

COCCIDIOSIS IN DAIRY HEIFERS: LONG-TERM DISEASE EFFECTS

NUMEROUS factors impact on the epidemiology of disease on farms. On arrival at a farm, a straw chopper with a damaged wheel was precariously balanced on a pile of rubble (Figure 1). It may seem an amusing sight, but it could indicate a lackadaisical approach to management.

Think of the consequences of this breakdown – the cost may not simply be replacement of the wheel; it may result in an outbreak of environmental mastitis in

Table 1. Suggested target bodyweights for Holstein-Friesians

Age (months)	Target weight (kg)
Birth	36-40
3	55-60
4	95-110
6	180-200
15	400-420
22-24	550-625* *85-90 per cent mature bodyweight

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considers the various contributing factors of coccidiosis in dairy cows, followed by methods of prevention and treatment to adopt on farm

groups of animals such as the dry cows, due to the lack of clean bedding.

Similarly, on premises where unhung gates are tied up with string, I have found suggested veterinary protocols are not always adhered to. This needs to be borne in mind when the timing of metaphylactic anticoccidials is important in preventing disease.

I still find it difficult to dispel the myth that the only costs of disease are veterinary medicines and mortality; however, decreased daily live weight gains (DLWG) in a group of animals will have a catastrophic effect on farm profitability.

Planned heifer rearing is the starting point for profitable dairying. The semen

costs for achieving a heifer pregnancy are considerable.

On a farm using conventional semen (£15/straw) with a conception rate of 40 per cent, it takes 2.5 straws per pregnancy and approximately five straws to achieve a heifer pregnancy. A heifer born has cost £75 in semen. The heifer is an investment for the future and needs to be viewed as such.

Housing

With herds expanding, improvements to cow housing and management have, and are, taking place, but similar improvements with youngstock have not kept pace, leading to cases of overcrowding. It is a mistake to think coc-

cidiosis only affects calves reared in groups (Figure 2); it can occur in calves housed singly in hutches (Figure 3).

Subclinical disease and DLWG

Clinical signs of disease in a group of calves are often the tip of the iceberg, with the majority of the group probably affected by subclinical disease.

Pathogenic coccidia invade and destroy the lining of the gut, which reduces nutrient absorption, leading to reduced DLWG and feed efficiency. The effect on the gut lining can reduce lifetime performance.

Jim Quigley at Provim's animal health conference in Barcelona quoted from published work of Jud Heinrichs. On a US study of 795 calves from 21 dairy units, from birth to four months, the results showed for every day a calf was sick, with scours or respiratory infection, its first lactation milk yield dropped by 126kg.

Table 1 illustrates the suggested target bodyweights for Holstein-Friesians to enable them to calve at approximately 24 months of age. To achieve this, an average DLWG of 0.7kg/day is required. A study at the RVC found mean age at first calving was 26 months, but the range was 21 months to 51 months.

Table 2 illustrates heifers calving between 23 months and 25 months, compared to those calving greater than 30 months, had a greater milk yield (kg) per day of life (11.8 versus 9.0) and 70 per cent reached parity three compared to 50 per cent. The effect on calving interval was significant in the first and second



Figure 1. The straw chopper with the damaged wheel.

lactations. Coccidiosis and the resultant reduction in DLWG can affect the future fertility of replacement heifers.

The mortality rate in animals with coccidiosis is approximately one per cent and high morbidity. With subclinical disease the intestinal damage can lead to susceptibility of other diseases – for example, pneumonia – and the greater the number of diseases, the greater negative effect on DLWG.

Field trials have shown 61 per cent of the economic loss in calves caused by coccidia is due to the non-clinical cases (Agneessens et al, 2005).

A further study (Veronesi et al, 2013) looked at the

effects of metaphylactic treatment of subclinical coccidiosis using toltrazuril compared to non-treated controls.

Treated heifers received their first service 24 days earlier than the non-treated controls. Treated heifers also had better conception rates (CR) to first service compared to the non-treated group (60 per cent versus 45 per cent). The effect on second and subsequent services was similar with the treated heifers a CR of 75 per cent compared to the non-treated controls 45 per cent.

The overall pregnancy rate was 95 per cent for the treated heifers compared to 85 per cent for the non-treated controls. These effects are often "accepted" by the non-seasonal calving herds. If this occurred in a seasonal calving herd, where the breeding season is short (approximately 10 to 12 weeks), a significant number of heifers would be barren and those that became pregnant would calve later in the calving period and thus have less opportunity to become pregnant for subsequent seasons.

One effect of disease that is often ignored is that on staff morale. Time taken to treat clinical cases is rewarded by the calf surviving (mortality tends to be low – less than one per cent). However, batches of calves that are not thriving are a daily reminder all is not well.

Prevention and treatment

Metaphylactic treatments are recommended. There is



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¹C. Sitzman, Evaluation of a hydrophilic gingival dental sealant in beagle dogs. J Vet Dent 2013; 30 (3): 150-155.



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Figure 2. A calf in a group exhibiting clinical signs of coccidiosis.

Veronesi F, Nisoli L, Diabla M, Falcini R, Nicola E and Forcetti D P (2013). Influence of a metaphylactic treatment with Baycox Bovis on the reproductive performance of Friesian heifers: a preliminary study. *Parasitology Research* 112(6): 2,137-2,142.

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ment heifers as follows:

- increased susceptibility to other diseases;
- reduced DLWG;
- increased time to first service;
- reduced conception rates; and
- increased the likelihood of premature culling.

Where coccidiosis is a problem, metaphylactic treatments are cost-effective.

Acknowledgements

Many thanks to Sharon Cooksey (Bayer Animal Health) and James Cheadle (Elanco).
 Agnesseens J, Goossens L, Veys P and Grewel (Veeclin) agents naturally acquired enteric infections in suckling beef calves and economic benefits of treatment. *Cattle Practice, The Journal of the British Cattle Veterinary Association* 13: 231-234.

References

Veronesi F, Nisoli L, Diabla M, Falcini R, Nicola E and Forcetti D P (2013). Influence of a metaphylactic treatment with Baycox Bovis on the reproductive performance of Friesian heifers: a preliminary study. *Parasitology Research* 112(6): 2,137-2,142.

prevent disease and for the calves to build up immunity. While multiple factors influence the reproductive efficiency of dairy cattle, there is little information about the effects that may be attributed to coccidiosis. Gut damage from coccidiosis may contribute to increased sensitivity to other pathogens, negatively influencing general fertility. The damage may also lead to a long-term deficit in nutrient absorption, contributing to endocrinal-metabolic changes which, in conjunction with changes caused by the onset of puberty, may increase overall stress on clinical and sub-clinical coccidiosis impact on the future of replace-

Summary

the future of replace-

quency as the age at which the calves are affected may change. The challenge is to



Figure 3. A calf being reared in a hutch, showing signs of coccidiosis. Note the blood in the diarrhoea on the floor.

ease. On 'coccidia' farms it is essential to recognise at what stage clinical signs

normally occur. It may be change of housing, changes of feed or stress brought on by temperature variations. Once high numbers of oocysts are found in faeces, still occur in certain circumstances. The Jersey calf in Figure 3 had not been weaned, I suspect, as it was still on milk; it was not eating enough medicated creep feed to prevent the disease. Calves between three weeks and six months of age are most at risk of disease. On 'coccidia' farms it is essential to recognise at what stage clinical signs normally occur. It may be change of housing, changes of feed or stress brought on by temperature variations. Once high numbers of oocysts are found in faeces, still occur in certain circumstances. The Jersey calf in Figure 3 had not been weaned, I suspect, as it was still on milk; it was not eating enough medicated creep feed to prevent the disease. Calves between three weeks and six months of age are most at risk of disease.

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 ACTIVATION



RCVS to share plans at BSAVA Congress

VISITORS TO BSAVA Congress this year can learn more about the RCVS plans for a veterinary consumer disputes resolution service.

A team from the college will be at stand 104 at congress - which takes place at the ICC/MIA in Birmingham on April 3 to 6 - ready to answer any delegate queries.

The college will also be providing further information on the new advanced practitioner accreditation set to launch this autumn, and delegates will be able to play a related 'Advance to Go' game, with the chance of winning a Kindle Fire. Delegates can also pick up a free aluminium water bottle created especially for the event.

Elsewhere at the congress, on Saturday (April 5), college chief Nick Stone and registrar Gordon Hockey will be giving a talk on RCVS' plans for a consumer disputes resolution service. The talk, 'What's good for consumers is the road to success', will take place from 9am to 10.15am in Hall 7, with coffee and pastries available from 8.30am.

The college is also hosting a series of Practice Standards Scheme surgeries with Lorna Francis, a senior inspector for the scheme, on the Friday (April 4). Taking place in the exhibition arena, the free 45-minute private surgeries will give members of the profession the opportunity to find out more about the scheme and how they can prepare for inspections.

To find out about availability and book a session, contact Fiona Harcourt on fharcourt@rcvs.org.uk or 020 7202 0773.

Table 2. Relationship between age at first calving and subsequent performance

Lactation 1		Lactation 2		Lactation 3	
305d yield (kg)	Calving interval (days)	305d yield (kg)	Calving interval (days)	Percentage entering lactation 3	Milk per day of life (kg)
8,914	402	9,908	392	70	17.8
8,811	451	9,633	434	50	9.0
23-25 months		>30 months			

The study at the RVC was part funded by DairyCo and Defra, and led by Claire Welton and Jessica Cooke.

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 *2013 survey. Total sample size was 2054. 08 adults who own a cat or a dog. Feedback was undertaken between 29-29 October 2013. The survey was created on iSurvey.
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