

Associations between TUS scores and mortality and productivity outcomes on Scottish dairy farms.

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INTRODUCTION

A previously published study used thoracic ultrasound (TUS) to assess farmer accuracy of diagnosing Bovine Respiratory Disease (BRD) in cattle youngstock¹:

- ▶ Sensitivity of farmer diagnosis of BRD was low.
- ▶ Animals with lung lesions were not identified and treated for BRD.
- ▶ Some farmers treated animals with no signs of BRD on TUS, resulting in unnecessary use of antibiotics.

OBJECTIVE

This study aimed to follow the same calves assessed in our previous work, to determine the effects of lung consolidation, as diagnosed by TUS, on future mortality and reproductive outcomes.

MATERIALS AND METHODS

TUS conducted between 2019.03.13 and 2019.11.26, by a single veterinarian over 7 dairy herds:

- ▶ All calves on the farm aged 21-61d were scanned and scored. Calves consisted of male and female calves destined for dairy or beef rearing.
- ▶ TUS score on a 0-6 scale² was given as well as a calf health score based on the Wisconsin calf health scoring system which was converted to a binary "normal" or "abnormal" TUS score.

All calves which had a TUS examination were included in the dataset for analysis of mortality. Female dairy calves retained on the study farms were followed through to calving, for analysis of reproductive outcomes (source: farms' management system and software).

Mixed effects logistic regression models were used to analyse associations between TUS score and mortality status, conception within 3 serves, time to conception and the number of serves to conception.

Follow up analysis of dairy cattle which had undergone TUS between 21-61 days of age suggests a tendency for increased mortality in animals with higher abnormal TUS scores, and a tendency for decreased pregnancy rates within the first 3 serves.



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RESULTS

The initial dataset consisted of 347 TUS results (Fig.1):

- ▶ **53 calves (15.3%)** - classified as **abnormal**, of which 13 (24.5%) were treated by the farmer.
- ▶ **294 calves (84.7%)** - classified as **normal**, of which 22 (7.5%) were treated for BRD.

There was a tendency for animals with an abnormal TUS score as calves to be more likely to die during the follow-up period (OR 2.33, 95% CI 0.9-6.1, P = 0.08). Mixed effects regression model on fertility results (within 3 serves, 149 animals) suggested that abnormal TUS score was associated with lower odds of becoming pregnant within 3 serves (OR 0.32, 95% CI 0.1-1.0, P=0.06) (Fig.2).

FIGURE 1. Results of TUS examination on 347 calves.

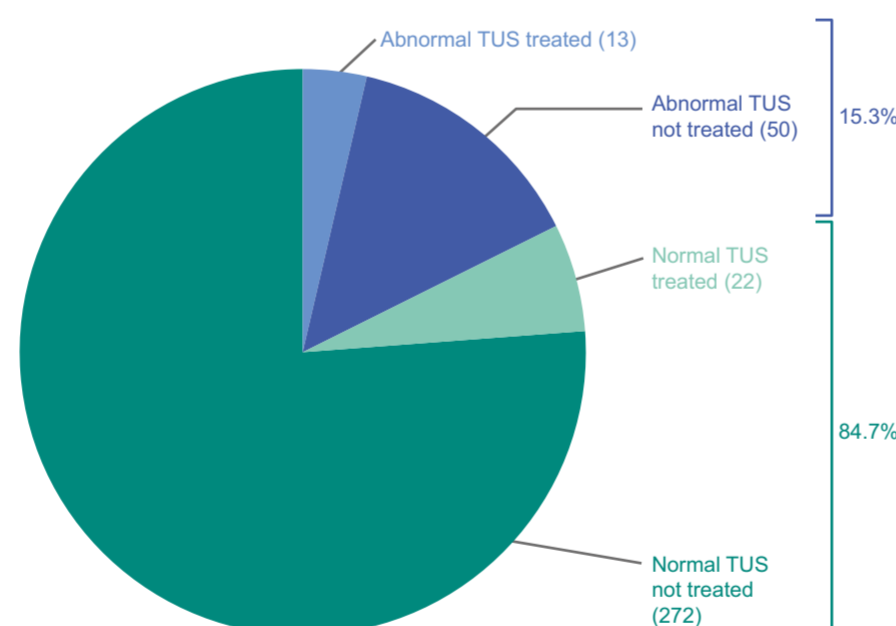
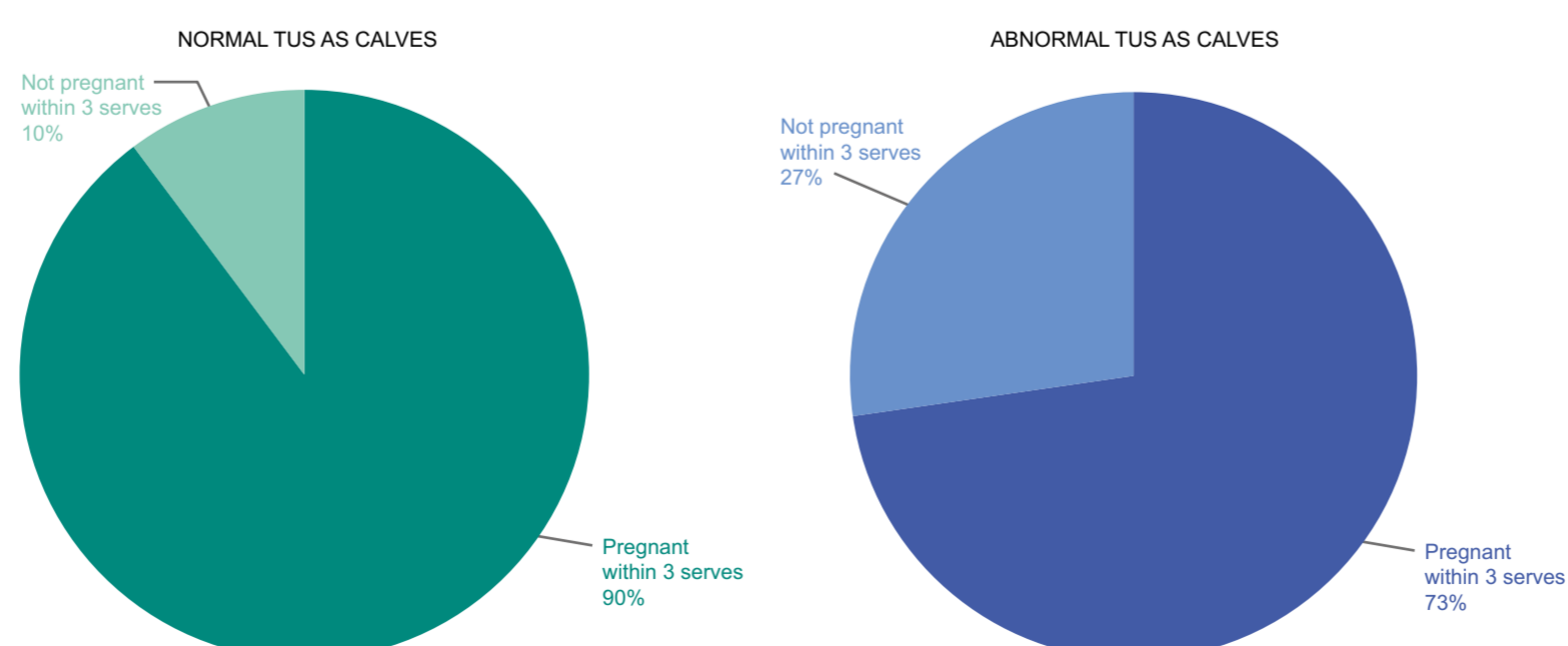


FIGURE 2. Fertility results (within 3 services) for 149 animals subjected to TUS as calves.



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