

Transition cow management: Farm audit data from a regional study

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Introduction

The transition period: 3 weeks before and 3 weeks after calving

- Greatest risk of developing disease during this time (LeBlanc, 2010)
- Management and nutrition strongly linked to
 - Incidence of metabolic disease
 - Milk yield
 - Fertility

(Roche et al. 2018)



Optimal transition cow success relies on multiple management and nutritional factors that all interlink



What's the problem?

- Extensive research conducted on transition cow management and nutrition, but high rates of metabolic disease are still a problem
- UK (Macrae et al., 2019)
- Ireland (Mulligan, 2008)
- Canada (Mills et al., 2020)

Approximately 75% of diseases in dairy cattle occur in the first month postpartum and 50% of dairy cattle suffer from metabolic and infectious diseases in the transition period (Leblanc, 2010)



What are the social factors that influence transition cow health on farm?



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Dairy cow health and management in the transition period: The need to understand the human dimension

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Why isn't the transition period getting the attention it deserves? Farm advisors' opinions and experiences of managing dairy cow health in the transition period

Emma A. Redfern ^a  , Liam A. Sinclair ^b, Philip A. Robinson ^a

Redfern, E.A., Sinclair, L.A. and Robinson, P.A., 2021. Investigating the advisor and farmer relationships that influence dairy cow health and welfare in the transition period before and after calving. In Proceedings of the Society for Veterinary Epidemiology and Preventive Medicine annual meeting held online, SVEPM (pp. 212- 223)

56 interviews

All-year round
calving farmers

Block calving
farmers

Vets

Nutritionists

Farm audit

Housing
assessment

Cattle
measurements

Dietary analysis

Water mineral
analysis

Cubicles

Pre-calver cubicles

- None met recommended requirements

Mean width 1.1 m (target 1.22-1.37m)

Mean length 1.8m (target 1.85-2m).

Mean lunging space 0.6m (target > 0.7m)

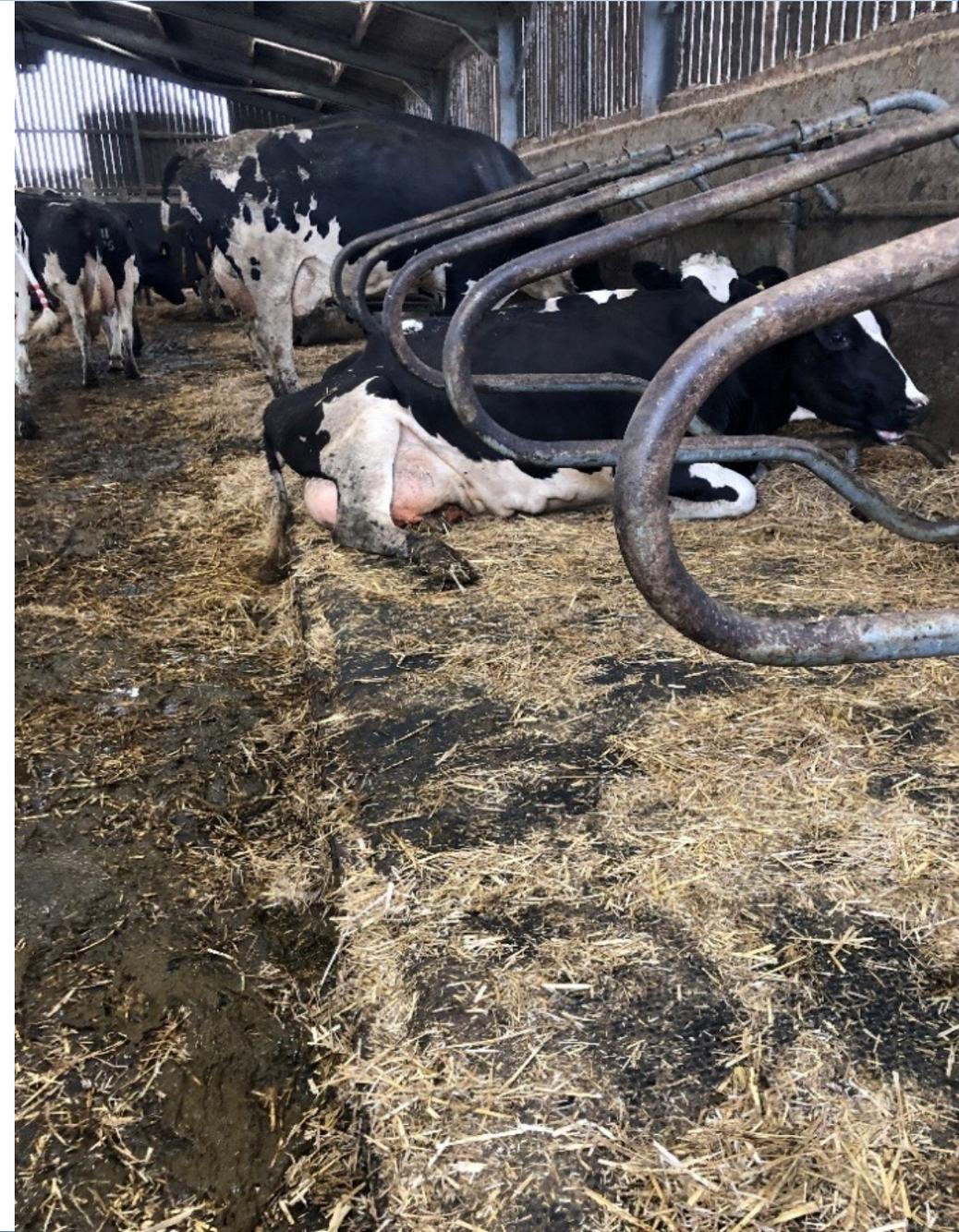
Fresh cow cubicles

- Met the recommended requirements

Mean width of 1.2m

Mean length of 1.9m

Mean lunging space of 0.8m



Body condition

F9: “I’m monitoring them every day aren’t I? I see them. No I don’t write it down”

- % of a group outside the ideal range (target <20%).
- Ideal range (2.5-3.0) according to AHDB

Pre-calvers

- 35.8% above the ideal range
- 2.6% below the ideal range

Mean pre-calver BCS was 3.34.

Fresh cows

- 28.3% above ideal range
- 5.2% below the ideal range

Mean early lactation BCS was 3.01.



Hock condition

- Mean of 33% of pre-calvers scoring ≥ 2 . A third of all pre-calving cows had at least one lesion or inflamed area with hair loss.
- Early lactation hock condition within the recommended target
Mean: 7.3% scoring ≥ 2

Mobility

- Mean 20% of pre-calvers scored 2 or above. That's 1/5th of pre-calvers scoring lame.
- Mean 28.4% early lactation cows scored 2 or above. Over half of the herds in my study had >15% either pre or post calving cows scoring lame.

Rumen fill score

- Lower than ideal across both groups
- 15.3% pre-calving cows with a rumen fill score < 4 (target < 10%).
- 35.8% early lactation cows with a rumen fill score < 3 (target < 10%).



Mineral analysis: Pre-calver diets

- Trace elements generally in excess of NRC (2001) guidelines
- The selenium content of the pre-calver diets did not meet recommendations on 86% of farms, with a mean content of 0.09 g/kg (target 0.3 mg/kg DM)
- Magnesium did not meet recommendations on 54% of farms (mean 3.41, target >3.5)
- Calcium and potassium exceeded recommendations. Calcium mean 5.66 g/kgDM (target <5). Potassium mean 13.9 g/kgDM (target <11).
- Mean copper content exceeded recommendations, with a mean value of 20.89 mg/kg DM, equating to 240 mg per day (on a 12 kg DM basis).
- Iron content over 5 times the recommended concentration
- Cobalt was also over 4 times the recommended concentration.
- Zinc was 18.8 g/kg DM above recommendations (68.8 g/kg DM)

	Recommended	Mean
Micronutrients (mg/kg DM)		
Manganese	50	89
Iron	60	334
Cobalt	0.12	0.59
Copper	12-18	20.8
Selenium	0.3	0.09
Molybdenum		1.43
Zinc	50	68.8
Macro minerals (g/kg DM)		
Potassium	<11	13.9
Calcium	< 5	5.66
Magnesium	>3.5	3.42
Phosphorus	2.5-3.3	2.76

Mineral analysis: Fresh cow diets

- Mineral content in early lactation diets were all oversupplied
- Copper concentrations exceeding recommendations by 17.9 mg/kgDM, and with one farm exceeding the maximum permitted level twice with a value of 79.3 mg/kgDM
- Similarly, to the pre-calver diets, iron content was over 5 times the recommended concentration.
- Cobalt was over 3 times the recommended concentration
- Zinc was 31.8 mg/kg DM over recommended concentrations.
- Manganese nearly 6 times over recommended concentration.

	Recommended	Mean
Trace minerals mg/kg DM		
Manganese	14	82.2
Iron	16	298
Cobalt	0.11	0.36
Copper	11	18.9
Selenium	0.3	0.94
Molybdenum	-	1.72
Zinc	51	82.8
Macro minerals g/kg DM		
Potassium	10.6	20.5
Calcium	6.2	8.08
Magnesium	2.0	3.07
Phosphorus	3.6	4.67

Conclusions



- Pre-calver cubicles were too small
- Generally, cows were over conditioned
- 1/3 pre-calvers had at least 1 hock lesion
- 1/5 pre-calvers were lame
- Over 1/4 fresh cows were lame
- Rumen fill suboptimal in both groups
- Fresh cow minerals all over supplied
- Pre-calver minerals- mostly over supplied apart from magnesium and selenium which was undersupplied

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