

Serial investigation of seroprevalence and faecal shedding of *Lawsonia intracellularis* in Thoroughbred foals during the first year of life

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Introduction

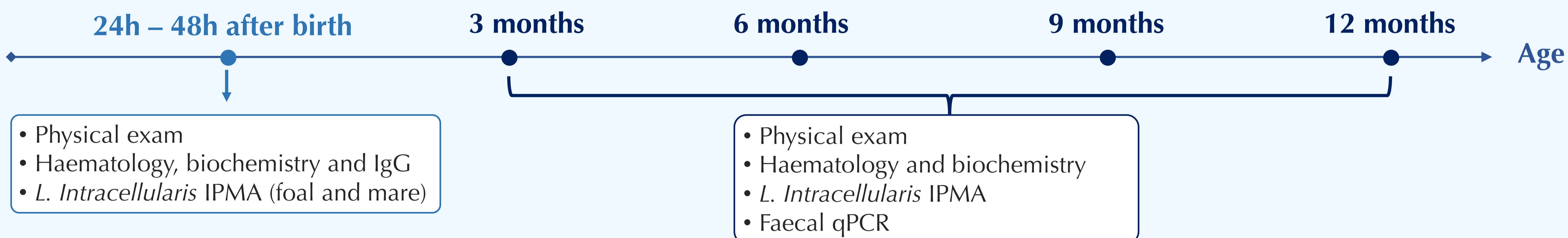
Equine Proliferative Enteropathy (EPE) is an intestinal disease caused by the obligate intracellular bacterium *Lawsonia intracellularis* (*L. intracellularis*), and characterised by diarrhoea, weight loss, anorexia, pyrexia, lethargy, peripheral oedema and colic, in foals between 2-8 months of age. Diagnosis is achieved by clinicopathology, ultrasonography, serological testing and faecal qPCR. Seroprevalence is documented in several countries, but UK information is lacking.

Objectives

- 1) Determine seroprevalence and faecal shedding of *L. intracellularis* in Thoroughbred mares and foals in UK
- 2) Determine timing of seroconversion to *L. intracellularis*
- 3) Evaluate associations between clinicopathologic parameters of foals and *L. intracellularis* serology titres

Materials and Methods

Between January and May 2014, 47 Thoroughbred foals and their dams were recruited from 6 UK stud farms in the Newmarket area.



Statistical analysis

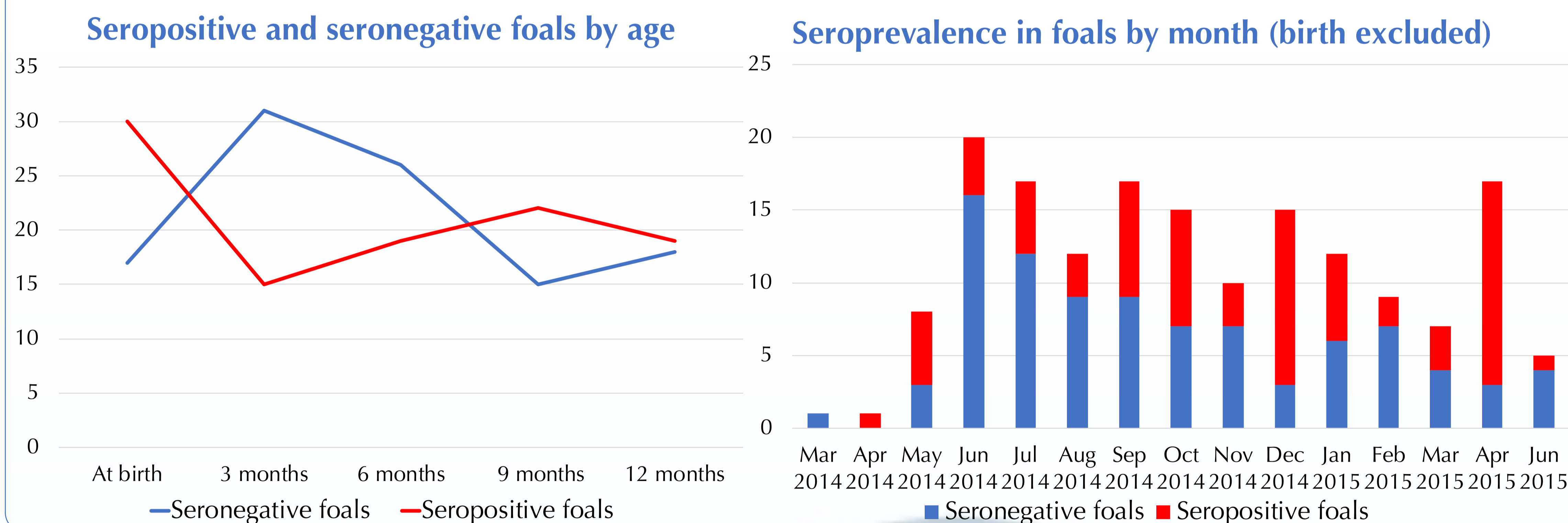
Descriptive analysis of serologic titres at each time point and month of the year. A 2-sample t test was used for continuous normal data, a Mann-Whitney test for continuous non-normal data, a Chi Square for ordinal data to compare clinicopathologic findings between seropositive and seronegative foals. A Kruskal-Wallis test was used for difference between farms.

Results

Serology results

- In the dam population, 36/47 were seropositive (77%, 95%CI 0.65 – 0.88)
- At birth, 14/47 (30%, 95%CI 0.17 – 0.43) of foals had failure of passive transfer (FPTI)
- There was a linear correlation between foals *L. intracellularis* titres and IgG levels ($r=0.35$; $p=0.016$).
- Maternally derived IgG decreased in 26 foals after 3 months, in 2 foals after 6 months, and in 4 foals remained stable after 6 months.

Serology titres throughout the first year of life



Clinicopathology results

- At 3 months, the mean WBC was higher in seropositive foals ($p=0.011$, 95% CI 0.41-2.98).
- At 9 months, the mean albumin was lower in seropositive foals ($p=0.027$, 95% CI 0.18-2.89).
- At 12 months, the median globulin count was higher in seropositive foals ($p = 0.044$, 95% CI 0.0-5).

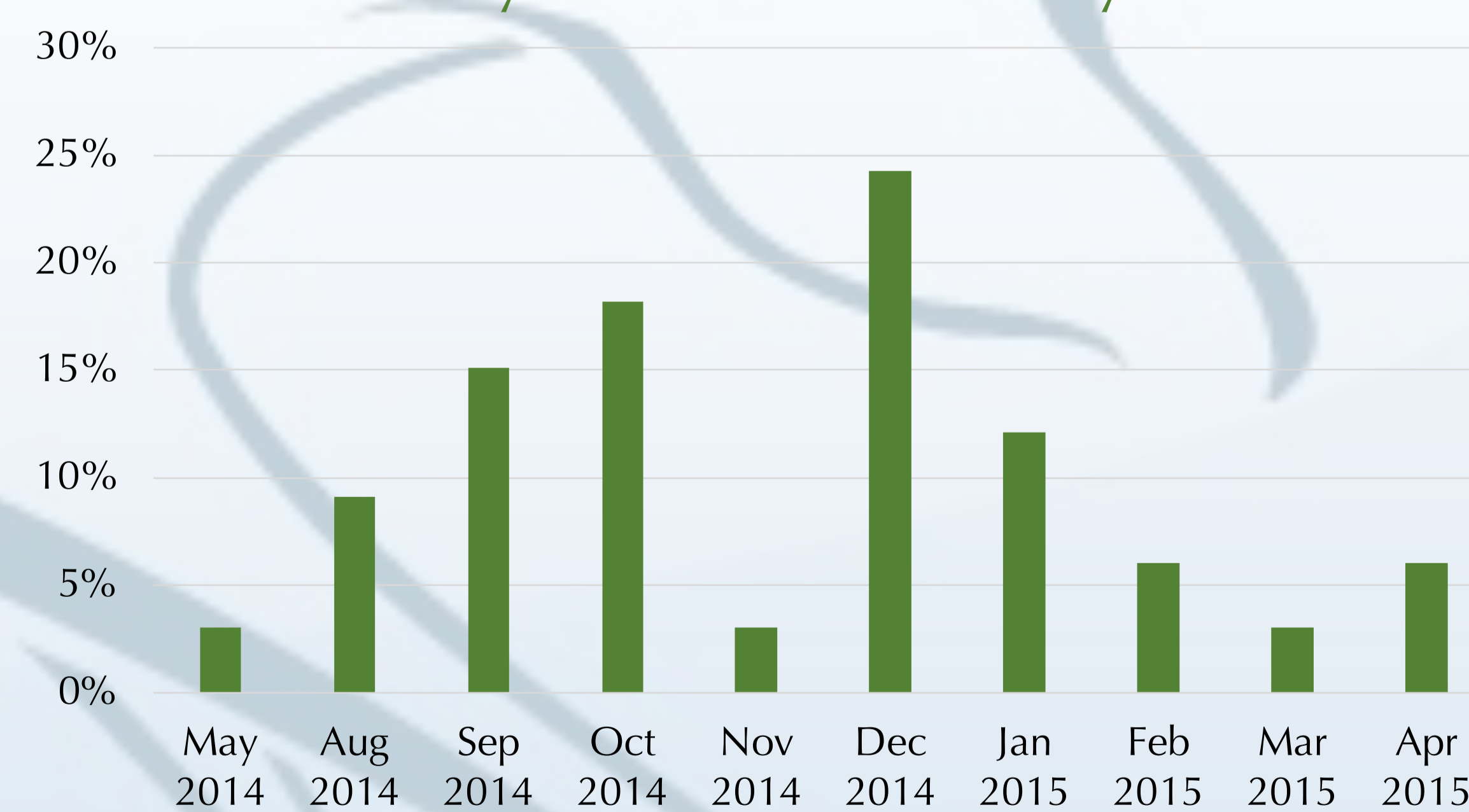
Timing of seroconversion

Overall, 82% of foals seroconverted throughout their first year of life.

Time point (months)	N tested	N newly seroconverted	% newly seroconverted
3	46*	1	2% (0 – 6)
6	45*	14	31% (18 – 45)
9	37*	14	38% (22 – 53)
12	37*	4	11% (1 – 21)

*At 3 months, 1 foal was moved to another yard and lost to follow-up. At 6 months, 1 foal was euthanized for an orthopaedic disorder. At 9 months, 7 foals were sold and lost to follow-up and 1 died from a caeco-colic intussusception.

% of newly seroconverted foals by month



Faecal real-time qPCR results

- Only 2 samples were positive in two foals (3 and 9 months)
- No clinical EPE detected during the entire study.

Discussion and Conclusions

This study indicates frequent exposure to *L.intracellularis* on UK Thoroughbred stud farms. Serology results correlate with the previously described timeframes for bacterial exposure and development of clinical disease. Changes in clinicopathology results suggest potential presence of subclinical disease. This information can help optimise screening policies, targeted treatments and vaccination schemes.