



# Australian and New Zealand College of Veterinary Scientists

## **Fellowship Examination**

June 2012

# **Dairy Cattle Medicine and Management Paper 1**

Perusal time: **Twenty (20)** minutes

Time allowed: **Three (3)** hours after perusal

Answer your choice of any **FIVE (5)** questions from the six questions **ONLY**

All questions are of equal value

Answer **FIVE** questions each worth 20 marks .....total 100 marks

# Paper 1: Dairy Cattle Medicine and Management

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Answer FIVE (5) questions from the six questions only

1. You are called to investigate a problem in a mob of 40 dairy cows that are 7 to 10 days away from their predicted calving date, and which are being fed a transition cow diet. On arrival, you estimate that approximately 20 of these cows are recumbent, with many of them being severely dehydrated.

The per cow per day transition diet comprises around 2 kg of pasture dry matter, 2.5 kg of wheat, anionic salts and *ad lib* low potash cereal hay. The wheat, anionic salts and 3 kg of hay per cow are mixed in a mixer wagon and fed on a feed pad.

The previous morning all 40 cows appeared normal, and the owner left a farm worker to mix and feed the transition diet later in the day.

- a) List the conditions that you might consider BEFORE you carry out a more detailed investigation of the problem. (2 marks)

Initially, the owner expressed the view that the problem could not be one of "grain overload". However, on detailed questioning of the farm worker you discover that he had included 1000 kg of wheat into the cows' daily mix, rather than the 100 kg which would be required to provide the planned 2.5 kg of wheat per head per day for the 40 cows in the mob.

- b) Discuss the pathogenesis of grain overload in this situation, and how the pathophysiological changes impact on the severity of the condition and your treatment protocol. (8 marks)
- c) Discuss and justify your approach to the evaluation and treatment of this mob of 40 cows, taking into consideration that the animals are likely to be affected with a variable degree of severity. (10 marks)

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2. Facial eczema is a disease that can occur in certain years in New Zealand, as well as in southern Australia.

a) Discuss the epidemiology, aetiology and pathogenesis of this disease. (8 marks)

b) Discuss the various options for monitoring and control of the disease, and indicate when you might implement these respective control strategies. (8 marks)

Zinc supplementation is one of the control measures commonly implemented. However, the amount of zinc required to prevent facial eczema is close to the level that is likely to cause toxicosis; indeed the practice of zinc supplementation in order to prevent facial eczema has been associated with zinc toxicosis in cattle.

c) List the clinical signs you might expect to see in a dairy herd suffering from zinc toxicosis (2 marks), and how you would confirm such a presumptive diagnosis. (2 marks)

3. A herd manager contacts you because she is concerned about the high incidence of clinical mastitis in her freshly calved, seasonal-calving dairy herd.

a) Discuss the initial logical approach that you would take to investigate the manager's concern (5 marks) and, assuming that a mastitis problem does exist, how you would continue your investigation. (5 marks)

*Streptococcus uberis* has become the most common and important pathogen associated with clinical mastitis in many dairy herds in Australia and New Zealand.

b) Outline a program that you would implement to minimise the incidence of *Streptococcus uberis* mastitis in a seasonal-calving dairy herd in Victoria. Justify your approach with evidence from recently published literature. (10 marks)

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4. Regular and frequent use of anthelmintics has formed the basis of control of gastrointestinal parasites in calves in many dairy herds.

Anthelmintic resistance has been frequently described in sheep and goats, and is now being increasingly recognised as a problem in cattle.

- a) Describe a parasite control program that you would recommend for a mob of 150 dairy cows being run on an irrigation block in northern Victoria. *(10 marks)*
- b) What steps would you take to minimise the risk of anthelmintic resistance occurring? *(10 marks)*
5. You are contacted by a recently qualified colleague who is unsure on how to deal with the following request from one of her dairy farming clients on the Atherton Tablelands in northern Queensland. The farmer is expanding his dairy herd and has recently bought 20 in-calf, pedigree Holstein-Friesian heifers from a property in East Gippsland, Victoria. In order to accelerate the genetic improvement of their offspring, these animals have been inseminated with sex-sorted semen.

Just before transporting them up north, they were diagnosed as being between 6 and 7.5 months pregnant. The heifers arrived on the farm two days ago, and the farmer now asks your colleague's advice on the type of precautions he should take in order to prevent any losses occurring in these heifers due to 'tick fever'.

- a) Describe what is usually meant by 'tick fever' in Australia, including the aetiological agent(s) involved, mode of transmission, clinical findings and treatment. *(10 marks)*
- b) In a comprehensive manner, outline the advice that you would give this colleague, so she can relay this to her dairy farming client. *(10 marks)*

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6. Bovine botulism is an important endemic disease in Australia, classically associated with extensive pastoral systems where phosphorus and protein deficiencies, combined with plentiful carrion, are present. However, it may also be seen in intensive dairy systems.
- a) Describe the epidemiology, aetiology and pathogenesis of botulism as it could occur in dairy cattle. *(5 marks)*
  - b) Describe the clinical signs and diagnosis of botulism in dairy cattle. *(5 marks)*
  - c) Outline how you would manage an outbreak of botulism in a predominantly pasture-based dairy herd in south-eastern Queensland, where several deaths have occurred during the past week. *(10 marks)*

**End of paper**



# Australian and New Zealand College of Veterinary Scientists

## **Fellowship Examination**

June 2012

## **Dairy Cattle Medicine and Management Paper 2**

Perusal time: **Twenty (20)** minutes

Time allowed: **Three (3)** hours after perusal

Answer your choice of any **FIVE (5)** questions from the six questions **ONLY**

All questions are of equal value

Answer **FIVE** questions each worth 20 marks .....total 100 marks

# Paper 2: Dairy Cattle Medicine and Management

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Answer FIVE (5) questions from the six questions only

1. Answer **both** part a) and b) of this question.

- a) Bovine neonatal pancytopenia or ‘bleeding calf syndrome’ is a new and emerging disease of young beef and dairy calves. Although exotic to Australia, the disease has recently been identified in New Zealand, the first country outside Europe where this syndrome has been recognised since 2007.
- i. Discuss what is presently known about this disease. Include in your answer the immunological factors thought to be involved in the disease and evidence from recently published literature. *(8 marks)*
  - ii. Discuss whether or not this disease is also likely to emerge in Australia and how this could happen. *(2 marks)*
- b) Percutaneous liver biopsy is a relatively safe and simple procedure in cattle. Despite this, it is only infrequently used as a diagnostic tool in Australia.
- i. List some diseases/conditions in cattle for which liver biopsy can be used as a diagnostic aid, and for each of these diseases/conditions explain the purpose of the biopsy sample. *(2 marks)*
  - ii. Describe step by step the procedure of percutaneous liver biopsy in cattle, including precautions, land marks used, and any risks associated with undertaking the procedure. *(8 marks)*

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2. The various treatments to correct left abomasal displacement (LDA) in a cow can be categorised as either a minimally invasive, closed procedure, or open procedure.
- a) Describe step by step your preferred method if you were to select a minimally invasive, closed procedure to correct an LDA in a recently calved, 4-year-old Friesian-Jersey cross cow. *(8 marks)*
  - b) Describe step by step your preferred method if you were to select an open procedure to correct an LDA that has recurred following a failed right paralumbar omentopexy carried out on a large-framed, 6-year-old Holstein-Friesian cow four weeks previously. Justify your approach. *(12 marks)*
3. High rates of failure of passive transfer (FPT) have been reported in dairy calves left to suckle their dams, both overseas and in Australasia.
- a) Explain in detail why FPT may occur in newborn dairy calves in Australasia. *(4 marks)*
  - b) Discuss how you would investigate the passive transfer status of a mob of 120 replacement calves in a seasonal-calving dairy herd, which are between 2 days and 4 weeks old. *(6 marks)*
  - c) What are your recommendations to improve the rate of passive transfer in a dairy herd where, following testing, only 55% of the calves are found to have had adequate passive transfer? Your answer should include specific information about colostrum composition, volumes and feed timing. *(10 marks)*

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4. You are asked to investigate a herd lameness problem on a large dairy farm in East Gippsland, Victoria. At present, about 10% of the 600-cow herd is lame; half of them being first-calf heifers. The predominant lesions involved are excessive wear, white line disease and septic traumatic pododermatitis (sole abscess, underrun sole).
- a) Discuss how you would approach this problem; in particular identify the areas of focus with your investigation. *(10 marks)*
  - b) Describe and justify the recommendations that you would make to reduce the overall incidence of lameness in this herd. *(10 marks)*
5. Answer **both** part a) and b) of this question.
- a) Jejunal haemorrhage syndrome (JHS) or haemorrhagic bowel syndrome is a relatively recently recognised and emerging abdominal disorder of mature dairy cattle, both overseas and in Australasia.
    - i. Discuss the epidemiology, aetiology and pathogenesis of this condition. *(5 marks)*
    - ii. Describe how you would manage a suspected case of JHS, where the animal is showing signs of dehydration and shock, is passing small amounts of haemorrhagic faeces, but is still standing. *(5 marks)*
  - b) You are contacted by a young veterinarian in dairy practice in northern Victoria, who is considering using blood transfusions as part of the treatment of several cases of severe theileriosis.
    - i. Describe your approach to giving a blood transfusion to a cow in a field setting. Include in your answer the precautions that you would take *(8 marks)*, and how you would treat any adverse reactions. *(2 marks)*

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6. If an outbreak of foot-and-mouth disease (FMD) were to occur in Australia, this would have very serious consequences for the economy. In 2002, the Productivity Commission estimated that the cumulative loss to the national economy would be about Aud\$2–3 billion in gross domestic product for a short outbreak, rising to Aud\$8–13 billion for an outbreak lasting twelve months.

A careful consideration of the potential consequences of any incursion of FMD into Australia highlights the need for a sound policy and a well-developed plan to combat any such incursion.

The current policy with respect to FMD is to eradicate this disease in the shortest possible time, while limiting economic impact, using ‘*stamping out*’.

- a) List the critical factors with respect to FMD that need to be assessed in formulating an appropriate response policy (*5 marks*), and what would be the critical factors that would need to be taken into account when implementing a ‘*stamping out*’ policy? (*5 marks*)
  
- b) Discuss the possible role of vaccination in helping to control an outbreak of FMD in Australia. Include in your answer the possible advantages and disadvantages of FMD vaccination in the Australian context. (*10 marks*)

**End of paper**