

A case study of a novel approach to mastitis vaccination in two dairy herds in the United Kingdom

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Objective

To evaluate a novel approach using a commercially available mastitis vaccine in two UK dairy herds aimed at reduction of mastitis in early lactation. Would a simplified vaccination protocol prove effective in reducing severity and case rate of coliform mastitis, whilst being more acceptable to farmers in terms of cost and handling time than the conventional regime?

Materials

In July 2012, 439 multiparous Holsteins with a planned calving period of September and October were enrolled from two commercial farms (total 700 milking head due to calve including 261 heifers uninvolved in the study). Both units are managed commercially with a single enterprise system: cows graze and calve down outdoors, they are then housed over winter on concrete/straw freestalls. The herds milk 2x through 20/40 swing-over (de Laval) parlour with target milk sales of 7,500 litres/cow/year

Method

In each herd two subgroups of multiparous cows were established – either vaccinated “study” or “control” unvaccinated cows. The animals were enrolled randomly at each farm following an assigned protocol using planned date of calving and a coin toss.

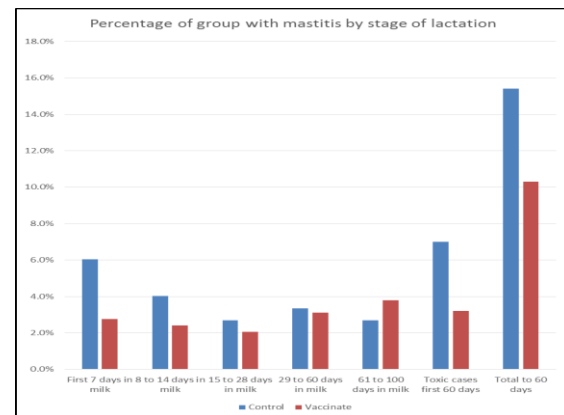
Protocol: study animals were vaccinated twice with Startvac (Hipra), the first dose set at 28 days before expected calving date (average 16 days, deviation 5-53) and repeated 28 days later (average 28, dev 27-32). At each site all the animals (study, control and heifers) were run as a single herd for management, milking and feeding to ensure all were treated in all other respects the same.

Results

Overall 432 cows were followed to 100 days in milk. Results for the study are shown in the table (see Fig.1) and can be summarised as:

	Study = vaccinate	Control
Total animals	252	187
Culled	4 (1.6%)	3 (1.6%)
Culled due to udder health	0	2 (1.1%)
Mastitis cases in first 60 days in milk	26 (10.3%)	29 (15.5%)
Mastitis classed as severe/toxic	8 (3.2%)	13 (7.0%)
Mean days to first case	23.1	13.7

The distribution of clinical cases by percentage of group for stage of lactation to 100 days is shown in Fig.2 for clarity.



Discussion

An average case of mastitis was estimated to cost £218 (Hillerton & Berry, 2005) whilst figures for the cost of a severe/toxic case varies between researchers. In this instance the farmer used £500 taking into consideration deaths/culls, lost production and adjunct therapy.

Looking specifically at the study results on a 100 cow batch basis:

- Investment in vaccination = £800 (at £8/head)
- Reduced mastitis case rate = 5.2 less cases (10.3 vaccinates against 15.4 controls)
 - Saving =
- Reduced severity:
 - Severe/toxic mastitis = 3.8 less cases (3.2 vaccinates against 7 controls)
- Cost benefit could be calculated in many ways:
 - Mastitis £1,133.60 – £800 = £333 or 1.4:1 return on investment
 - Severe/toxic £1,900.00 – £800 = £1,100 or 2.4:1 return on investment

Conclusion

Looking specifically at the simplified protocol: using two doses appeared to give good early protection and reduced both clinical and severe/toxic cases whilst delaying the onset of the first case. It is hoped this regime would be more likely employed by farmers, thereby benefiting them and their stock.

The simple cost benefit analysis demonstrates substantial return on investment to the farmer as well as improving welfare for the cow alongside reducing the need and use of antibiotics.

This regime merits further study for use within the EU especially where J5 vaccine would appear to offer benefits in udder health in herds where post-partum mastitis has been identified as a problem?

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