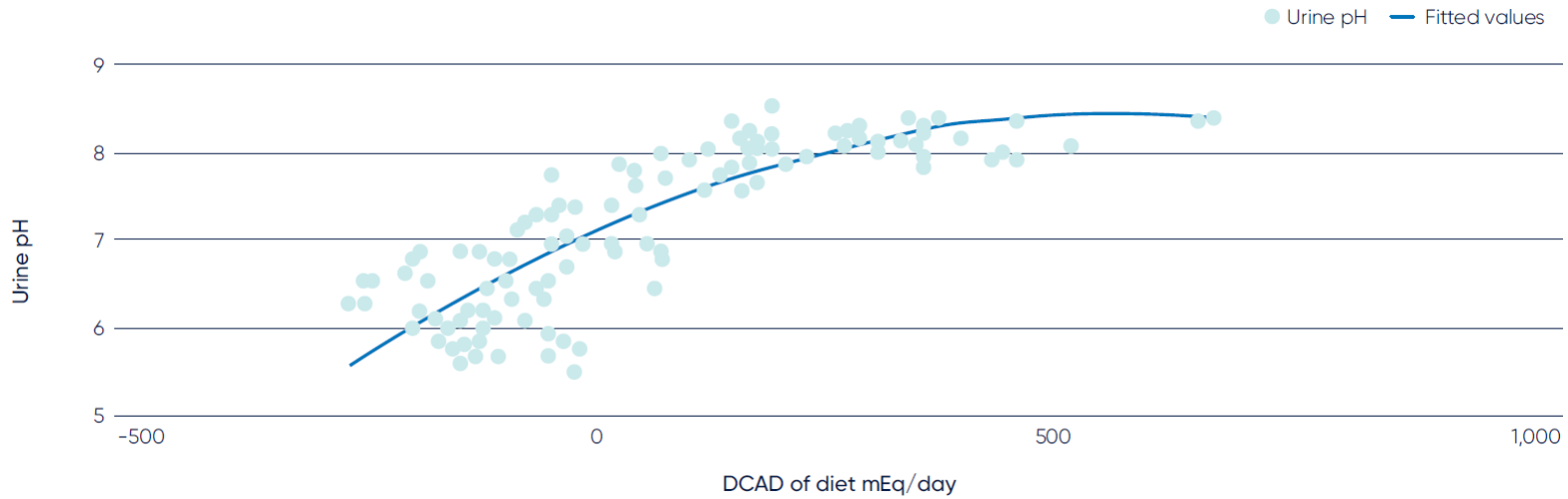
Reco. for pre-calving transition diet: Less than 0 mEq/kg DM

However, any decrease in DCAD will reduce milk fever risk, even when 0 mEq/kg DM is not achieved

Using urine pH to monitor efficacy of diet acidification

Urine pH is a useful tool for determining whether the DCAD of the diet is negative, but not necessarily to predict the risk of hypocalcaemia, as this is influenced by many other factors

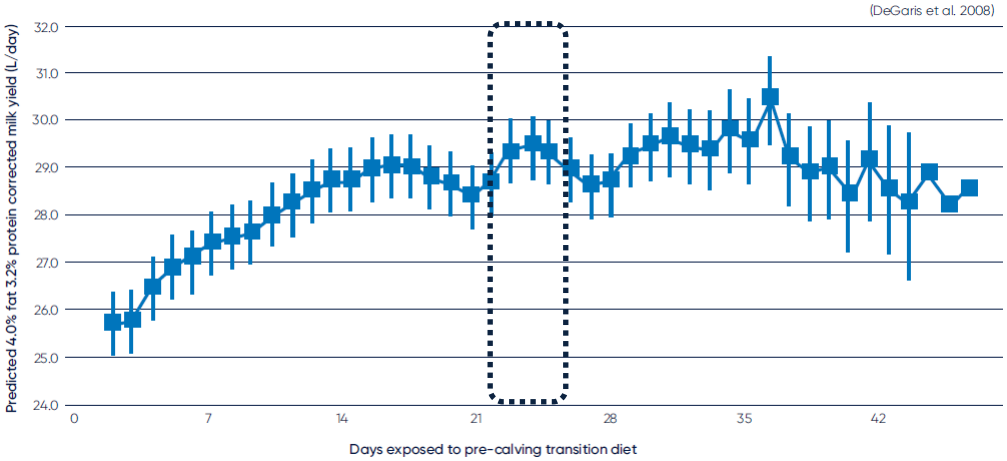
Curvilinear relationship (R^2 0.72) between DCAD (mEq of intake per day) and urine pH
(data from Santos and Lean)



HOW LONG SHOULD A TRANSITION DIET BE FED PRE-CALVING?

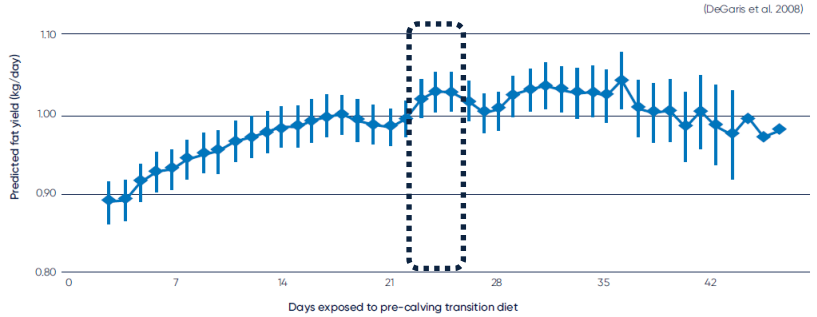
Reco. for pre-calving transition diet:
21 days exposure

Effect of days exposure on milk yield



Effect of days exposure on fat yield

Effect of days exposure on protein yield



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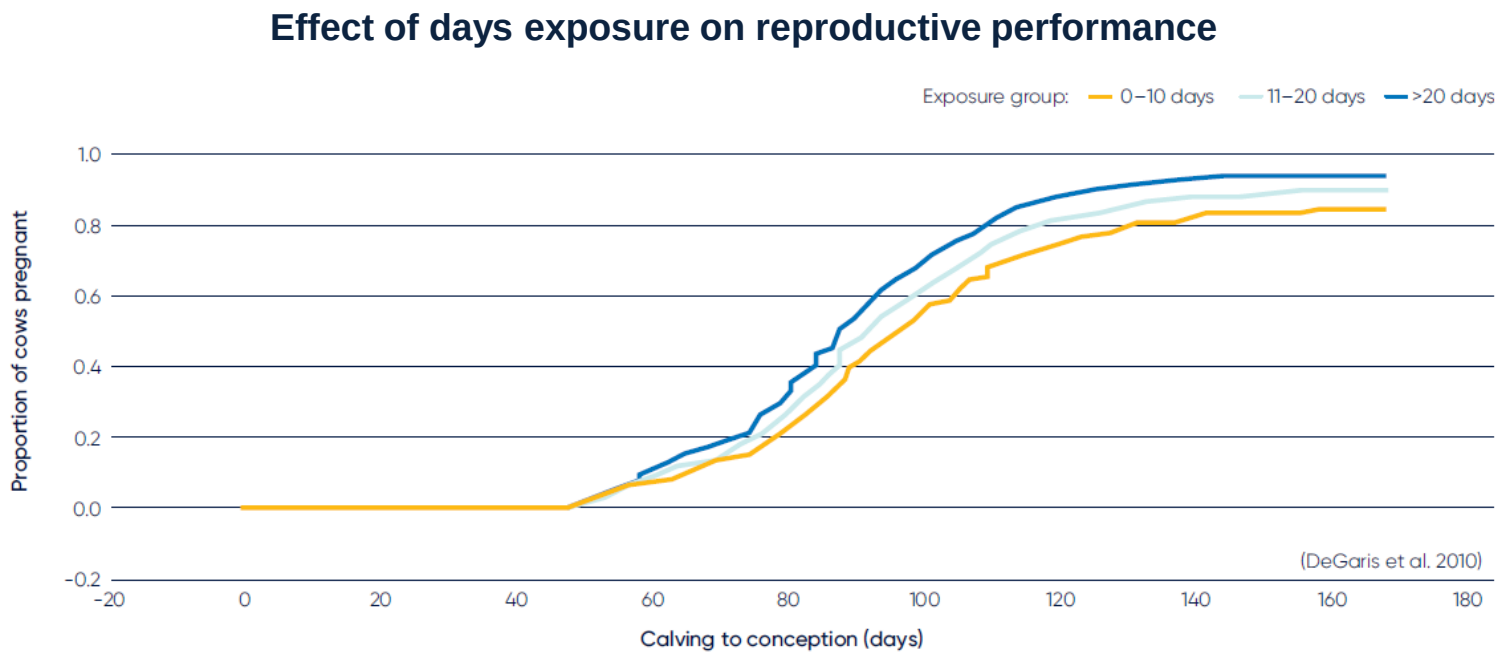

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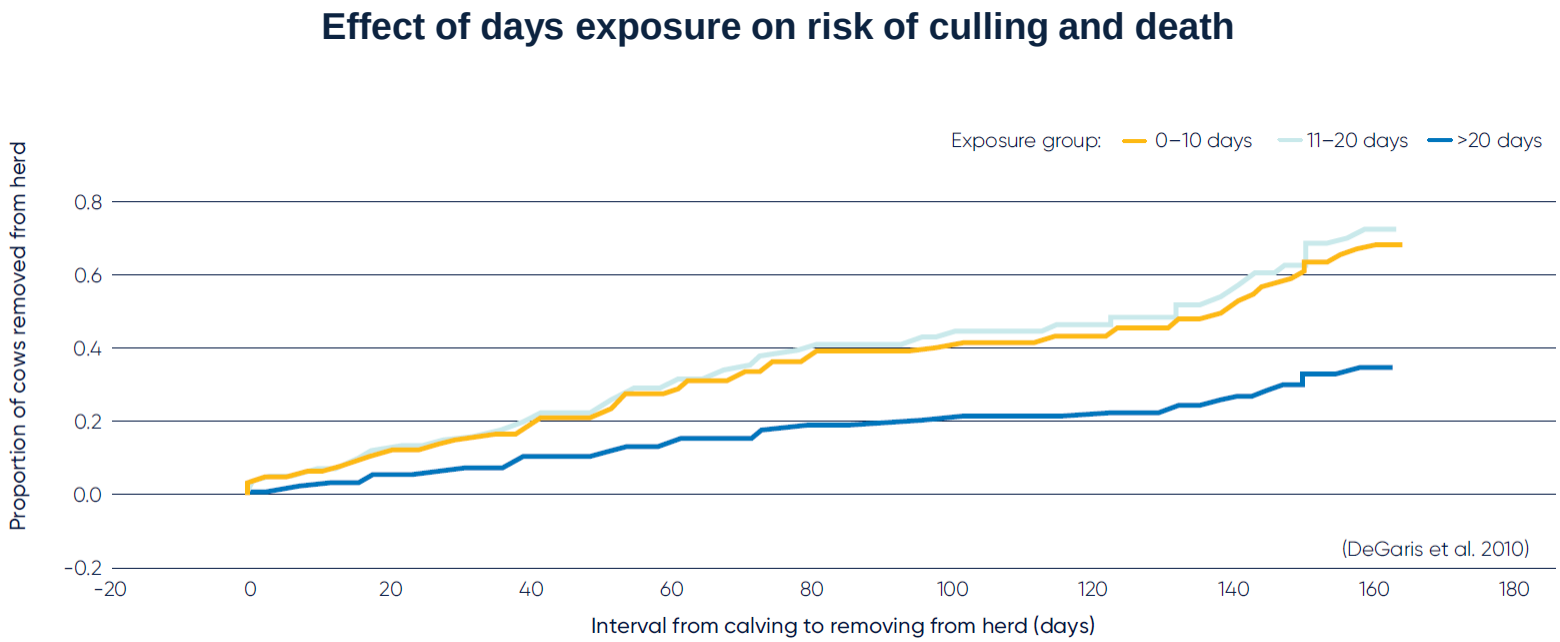
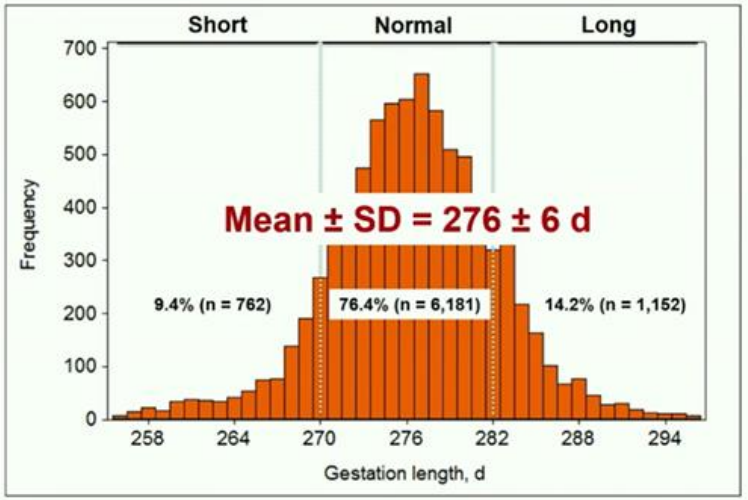


HOW LONG SHOULD A TRANSITION DIET BE FED PRE-CALVING?

Reco. for pre-calving transition diet:
21 days exposure

To achieve this, early and accurate pregnancy diagnosis is essential

Distribution of gestation length in Holstein cows



Vieira-Neto et al. (2015) J. Dairy Sci. (Abstr)

GROUP ACTIVITY

1. What is the risk level of transition diet A / B / C for milk fever?

- Low,
- Moderate, or
- High

2. Use the information provided to calculate DCAD, Ca, P and Mg content of this diet and compare with the recommendations

RECOMMENDATIONS FOR FAR-OFF, TRANSITION AND FRESH COW DIETS

Dairy Australia

Dry matter content	Far off dry cows	Transition (low DCAD)	Transition (low calcium)	Fresh cows
Neutral detergent fibre % (NDF)	Greater than 36	Greater than 36	Greater than 36	Greater than 32
Physically effective NDF %	30	25 to 30	25 to 30	Greater than 19
Crude protein (CP) %	Greater than 12	14 to 16	14 to 16	16 to 19
Degradability of CP	80%	65 to 70%	65 to 70 %	65 to 70%
Estimated metabolisable energy MJ ME	10 (9)*	11	11	11.5 to 12
Metabolisable energy intake per day (MJ)±	90 to 100	100 to 120	100 to 120	160 to 190
Starch %	Up to 18%	18 to 22	18 to 22	Greater than 20%
Sugar %	Up to 4%	4 to 6	4 to 6	8%
Ether extract %	3%	4 to 5%	4 to 5%	4 to 5%
Non-Fibre Carbohydrate	Less than 28%	Less than 36%	Less than 36%	Less than 40%
Calcium %	0.4%	0.5 to 0.7%	Less than 0.2% available Ca	0.8 to 1%
Phosphorous %	0.25%	0.25 to 0.4%	0.25%	0.4%
Magnesium %	0.3%	At least 0.45 %	At least 0.45 %	0.3%
DCAD mEq/kg	N/A	Less than 0	?	Greater than 250

*Energy content that is desirable will vary with body condition
± For a 500kg cow

Why include heifers in the transition feeding program?

- Calcium benefits
- Rumen adaptation
- Energy and protein needs
- Socialisation

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- Calcium benefits
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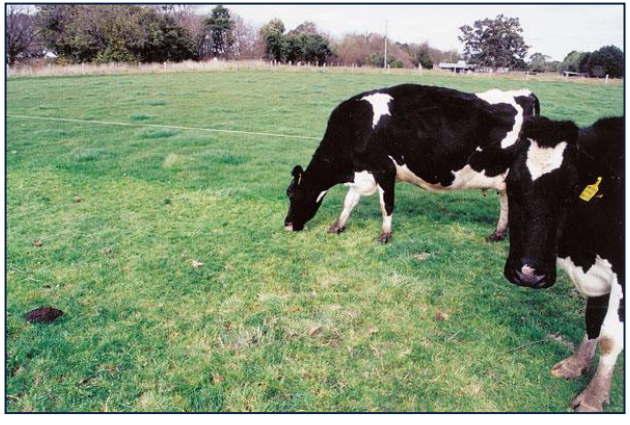
SESSION 4
MAKING IT WORK ON FARM



MAKING IT WORK ON FARM

Example farm

Milk 550 cows on 240 hectares, West Vic.

Split calving, H-F herd

7,500 litres/cow/lactation

Mod.-high bail feeding

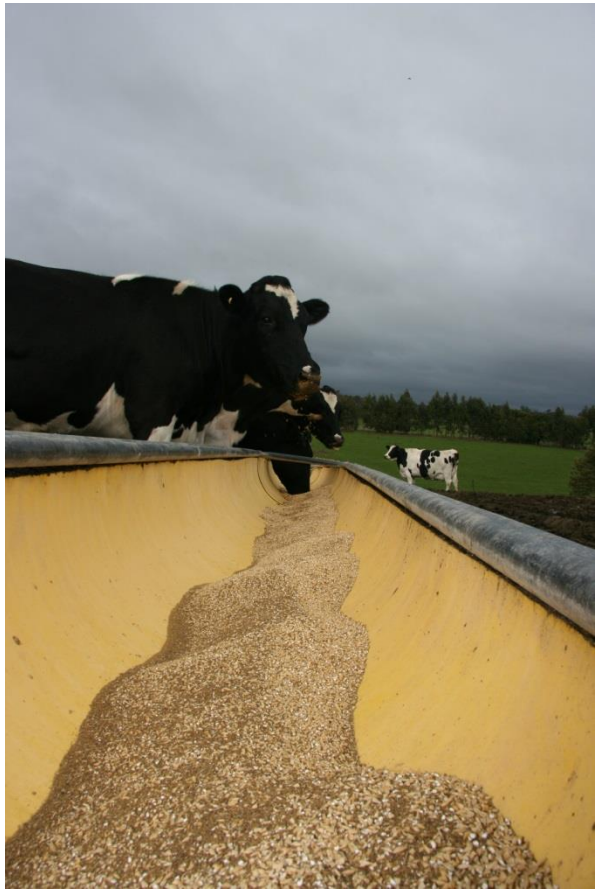
This farm's transition program:

Springer paddock plus hay shed with sand floor close to dairy

Cows spend 2-3 weeks in springer paddock where fed:

- Cereal hay ad-lib
- 5 kg/cow/day of commercial mix of barley, canola meal and anionic salts premix

Example farm



“Feeding in the paddock suits us. We already have an automatic feeding system in our rotary dairy so to lead feed through the dairy would have involved investing in an additional feed system.”

Example farm

"We started feeding on the ground, but there was too much wastage so we made our own plastic troughs which cut waste right down."

Example farm

"We feed the springers at about 3 or 4 in the afternoon because we find we have fewer cows calving in the night."

Example farm

"Feeding out is a simple, routine task; treating sick cows is stressful, time-consuming and costly. It's a clear case of prevention is better than treatment, for our cows, our people, and our business."

Example farm

Two other features of this farm's transition program

1. Accurate due calving dates from early pregnancy testing

2. Use of hay shed for last few days before calving

    Reduces heat stress risk for cows calving in Feb/March, and exposure to cold winds and rain for cows calving in July/Aug.

GROUP ACTIVITY

SETTING UP A TRANSITION PROGRAM ON A FARM

- **What do you need to consider and get right? (Things you need to know / decide / do)**

Animals	Feed	Facilities	People

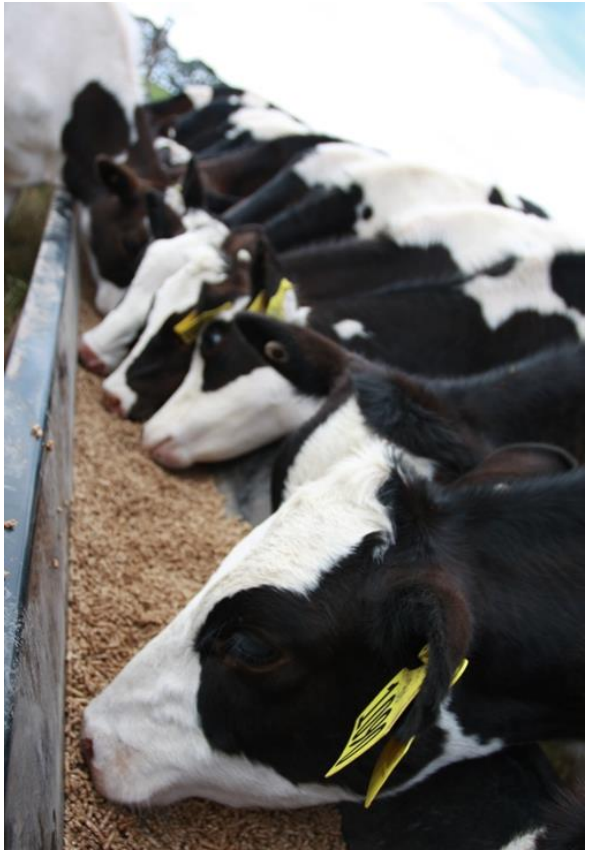
Happy and sad transition feeding management

(with thanks to Dr Neil Moss, Scibus)

Happy and sad transition feeding management

(with thanks to Dr Neil Moss, Scibus)

SESSION 5
MONITORING AND TROUBLESHOOTING



MONITORING PERFORMANCE

How would you know if a farm's transition program is being well managed?

What would you look for?

What would you measure?

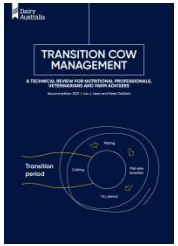
SESSION 6
ENGAGING AND ADVISING FARMERS IN TRANSITION COW MANAGEMENT

HOW TO ENGAGE AND ADVISE FARMERS ON TCM

1. Use client's milk fever rate as a conversation starter

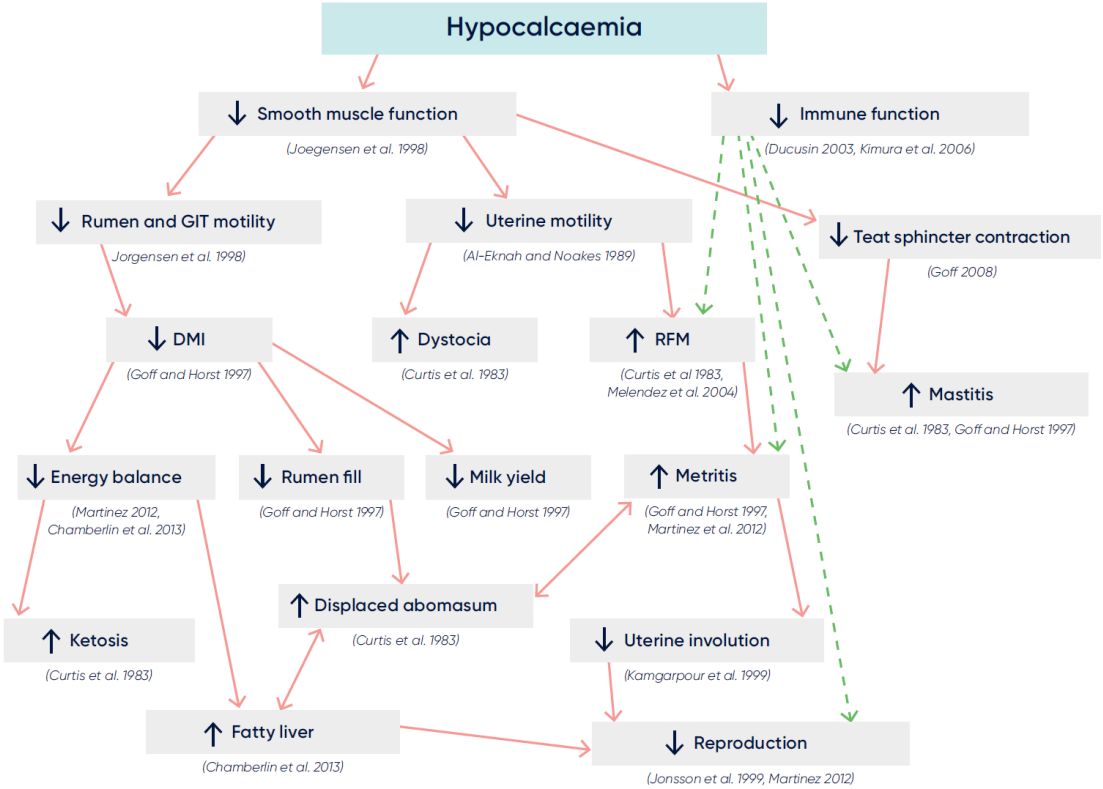
Achievable targets for cow health problems expressed as % cases of calving cows within 14 days of calving unless otherwise specified. Based on data sets from Morton, Curtis, Beckett, Moss and Stevenson.

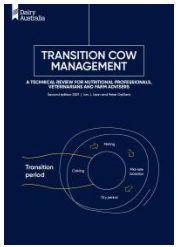
Indicator	Target performance	Seek help if
Milk fever	1% (8 years of age or less) 2% (greater than 8 years of age)	Greater than 3%
Pregnancy toxaemia	No cases	One or more cases
Clinical ketosis	Less than 1%	Greater than 2%
Abomasal displacements (left or right)	Less than 1%	Greater than 2%
Clinical mastitis	Less than 5% in the first 14 days after calving	Greater than 5% in the first 14 days after calving
Lameness (Sprecher et al., 1997 scale 1-5)	Less than 2% (greater than Score 2)	Greater than 4% (greater than Score 2)
Hypomagnesaemia	No cases	One or more cases
Retained foetal membranes greater than 12 hrs after calving	Less than 3%	Greater than 6%
Endometritis – infected after 21 days	Less than 3%	Greater than 10%
Calving difficulty	Less than 2%	Greater than 3%
Lactic acidosis	Less than 1%	Greater than 1%



HOW TO ENGAGE AND ADVISE FARMERS ON TCM

2. Present milk fever as a ‘gateway disease’





HOW TO ENGAGE AND ADVISE FARMERS ON TCM

3. Explain the benefits of taking an integrated approach to transition cow nutrition

- Better use of labour
- Lower culling & death rates
- More milk over lactation
- Higher in-calf rates

Relative net benefits:
up to $200+ / cow / year

Recommendations for far-off, transition and fresh cow diets

Dry matter content	Far off dry cows	Transition (low DCAD)	Transition (low calcium)	Fresh cows
Neutral detergent fibre % (NDF)	Greater than 36	Greater than 36	Greater than 36	Greater than 32
Physically effective NDF %	30	25 to 30	25 to 30	Greater than 19
Crude protein (CP) %	Greater than 12	14 to 16	14 to 16	16 to 19
Degradability of CP	80%	65 to 70%	65 to 70 %	65 to 70%
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Metabolisable energy intake per day (MJ)±	90 to 100	100 to 120	100 to 120	160 to 190
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Non-Fibre Carbohydrate	Less than 28%	Less than 36%	Less than 36%	Less than 40%
Calcium %	0.4%	0.5 to 0.7%	Less than 0.2% available Ca	0.8 to 1%
Phosphorous %	0.25%	0.25 to 0.4%	0.25%	0.4%
Magnesium %	0.3%	At least 0.45 %	At least 0.45 %	0.3%
DCAD mEq/kg	N/A	Less than 0	?	Greater than 250

*Energy content that is desirable will vary with body condition
± For a 500kg cow

HOW TO ENGAGE AND ADVISE FARMERS ON TCM

4. Discuss opportunities for improvement and what these may be worth

Change to a more effective transition feeding option

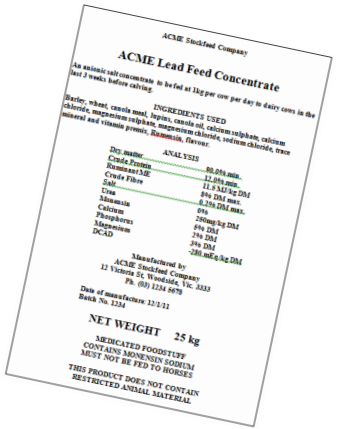
				Provides for needs of transition cow								
Description	Applicable production systems (1 to 5)*	Ease of use	Effectiveness (1 to 4)**	Milk fever control	Other metabolic disease control	Improved animal health	Improved production	Improved reproduction	Rumen adaptation	Positive metabolisable protein balance	Positive metabolisable energy balance	Comments
Pasture and hay	1 & 2	✓✓✓✓✓	1	✓	✓	✓	✓	✓	✓	✓	✓	Does not address needs of the cow
Pasture, hay, acidogenic salts	1 & 2	✓✓✓✓	2	✓✓	✓	✓✓	✓✓	✓	✓	✓	✓	Acidogenic salts delivered in water may reduce water and feed intakes
Pasture, hay, concentrate	1 & 2	✓✓✓	2	✓	✓✓	✓✓	✓✓	✓	✓✓✓	✓	✓✓✓	Does not address control of macromineral disorders
Pasture, hay, concentrate, zeolite A	1, 2, 3 & 4	✓✓✓	2 to 3	✓✓✓✓	?	✓✓✓	✓✓✓	✓✓	✓✓✓✓	✓✓	✓✓✓✓	Impact on production, reproduction and health not currently understood.
Pasture, hay, grain, acidogenic salts	1, 2 & 3	✓✓✓	2 to 3	✓✓✓	✓✓✓✓	✓✓✓	✓✓✓	✓✓	✓✓✓✓	✓✓	✓✓✓✓	Can be difficult to control macromineral disorders
Pasture, hay, commercial lead feed	1, 2, 3 & 4	✓✓✓	3 to 4	✓✓✓✓✓	✓✓✓✓✓	✓✓✓✓	✓✓✓✓	✓✓✓	✓✓✓✓✓	✓✓✓	✓✓✓✓	Can be a highly effective strategy
TMR/PMR (fully integrated transition diet)	3, 4 & 5	✓✓✓	4	✓✓✓✓✓	✓✓✓✓✓	✓✓✓✓✓	✓✓✓✓✓	✓✓✓✓✓	✓✓✓✓✓	✓✓✓✓✓	✓✓✓✓✓	Highly effective strategy

* Production systems: 1. Pasture, other forages and low grain/concentrate feeding in bail; 2. Pasture plus other forages and moderate to high grain/concentrate feeding in bail; 3. Pasture plus PMR with or without grain/concentrate feeding in bail; 4. Hybrid system; 5. Total mixed ration (TMR) system.

** Effectiveness: 1. Does not address any of the needs of the transition cow. 2. Addresses some of the needs of the transition cow. 3. May address all the needs of the transition cow. 4. Addresses all the needs of the transition cow.

HOW TO ENGAGE AND ADVISE FARMERS ON TCM

5. Help clients design a transition diet with a low milk fever risk



ACME Stockfeed Company

ACME Lead Feed Concentrate

An anionic salt concentrate to be fed at 1kg per cow per day to dairy cows in the last 3 weeks before calving.

INGREDIENTS USED

Barley, wheat, canola meal, lupins, canola oil, calcium sulphate, calcium chloride, magnesium sulphate, magnesium chloride, sodium chloride, trace mineral and vitamin premix, Rumensin, flavour.

ANALYSIS

Dry matter	
Crude Protein	80.0% min.
Rumensin ME	11.9% min.
Crude Fibre	11.8 MJ/kg DM
Salt	8% DM max.
Urea	0.25% DM max.
Ammonia	0%
Calcium	280mg/kg DM
Phosphorus	6% DM
Magnesium	3% DM
DCAD	-280 mEq/kg DM

Manufactured by
ACME Stockfeed Company
12 Victoria St, Woodside, Vic 3333
Ph. (03) 1234 5678

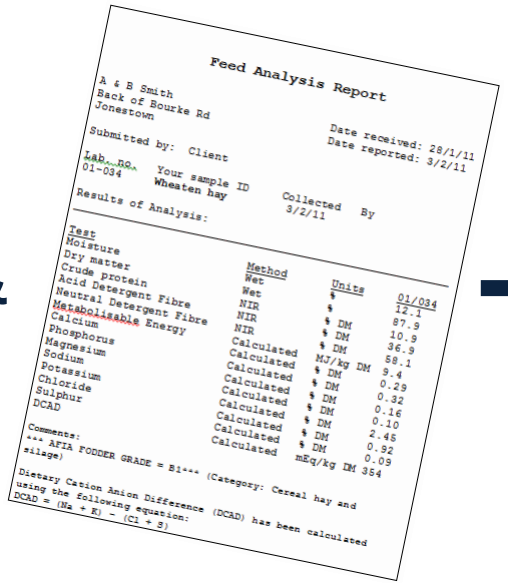
Date of manufacture: 12/1/11
Batch No. 1234

NET WEIGHT 25 kg

MEDICATED FOODSTUFF
CONTAINS MONENSIN SODIUM
MUST NOT BE FED TO HORSES

THIS PRODUCT DOES NOT CONTAIN RESTRICTED ANIMAL MATERIAL

&



Feed Analysis Report

A & B Smith
Back of Bourke Rd
Jonestown

Date received: 28/1/11
Date reported: 3/2/11

Submitted by: Client

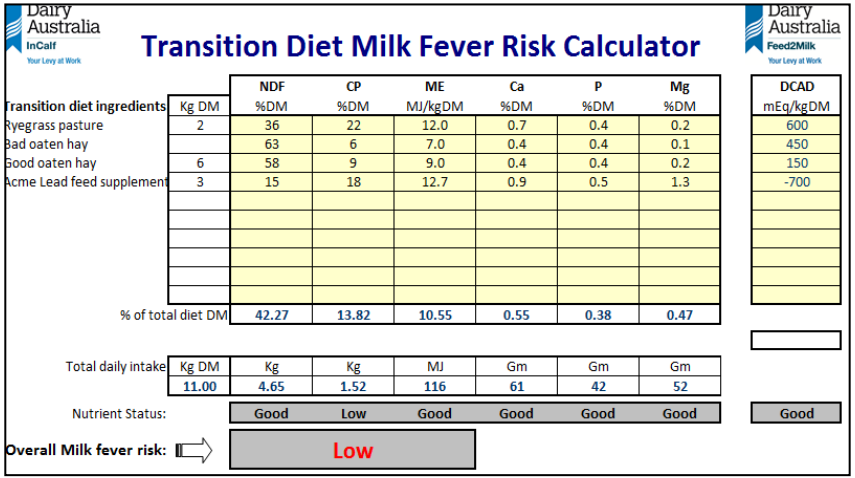
Lab. no.	Your sample ID	Collected	By
01-034	Wheaten hay	3/2/11	

Results of Analysis:

Test	Method	Units	01/034
Moisture	Wet	%	12.1
Dry matter	Wet	%	87.9
Crude protein	NIR	% DM	10.9
Acid Detergent Fibre	NIR	% DM	36.9
Neutral Detergent Fibre	NIR	% DM	58.1
Metabolisable Energy	Calculated	MJ/kg DM	9.4
Calcium	Calculated	% DM	0.29
Phosphorus	Calculated	% DM	0.32
Magnesium	Calculated	% DM	0.16
Sodium	Calculated	% DM	0.10
Potassium	Calculated	% DM	2.45
Chloride	Calculated	% DM	0.92
Sulphur	Calculated	% DM	0.09
DCAD	Calculated	mEq/kg DM	354

Comments:
+++ AFIA FODDER GRADE = B1+++ (Category: Cereal hay and silage)

Dietary Cation Anion Difference (DCAD) has been calculated using the following equation:
DCAD = (Na + K) - (Cl + S)



Dairy Australia InCalf — Your Levy at Work

Transition Diet Milk Fever Risk Calculator

Dairy Australia Feed2Milk — Your Levy at Work

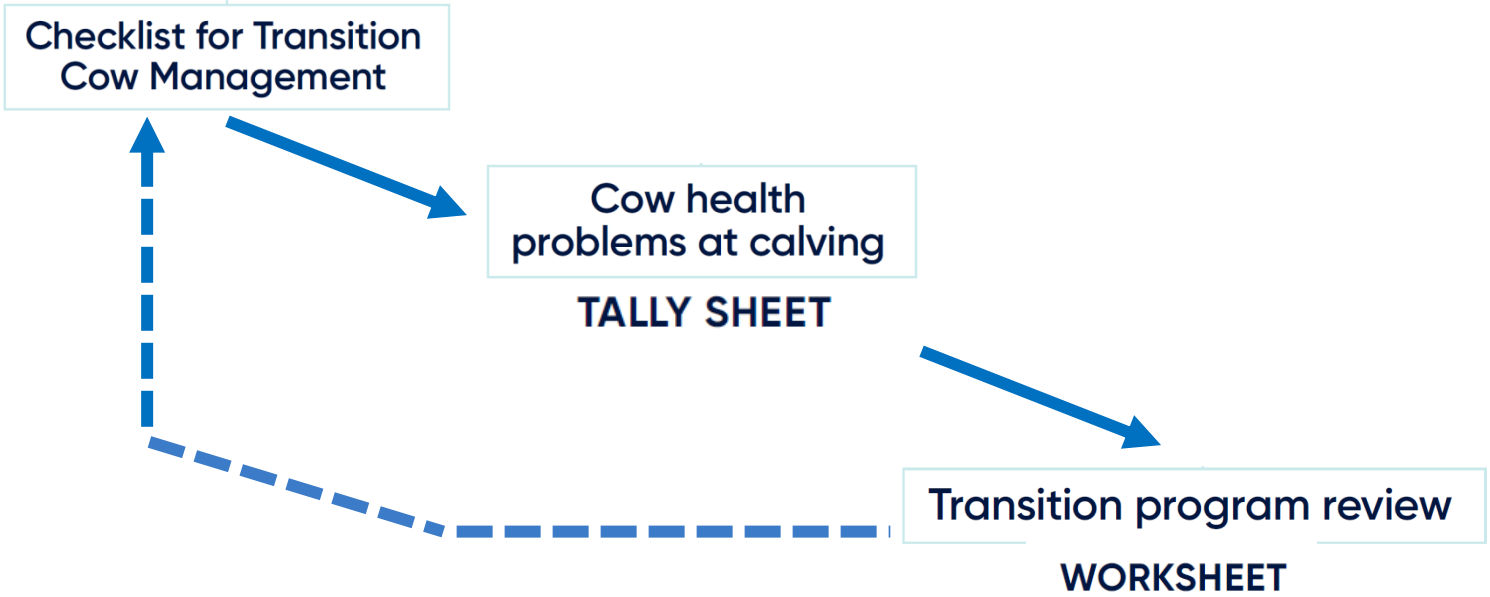
Transition diet ingredients	Kg DM	NDF %DM	CP %DM	ME MJ/kgDM	Ca %DM	P %DM	Mg %DM	DCAD mEq/kgDM
Ryegrass pasture	2	36	22	12.0	0.7	0.4	0.2	600
Bad oaten hay		63	6	7.0	0.4	0.4	0.1	450
Good oaten hay	6	58	9	9.0	0.4	0.4	0.2	150
Acme Lead feed supplement	3	15	18	12.7	0.9	0.5	1.3	-700
% of total diet DM		42.27	13.82	10.55	0.55	0.38	0.47	
Total daily intake	Kg DM	Kg	Kg	MJ	Gm	Gm	Gm	
	11.00	4.65	1.52	116	61	42	52	
Nutrient Status:		Good	Low	Good	Good	Good	Good	Good

Overall Milk fever risk: Low

www.dairyaustralia.com.au

HOW TO ENGAGE AND ADVISE FARMERS ON TCM

6. Help clients plan / do / monitor / review their TCM program



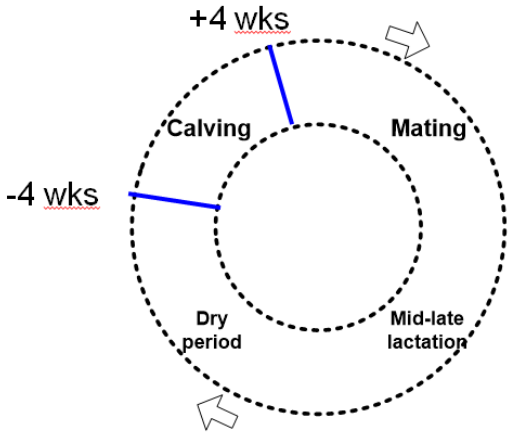
HOW TO ENGAGE AND ADVISE FARMERS ON TCM

1. Use client's milk fever rate as a conversation starter
2. Present milk fever as a 'gateway disease'
3. Sell the benefits of taking an integrated approach to transition nutrition
4. Discuss opportunities for improvement and what these may be worth
5. Help clients design a transition diet with a low milk fever risk
6. Help clients plan / do / monitor / review their TCM program

SESSION 7
MANAGING FRESHLY CALVED COWS

For a successful lactation it is critical to:

- Continue ruminal adaption to high concentrate diets
- Pay careful attention to macro and micro mineral metabolism
- Minimise depth and length of negative energy and protein balance
- Provide adequate Ca, Mg and P



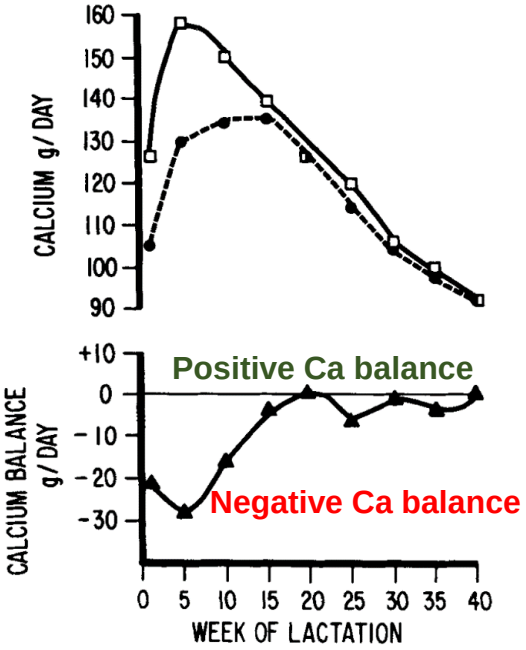
Three common failures in the management of fresh cows:

- Too little feed
- Too much grain, too quickly
- Too little Ca, Mg, P

5 challenges to establishing a successful lactation

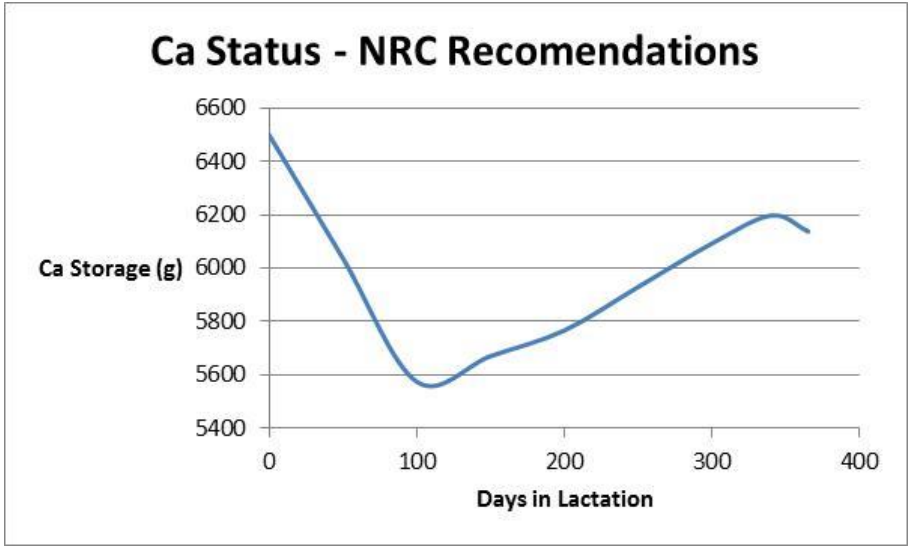
Calcium balance

Dynamics of calcium metabolism in the cow



(Horst, 1986)

600kg cow, fed ryegrass pasture & concentrate, peak at 32L, 20kg DM, 0.6% Ca



(McGrath, 2016)

SESSION 8
YOUR ASSIGNMENT

For a dairy farm business of your choice:
Use the Dairy Aust. Checklist for TCM (plus the Transition diet Milk Fever Risk Calculator and / or Review worksheet if you wish) and available herd health records to:

- assess the pre-calving TCM program used in the most recent calving period with the farm owner/manager, and
- develop recommendations on the farm's TCM program for the upcoming calving period

Write a report (max. 1000 words) addressed to the farm owner / manager with your comments and recommendations.
Enclose a completed Dairy Aust. Checklist for TCM as an attachment.

TRANSITION COW MANAGEMENT WORKSHOP

ReproRight, CSU, Wagga Wagga, 28TH June 2022

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Capacity+ Ag Consulting