



Baby Steps: Why we need to focus more on our heifers

Dr Sara Pedersen
RCVS Specialist in Cattle Health and Production

FARM DYNAMICS

1

Focus on Heifers

Background

Interventions

1. Genetics
2. Digital Dermatitis
3. Heifer Groups
4. Hoof Trimming
5. Early Detection and Prompt Effective Treatment
6. NSAIDS



FARM DYNAMICS

2



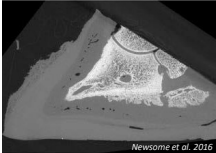
Background

FARM DYNAMICS

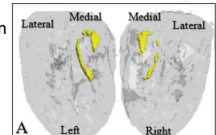
3

The Age Effect

- Once a cow is lame she enters a chronic cycle:
 - Underlying damage due to inflammation
 - Pedal bone
 - Digital cushion
- Once a cow has been lame her risk of going lame is increased
- Disease processes start in heifers
- Need to shift away from cows and focus more on heifers
 - Pre-calving
 - First lactation



Newsome et al., 2016



Wilson et al., 2021

FARM DYNAMICS

4

How many of our heifers are lame?

Studies on lameness in 1st Lactation:

2006 (Bell):

- Mean prevalence **16.0%** (0-55.6%)

2017 (Mahendran et al.):

- **41.1%** of heifers went lame in 1st lactation
- Peak risk 29-42 days (12.2%)
- End of lactation 1.1%
- Transient and dynamic nature of lameness

Target prevalence in 1st lactation = <5%



FARM DYNAMICS

5



Interventions

FARM DYNAMICS

6

1. Genetic Selection

FARM DYNAMICS

7

1. Genetic Selection



- University of Liverpool work on select group of farms
- Genetic selection for some lesions is promising:
 - Digital Dermatitis: Heritability (h^2) = 0.34
 - Sole haemorrhage/bruising: Heritability (h^2) = 0.29
 - Sole Ulcers: Heritability (h^2) = 0.34
- Less so for white line disease (h^2 = 0.1)

FARM DYNAMICS

8

2. Digital Dermatitis

FARM DYNAMICS

9

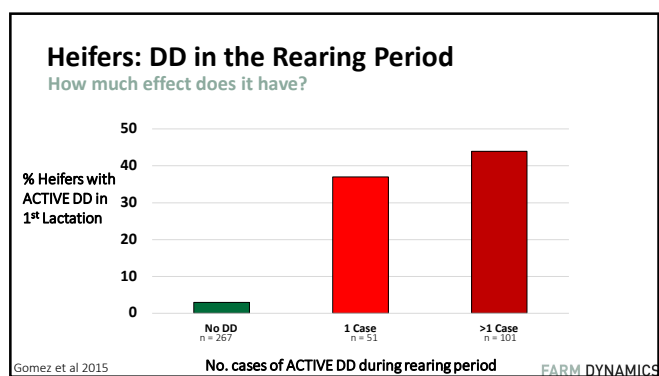
2. Digital Dermatitis



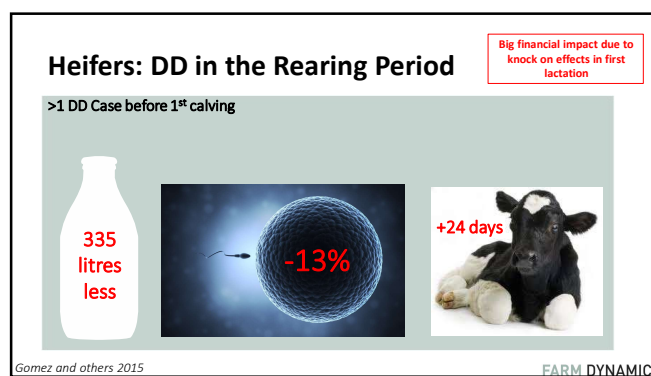
- Digital dermatitis pre-calving has a large impact on future risk
- Enter herd and drive 'flare ups'
- Long term herd control not possible without control in youngstock

FARM DYNAMICS

10



11



12

Preventing DD in Heifers

- Biosecurity between cows and heifers
 - Automatic/tractor scrapers
 - Gathering herd together for management tasks
- Building resilience through appropriate nutrition
 - Vitamins A, E & Biotin
 - Trace minerals: Zinc, iodine, selenium, copper
- Footbathing



FARM DYNAMICS

13

3. Heifer Groups

FARM DYNAMICS

14

3. Heifer Groups and Comfort

- Weaknesses in the foot around calving
- Longer recovery in heifers vs cows
- Strong evidence of benefit of straw yards 4wks before to 8wks after calving (Webster 2002)
- Comfortable, deep bed more practical to achieve?
- Separate heifer group:
 - Less bullying
 - Less impact on feeding
 - Improved lying times?



FARM DYNAMICS

15

Cubicles and Dimensions

- Train to cubicles prior to calving
- Lying times drop by 2.9-4.2 hours on introduction (von Keyserlingk et al., 2011)
- Protective effective of exposure to concrete prior to calving? (Randall et al., 2016)
- But cubicles need to be the right dimensions



FARM DYNAMICS

16

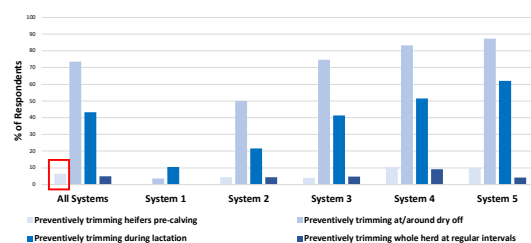
4. Hoof Trimming

FARM DYNAMICS

17

4. Hoof Trimming

Very few farms undertaking preventive trimming of pre-calving heifers

Pedersen et al. 2021
FARM DYNAMICS

18

What does the evidence say?

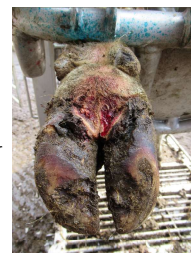
- That it increases risk of lameness!
- BUT confounding factors:
 - Close to calving (3 weeks)
 - High wear environment – sand on new concrete
- If we are thinking 'if' we should trim, should we also consider 'how'?

Mahendaran et al. 2017
FARM DYNAMICS

19

Enrolment Criteria

- Enrolled 50-70 d prior to predicted 1st calving
- Excluded if:
 - History of lameness
 - Clinically lame (MS ≥ 2) and/or requiring treatment for claw horn lesion at the point of enrolment
 - Not present at enrolment visit

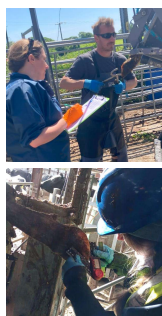


FARM DYNAMICS

20

Measurements

- **1,023 heifers enrolled in total**
 - Mechanical failures, incorrect treatment applied, Covid!
- Hoof trimming: 5 qualified hoof trimmers
- At enrolment (all undertaken by SP)
 - Mobility scored (adapted 0-3: 0, 1a, 1b, 2a, 2b, 3a, 3b)
 - BCS (visual)
 - Dorsal wall length (from where horn hard to roll of toe on axial wall)
 - Foot angle
 - Depth and width of model (if applicable)
 - Lesions recorded (if present): 0-3 severity
 - Corkscrew severity



FARM DYNAMICS

21

Follow Up

- Fortnightly mobility scored by same observer (SP) 60-90 days in milk
- 60-90 days in milk: Reinspected, trimmed with large model
- Additional measurements:
 - BCS
 - Lesions present
 - Dorsal wall length
 - Foot angle



FARM DYNAMICS

22

Main Results

• 888 heifers

- No statistical difference between Control and Small
- Statistically significant different between Control and Large
43% reduced odds of developing lesions
- Impacted by BCS and Farm

	No. Heifers	% with Lesion
No trim	313	16
Small	295	15
Large	280	10



23

	Control (n=313)	Small (n=295)	Large (n=280)
Sole haemorrhage			
Severity 2	33 (10.54%)	27 (9.15%)	19 (6.49%)
Severity 3	10 (3.19%)	7 (2.37%)	2 (0.71%)
Sole ulcer	2 (0.64%)	3 (1.02%)	0 (0.00%)
Heel ulcer	2 (0.64%)	0 (0.00%)	1 (0.36%)
White line haemorrhage			
Severity 2	3 (0.32%)	0 (0.00%)	0 (0.00%)
Severity 3	0 (0.00%)	0 (0.00%)	0 (0.00%)
White line disease			
Severity 2	1 (0.32%)	6 (2.03%)	4 (1.43%)
Severity 3	0 (0.00%)	0 (0.00%)	1 (0.36%)
Axial horn fissure	1 (0.32%)	0 (0.00%)	0 (0.00%)

FARM DYNAMICS

24

What about Mobility Scoring?

No statistical difference between never vs ever lame between the groups

BUT mobility score is multifactorial

- More knocks in heifers?
- Better at hiding lameness?



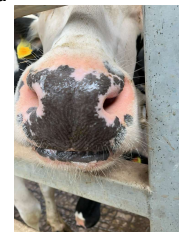
25

Conclusion

In housed pre-calving heifers, trimming with a deep, wide model 50-70 days before predicted calving date significantly reduces the risk of developing a claw horn lesion in early lactation

BUT:

- Trim at the correct time
- Don't overtrim



26

5. EDPET

FARM DYNAMICS

27

5. Early Detection and Prompt Effective Treatment

- Large proportion of heifers have moderate to severe bruising in first lactation
- Significant impact on milk yield
- Increases risk of future lameness
- Need to focus on picking up heifers early
- Better at compensating for lameness as smaller and fitter?



28

6. NSAIDs at Calving

FARM DYNAMICS

29

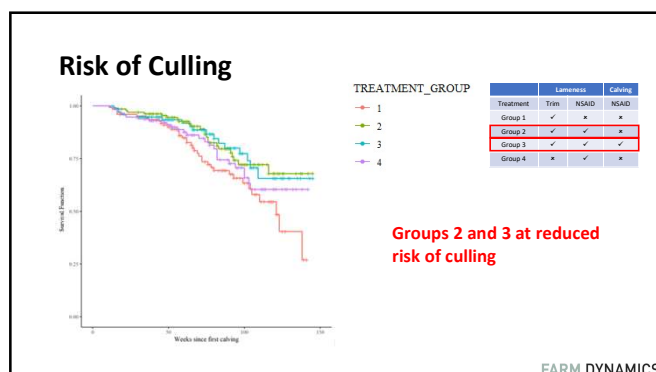
Effect of Routine NSAID at Calving

- 34 month randomised control trial
- Heifers recruited as they calved into herd (n = 438)
- Mobility scored fortnightly
- One of 4 treatment groups:

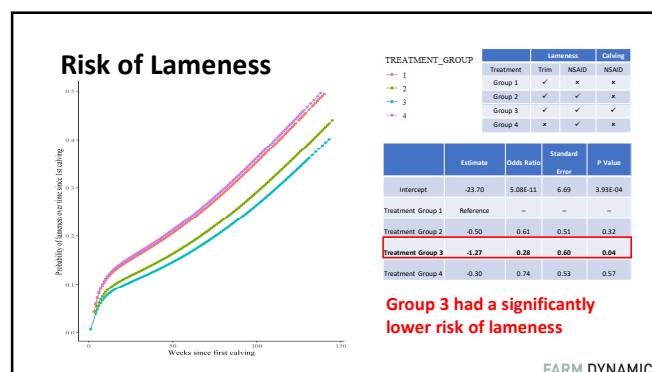
Treatment	Lameness		Calving
	Trim	NSAID	NSAID
Group 1	✓	×	×
Group 2	✓	✓	×
Group 3	✓	✓	✓
Group 4	×	✓	×

Wilson et al., 2022
FARM DYNAMICS

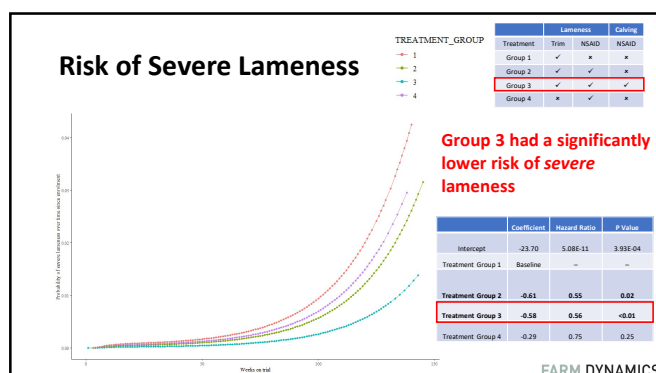
30



31



32



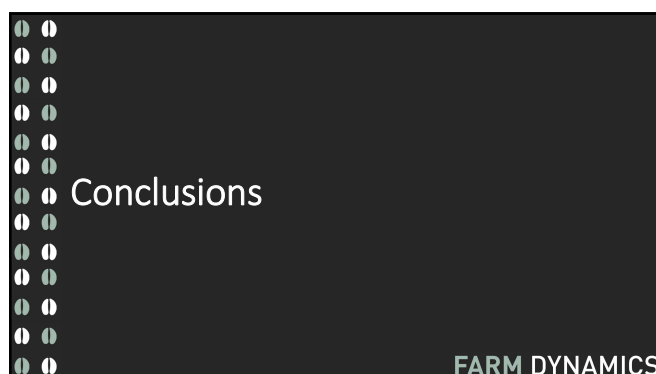
33

6. NSAIDS

- Clear benefit in NSAID when lame
- What about calving?
- Benefit to giving 3 days of NSAID (ketoprofen) at calving
 - Reduced risk of culling
 - Reduced risk of lameness
 - Reduced risk of severe lameness
 - BUT this was also alongside EDEPT with NSAID use in new cases

This effect was not seen in cows!

34



35

Conclusions

- Start recording and assessing lameness levels in heifers
- Aim for <5% lame
- Incorporate lameness indices in genetic selection
 - Should we breed heifer replacements from lame cows?
- Focus on DD control in heifers
- Is the heifer accommodation fit for purpose?
- Review hoof trimming protocols
- Consider NSAID use as routine at calving



36

Thank you

Any final questions....



sara@farmdynamics.co.uk
FARM DYNAMICS