



**AUSTRALIAN AND NEW ZEALAND  
COLLEGE OF VETERINARY SCIENTISTS**

**MEMBERSHIP GUIDELINES**

*Medicine of Dairy Cattle*

**INTRODUCTION**

These Membership Guidelines should be read in conjunction with *Membership Candidate Handbook*.

**ELIGIBILITY**

Refer to the *Membership Candidate Handbook*.

**OBJECTIVES**

To demonstrate that the candidate is an advanced practitioner, representing a middle-tier of knowledge, competence and experience in a specific area of medicine of dairy cattle .

**LEARNING OUTCOMES**

1. The candidate will have a **sound**\* knowledge of:
  - a. General bovine anatomy and physiology.
  - b. The aetiology, pathogenesis, and pathophysiology of organ dysfunction in dairy cattle
  - c. The epidemiology, clinical signs and clinical pathology, diagnostic tests and procedures, necropsy findings, differential diagnosis, treatment, and control of dairy cattle disease conditions of all body systems (cardiovascular, reproductive, neurological, gastrointestinal, integument, mammary, urinary). This includes metabolic, genetic, nutritional, infectious, parasitic, allergic, and toxicological disorders in dairy cattle

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\* **Detailed knowledge** - candidates must be able to demonstrate an in-depth knowledge of the topic including differing points of view and published literature. The highest level of knowledge.

**Sound knowledge** – candidate must know all of the principles of the topic including some of the finer detail, and be able to identify areas where opinions may diverge. A middle level of knowledge.

**Basic knowledge** – candidate must know the main points of the topic and the major literature.

- d. Therapeutic agents used in dairy cattle medicine. Specifically, their action and indication for use, likely efficacy, and milk and meat residues after their use.
- e. Principles of disinfection
- f. The different management systems for dairy cattle (including reproductive management, milking management, nutrition, and calf rearing management) and their relationship with disease.
- g. Preventive medicine as it applies to dairy cattle, including principles of epidemiology, economics, and appropriate disease control programs.
- h. Bovine clinical nutrition especially as it applies to the management of dairy herd health
- i. Herd health computer software for the management of nutrition, production, and reproduction.
- j. Behaviour and welfare of dairy cattle including an understanding of current and future welfare issues in the dairy industry and how to remedy them.
- k. Disorders of the newborn and neonatal calf

2. The candidate will have a **basic** knowledge of:

- a. Vaccines and biological agents used for the treatment, prevention and control and management of bovine diseases.
- b. Bovine diseases exotic to Australia and New Zealand but which could be of potential significance or importance to bovine health in Australia and New Zealand
- c. State/federal regulations governing the control of endemic, epidemic and exotic diseases of dairy cattle
- d. The measures to reduce the public health significance of those diseases of dairy cattle which are zoonotic.
- e. Physiology of lactation and milk synthesis. Mechanisms of milk secretion and let down. Milk composition and factors affecting milk composition.
- f. The Australian or New Zealand dairy industry including markets and milk pricing

3. The candidate will be able to do the following with **sound**<sup>†</sup> expertise:
- a. Collect and interpret clinical and production data in dairy cattle medicine cases including:
    - i. historical and physical examinations of the individual animal
    - ii. historical and physical examination of herd health and production problems
    - iii. the results of common clinical pathology investigations - normal values and causes of alterations in these values as well as the value and limitations of such tests.
    - iv. the results of diagnostic imaging examinations including radiography and ultrasound imaging.
  - b. Offer management advice to improve the efficiency of commercial dairy cattle production
  - c. Analyse common clinical problems and make clinical judgements
  - d. Communicate effectively with clients and peers.

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<sup>†</sup> **Skill levels:**

**Detailed expertise** – the candidate must be able to perform the technique with a high degree of skill and have extensive experience in its application. The highest level of proficiency.

**Sound expertise** – the candidate must be able to perform the technique with a moderate degree of skill and have moderate experience in its application. A middle level of proficiency.

**Basic expertise** – the candidate must be able to perform the technique competently in uncomplicated circumstances.

## EXAMINATIONS

For information on both the standard and the format of the Written and Oral examinations, candidates are referred to the *Membership Candidates Handbook*. The Membership examination has **two separate, autonomous components**:

1. **Written Examination** (*Component 1*)  
**Written Paper 1** (two hours): Principles of the Subject  
**Written Paper 2** (two hours): Applied Aspects of the Subject
2. **Oral Examination** (*Component 2*)  
**Oral** (one hour)

The written examination will comprise of two separate two-hour written papers taken on the same day. There will be an additional 15 minute perusal time for each paper, during which no writing in an answer booklet is permitted. In each paper you are provided with four (4) questions to answer, worth 30 marks each, giving a total of 120 marks per paper. There is no choice of questions. Marks allocated to each question and to each subsection of questions will be clearly indicated on the written paper.

### **Written Paper 1:**

This paper is designed to test the candidate's knowledge of the principles of Medicine of Dairy Cattle as described in the Learning Outcomes using essay-style, short answer and note-point formats. Answers may cite specific examples where general principles apply, but should primarily address the theoretical basis underlying each example.

### **Written Paper 2:**

This paper is designed to (a) test the candidate's ability to apply the principles of Medicine of Dairy Cattle to particular cases/problems or tasks and (b) test the candidate's familiarity with the current practices and current issues that arise from activities within the discipline of Medicine of Dairy Cattle in Australia and New Zealand using essay-style, short answer and note-point formats.

### **Oral Examination:**

The duration of this examination is approximately one (1) hour. Slides and/or video of livestock and farms and other clinically relevant material are likely to be used during this examination. Five (5) cases are presented with supporting questions asked verbally in a face-to-face setting. The oral examination has a total of 100 marks with each case allocated 20 marks. This examination will assess the candidate's problem solving skills with respect to individual animal disease and herd health and production problems. The candidate will be required to demonstrate achievement of the above-mentioned Learning Outcomes.

## RECOMMENDED READING MATERIAL<sup>‡</sup>

The candidate is expected to read widely within the discipline, paying particular attention to areas not part of their normal work experiences. This list of books and journals is intended to guide the candidate to some core references and other source material. Candidates also should be guided by their mentors. *The list is not comprehensive and is not intended as an indicator of the content of the examination.*

### Core Textbooks

Anderson DE & Rings DM. *Current veterinary therapy: food animal practice 5*. Saunders Elsevier, 2009.

Noakes DE, Parkinson TJ & England GCW. *Veterinary reproduction and obstetrics*. 9<sup>th</sup> or 10<sup>th</sup> edn. Saunders Elsevier, 2009/2018.

Parkinson TJ, Vermunt JJ, Malmo J & Laven RA. *Diseases of Cattle in Australasia – a comprehensive textbook*. 2<sup>nd</sup> edn VetLearn, New Zealand, 2019.

Radostits OM, Gay CC, Hinchcliff KW & Constable PD. *Veterinary medicine*. 10<sup>th</sup> edn. Saunders Elsevier, 2007 and/or Constable PD, Hinchcliff KW, Done SH & Gruenberg W. *Veterinary medicine*. 11<sup>th</sup> edn. Saunders Ltd, 2016

Antimicrobial prescribing guidelines for dairy cattle (AVA, 2022).

<https://www.ava.com.au/siteassets/policy-and-advocacy/policies/animal-welfare-principles-and-philosophy/ava-ama-antimicrobial-prescribing-guidelines-for-dairy-cattle-4-01-22-final.pdf>

### Recommended Textbooks

Divers TJ & Peek SF Rebhun's Diseases of Dairy Cattle, 2<sup>nd</sup> or 3<sup>rd</sup> edn Saunders Elsevier 2008.2018.

Greenough PR & Weaver AD. *Lameness in cattle*, 3rd edn. WB Saunders, 1997.

*Nutrient requirements of dairy cattle*. 7<sup>th</sup> or 8<sup>th</sup> edns National Academy Press, Washington, DC, 2001/2021.

McKenzie R Australia's Poisonous Plants, Fungi and Cyanobacteria CSIRO Publishing 2020 eBook (<https://www.publish.csiro.au/book/6507/>)

Radostits OM, Mayhew IG & Houston DM. *Veterinary clinical examination and diagnosis*. W.B. Saunders, 2000.

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<sup>‡</sup> **Core textbook** – candidates are expected to own a copy of the textbook and have a detailed knowledge of the contents.

**Recommended textbook** – candidates should own or have ready access to a copy of the book and have a sound knowledge of the contents.

**Additional references** – candidates should have access to the book and have a basic knowledge of the contents

**Additional Reading Materials** - These are conference proceedings, other non-refereed publications and other journals that would offer some information in the subject area including differing points of view, but are not required reading.

Radostits OM. *Herd health, food animal production medicine*. 3<sup>rd</sup> edn. WB Saunders, 2011.

Smith BP. *Large animal internal medicine*. 6<sup>th</sup> edn. Mosby Elsevier, 2019.

## **Periodicals**<sup>§</sup>

**Core Journals:** Candidates should have been consistent readers of the essential journals listed below:

*Australian Veterinary Journal and/or New Zealand Veterinary Journal*

*Journal of Dairy Science*

*Journal of the American Veterinary Medical Association*

*Veterinary Clinics of North America: Food Animal Practice*

*Veterinary Record*

**Recommended Journals:** Candidates should have been consistent readers of the proceedings listed below:

Newsletter of the Australian Cattle Veterinarians and/or Newsletter of the Dairy Cattle Veterinarians of the NZVA

Proceedings of Dairy Cattle Veterinarians of New Zealand (annual conference)

Proceedings of the Australian Cattle Veterinarians (annual conference)

*Bovine Practitioner* (and the Proceedings of the American Association of Bovine Practitioners)

Proceedings of the National Mastitis Council (annual conference)

Proceedings of the World Buiatrics Conferences

**Additional Journals:** Candidates should be familiar with the journals listed below as a course of reference material:

*American Journal of Veterinary Research*

*Canadian Journal of Veterinary Research*

*American Journal of Veterinary Research*

*Animal Reproduction Science*

*Canadian Journal of Veterinary Research*

*Journal of Animal Science*

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<sup>§</sup> **Core Journal** – candidates are expected to have ready access to either print or electronic versions of the journal and have a detailed knowledge of the published articles in the subject area.

**Recommended Journal** – candidates should have ready access to either print or electronic versions of the journal and have a sound knowledge of the published articles in the subject area.

**Additional Journal** – candidates should be able to access either printed or electronic versions of the journal and have a basic knowledge of the published articles in the subject area.

*Journal of Comparative Pathology*  
*Journal of Dairy Research*  
*Journal of the South African Veterinary Association*  
*Journal of Veterinary Diagnostic Investigation*  
*Onderstepoort Journal of Veterinary Research*  
*Veterinary Microbiology*  
*Veterinary Parasitology*  
*Preventive Veterinary Medicine*  
*The Veterinary Journal*  
*Theriogenology*

#### **FURTHER INFORMATION**

For further information contact the College Office

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