Investigating approaches to lameness control & aetiologies of hoof disorders in sheep

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Why lameness in sheep?

- Great Britain has >15M breeding ewes & is the largest lamb meat producer in Europe

- Lameness is present in **every** flock, with prevalence from <1% to >15%

- One of the most significant challenges facing sheep farmers today
  - Reduces health & welfare
  - Huge impacts on productivity
  - Costs the sheep industry ~£80M/year
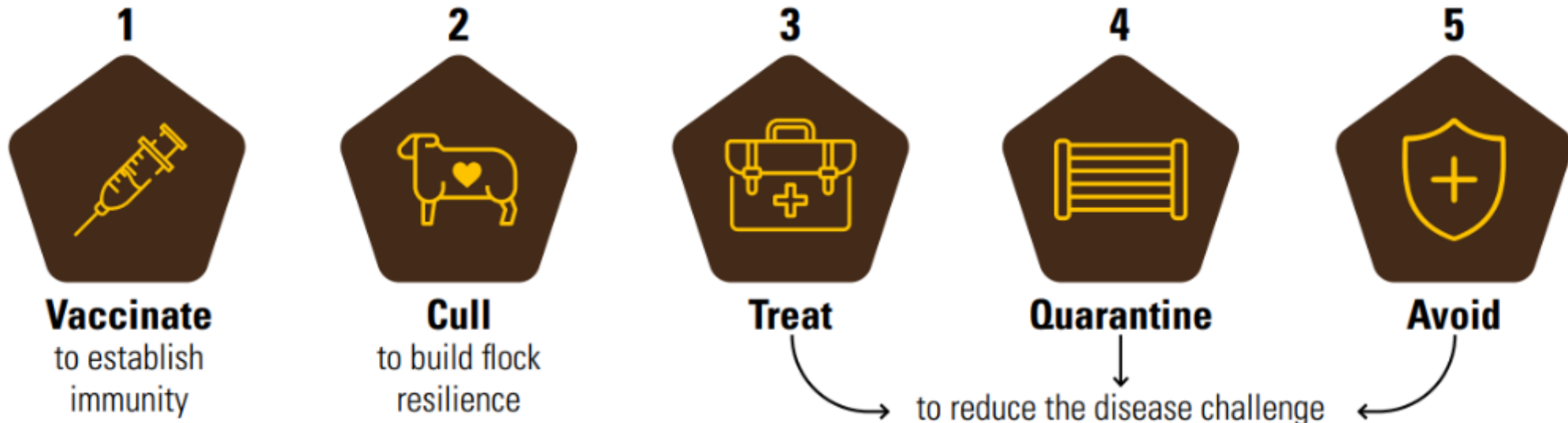
Causes of lameness

- Multifactorial
  - But mainly infectious & non-infectious conditions of the foot
- Infectious conditions
  - Footrot & contagious ovine digital dermatitis
  - Responsible for >90% lameness
  - Focus of research
- Non-infectious conditions
  - White line disease & toe granuloma
  - Little understanding of their causes

Control of lameness

- Farm Animal Welfare Council (FAWC) set targets for farmers to reduce lameness to ≤ **5% by 2016** and ≤ **2% by 2021**

- Lameness Five-Point Plan - industry-supported control plan

- Little understanding of its uptake in UK flocks

1 Vaccinate to establish immunity

2 Cull to build flock resilience

3 Treat

4 Quarantine

5 Avoid

to reduce the disease challenge

My PhD

Study 3
Characterisation of *Dichelobacter nodosus* on misshapen & damaged feet

Study 4
Prevalence of & risk factors for white line disease

Study 1
Uptake & impact of the 5PP

Study 2
Factors affecting adoption of the 5PP

Study 5
Prevalence of & risk factors for hoof conformation traits
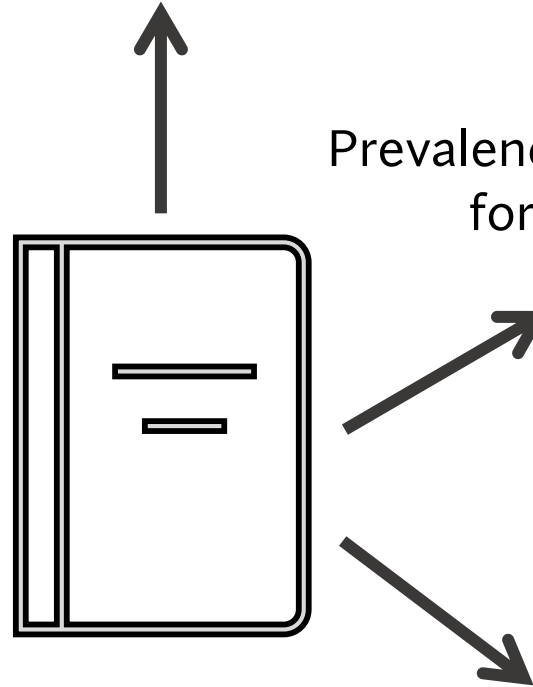
Study 1: methods

- Cross-sectional online survey of UK sheep farmers

- Launched between Nov' 2018 – Feb' 2019

- Asked farmers to:
  - ➢ Provide a current estimate of % flock lameness
  - ➢ Indicate which, if any, of the 5PP measures were adopted
  - ➢ Highlight any further lameness managements used on farm

- Multivariable regression modelling to highlight the risk factors for higher % flock lameness

Study 1: key results

- 532 usable responses from UK farmers

- Mean % lameness in flocks was 3.2%

- On average, farmers adopted 3 points of the 5PP

- Only 6% of farmers adopted all 5 points

- Over 50% farmers still foot trimmed lame sheep

- Eight key risk factors for higher flock % lameness

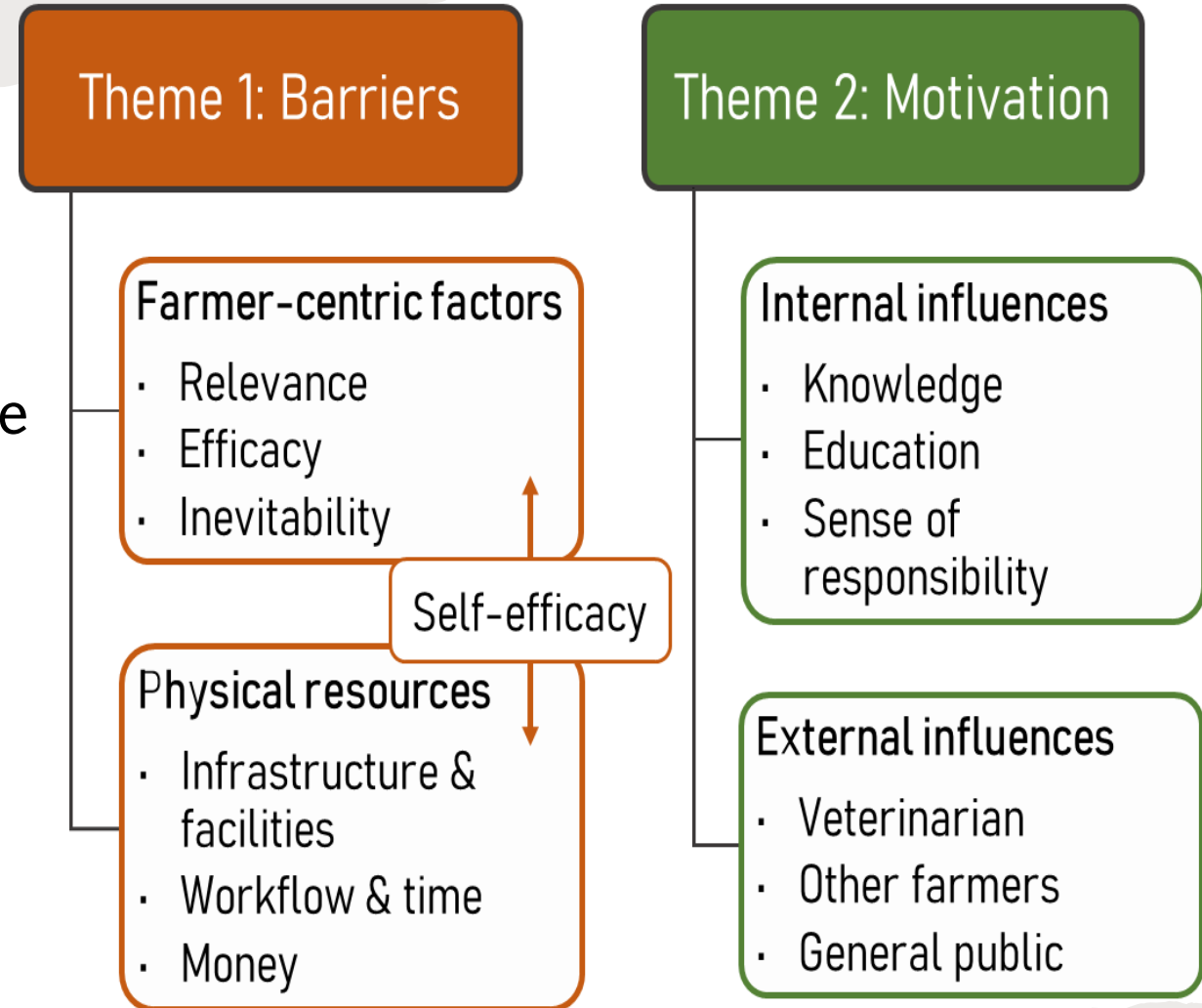- Implementing "best-practice" is important
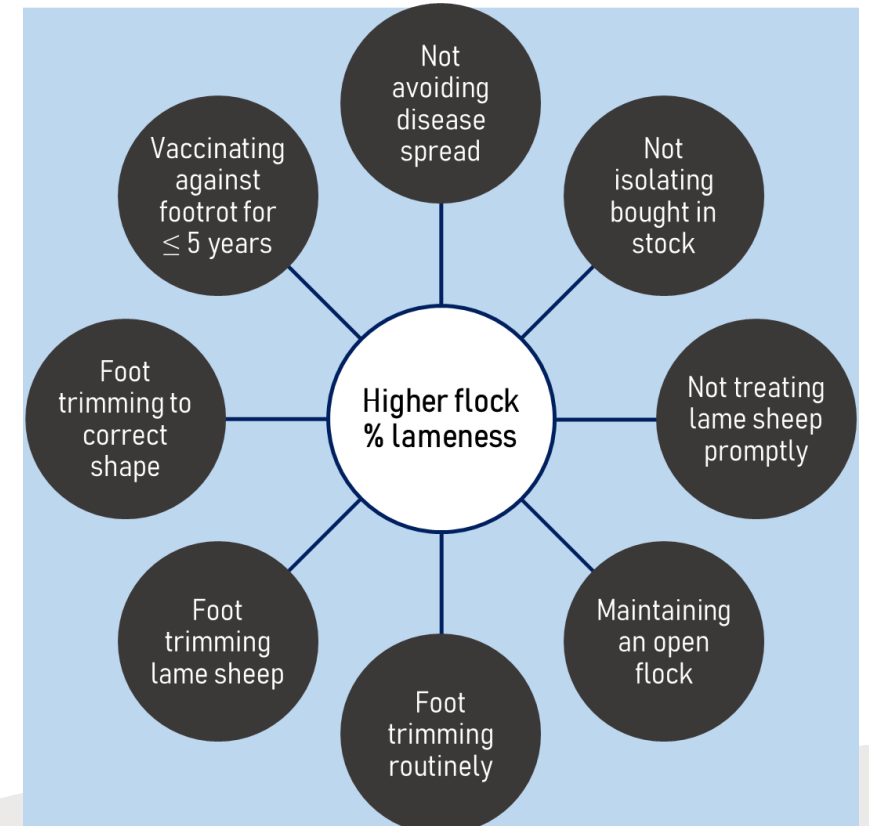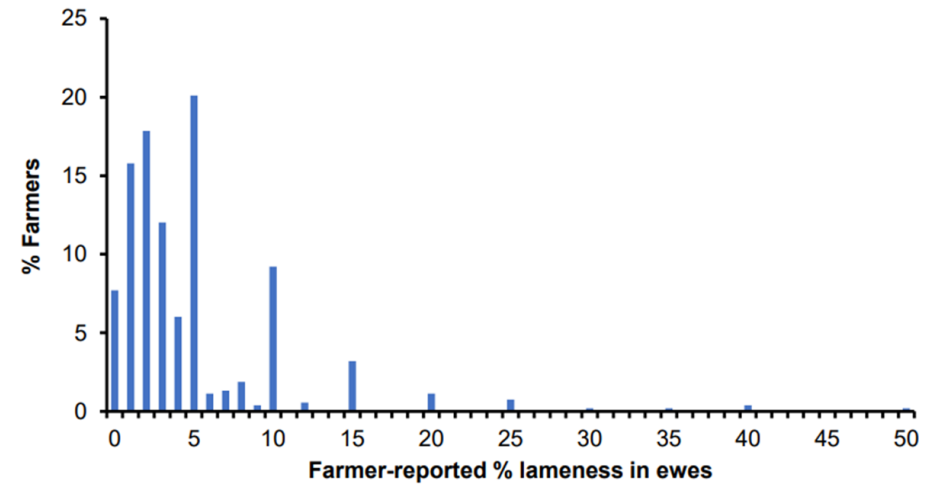
Study 2: methods

- Qualitative, semi-structured interviews with farmers

- Conducted between Jun' – Sep' 2019

- Explored the factors affecting adoption of the 5PP

- Interviews were recorded & transcribed

- Thematic analysis conducted to identify patterns and meaning in the data collected

- 12 interviews conducted in total = data saturation

Study 2: key results

- Two overarching themes emerged
- Self-efficacy
  - ➢ The perceived ability to carry out the measure effectively
- Knowledge and education important
  - ➢ Vet & other farmers play key role in disseminating knowledge
- Heterogeneity in farmers' attitudes
- Farming circumstances are unique

Theme 1: Barriers

Farmer-centric factors
- Relevance
- Efficacy
- Inevitability

Self-efficacy

Physical resources
- Infrastructure & facilities
- Workflow & time
- Money

Theme 2: Motivation

Internal influences
- Knowledge
- Education
- Sense of responsibility

External influences
- Veterinarian
- Other farmers
- General public

Concluding thoughts

- Lameness is an intractable challenge for sheep farmers
  - No silver bullet
  - Range of risk factors
  - Difficult to implement best-practice measures
- Lameness is an improving picture
- There is scope for improvement on farm
  - Eliminating risk factors
  - Removing barriers for best-practice adoption
  - Motivating farmers to improve self-efficacy
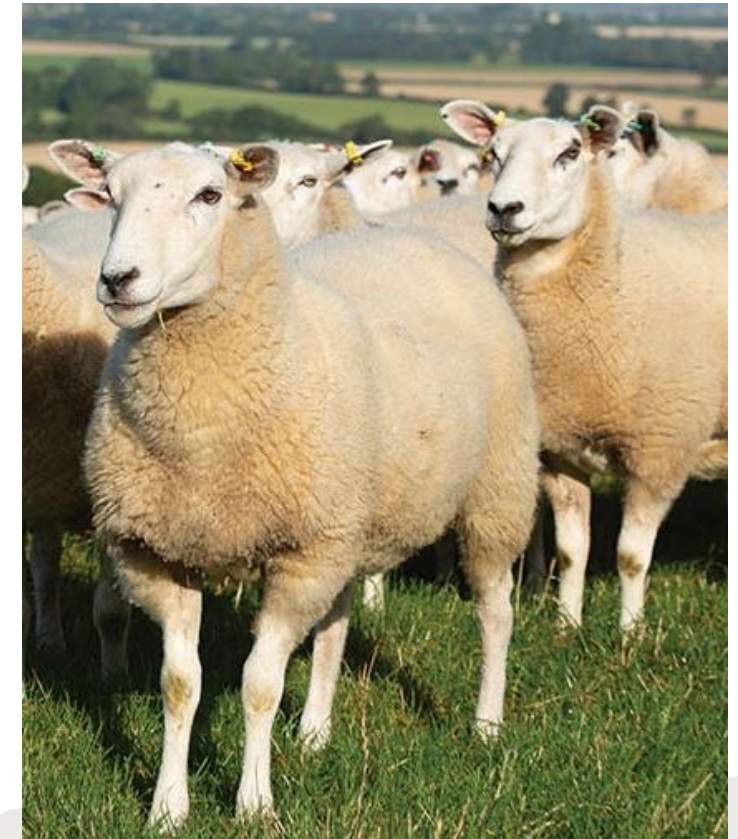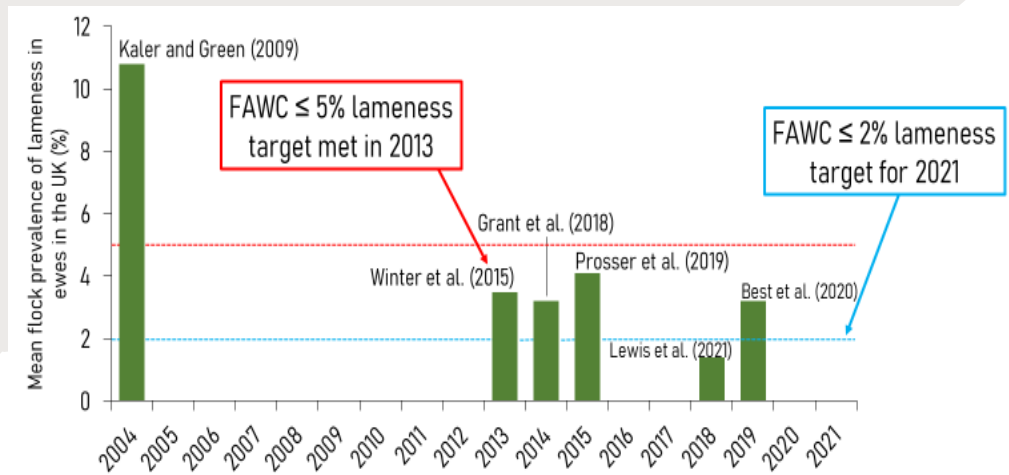
Acknowledgements

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