



## AUSTRALIAN AND NEW ZEALAND COLLEGE OF VETERINARY SCIENTISTS

### MEMBERSHIP GUIDELINES

#### *Veterinary Pharmacology*

### INTRODUCTION

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

### ELIGIBILITY

Refer to the *Membership Candidate Handbook*.

### OBJECTIVES

Membership of the College is an official recognition of a veterinarian's knowledge and experience in veterinary pharmacology. Membership is an indication to the profession and the general public of an advanced practitioner, representing a middle-tier of knowledge, competence and experience in veterinary pharmacology. Membership is not a specialist qualification. Membership requires examination with members signified by post-nominals MANZCVS.

### LEARNING OUTCOMES

1. To demonstrate that the candidate has **sound<sup>1</sup> knowledge** of:
  - 1.1. Drug disposition and action including pharmacokinetics [absorption, distribution, metabolism and excretion (ADME)], pharmacodynamics, dose response relationships, variability of response, routes of administration, mode of action, drug interactions, pharmaceutical formulations, and delivery systems
  - 1.2. Drug development and manufacture including drug screening, dose rate selection, routes of administration; formulation, stability and quality assurance/control of veterinary drugs and vaccines; design, analysis, and interpretation of clinical studies; safety, efficacy and residue study evaluations
  - 1.3. Systems Pharmacology including clinical pharmacology of autonomic drugs, treatment of ophthalmic conditions, neuromuscular blocking agents, drugs affecting

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<sup>1</sup> **Knowledge levels:**

**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

the central nervous system, drugs affecting the gastrointestinal tract, local anaesthetics, autacoids and drugs interacting with them, corticosteroids, control of pain, cardiovascular drugs, treatment of congestive heart failure and arrhythmias, agents affecting volume and composition of body fluids; treatment of ascites, pulmonary oedema and shock; hormones, and antagonists

- 1.4. Chemotherapeutics including modes of action, resistance phenomena and prudent use of antibiotics, antifungal agents, antiviral agents, antiseptics and disinfectants, anthelmintics, insecticides, acaricides and antineoplastic agents
  - 1.5. Immunology and Vaccines including the principles of immunology, specific and nonspecific immunotherapy, active and passive immunization, types of vaccines, administration of vaccines, vaccine failures, adverse reactions to vaccines, adjuvants, immunostimulants and monoclonal antibodies.
  - 1.6. Toxicology including the principles of toxic drug action, selective toxicity, safety testing of drugs including husbandry and the use of experimental animals, common plant poisons, organic poisons including therapeutic drugs, inorganic compounds such as the metals, pesticides including rodenticides, toxins of animal origin, investigation of suspected poisoning cases, use of emetics and antidotes, and relevance of toxic and drug residues in carcasses and the environment.
2. The candidate will have a **basic knowledge**<sup>1</sup> of:
- 2.1. Regulatory Affairs and Legislation including the registration and legal use of veterinary products in Australia and New Zealand and the regulatory environment in which product registration occurs; quality, efficacy, target animal safety, public health, OH&S and trade issues evaluated by regulatory agencies during product evaluation for registration; drugs and poisons scheduling; adverse experience reporting programs; the use, dispensing, labelling and storage of drug products and the legislative constraints on veterinarians (most registration bodies have links to relevant legislation on their websites).
3. The candidate will be able to do the following with **sound**<sup>2</sup> **expertise**:
- 3.1. discuss the use of drugs in the control, prevention and treatment of common clinical conditions in major (cats, dogs, horses, cattle, sheep) species
  - 3.2. support their discussion with an understanding of how drugs affect the pathophysiology of the disease or clinical sign
  - 3.3. discuss the use of vaccines in the prevention of specific diseases
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4. The candidate will be able to do the following with **basic expertise**<sup>2</sup>:
- 4.1. demonstrate a working knowledge of the major drugs used in all species
  - 4.2. interpret veterinary pharmacology literature including graphs and diagrams, and explaining rational drug use in veterinary practice.

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<sup>2</sup> **Skill levels:**

**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 the required standard and format for both the Written and Oral examinations, candidates are referred to the *Membership Candidates Handbook*. The Membership examination has **two separate components**:

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

The written examination will comprise of two separate two-hour written papers taken on the same day. There will be an additional 15 minutes perusal time for each paper, during which time no typing is permitted. Questions may be long essay type, a series of shorter answer sub-questions, and/ or multiple-choice 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 Veterinary Pharmacology as described in the Learning Outcomes. This written paper will focus on basic concepts.

### **Written Paper 2:**

This paper is designed to (a) test the candidate's ability to apply the principles of Veterinary Pharmacology to particular cases/problems or tasks and (b) test the candidate's familiarity with the current practices and issues that arise from activities within the discipline of Veterinary Pharmacology in Australia and New Zealand. This paper will focus on practice and applications.

### **Oral Examination:**

This examination requires the candidate to demonstrate achievement of the Learning Outcomes listed earlier. Question material will be delivered verbally and may include the use of an audio and/visual presentation. The candidate will deliver their response to the questions with an oral explanation. The duration of this examination is approximately one (1) hour. Questions are presented with supporting information asked verbally either in person or by means of a digital platform. Questions may include case scenarios, interpretation of clinical trials, discussion of regulatory/legislative requirements, and identification of pharmacokinetic/pharmacodynamic principles. Follow-on/sub-questions may be used. The oral examination has a total of 120 marks.

## READING MATERIAL

Veterinary Pharmacology covers diverse subject areas. The candidate is expected to research the depth and breadth of the knowledge of the discipline. It is expected that the candidate will use textbooks and peer-reviewed publications as the core of their reading. *The list is not comprehensive and is not intended as an indicator of the content of the examination.*

## TEXTBOOKS<sup>3</sup>

There are a number of excellent pharmacology textbooks available. Always look for the most recent edition.

### *Recommended*

Veterinary Pharmacology and Therapeutics, 2018, 10<sup>th</sup> Edition, Wiley Blackwell, Edited by Jim Riviere and Mark Papich, ISBN: 9781118855829.

This is a comprehensive textbook of veterinary pharmacology. It is written at a reasonably advanced level and some information in it is relevant to America more than Australia. The pharmacokinetics section in particular is not pitched at beginners. For this reason, a more accessible text on pharmacokinetics is recommended.

### *Additional*

Pocket Guide: Pharmacokinetics Made Easy, Donald Birkett, 2011, 2<sup>nd</sup> Edition, McGraw-Hill Education, ISBN: 9780070285279

### *Additional*

Small Animal Clinical Pharmacology, 2008, 2<sup>nd</sup> edition, Saunders, Edited by Jill Maddison, Stephen Page and David Church, ISBN: 9780702028588

This text is more accessible and more practical than *Veterinary Pharmacology and Therapeutics* by Reviere and Papich; however, the obvious limitation is that this text is restricted to small animals.

### *Additional*

Medical Statistics at a Glance, Aviva Petrie and Caroline Sabin, 2019, 4<sup>th</sup> edition, Wiley-Blackwell, ISBN: 9781119167839.

Statistics for Veterinary and Animal Science, Aviva Petrie and Paul Watson, 2013, 3<sup>rd</sup> edition, Wiley-Blackwell, ISBN: 9780470670750.

Both of these statistic texts will provide more than the detail required for membership-level of veterinary pharmacology. The first one is more introductory than the second.

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<sup>3</sup> Definitions of Textbooks

**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.

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## PEER-REVIEWED PUBLICATIONS

In addition to textbooks it is advised candidates should read up to date peer-reviewed publications from various sources but in particular The Journal of Veterinary Pharmacology and Therapeutics.

Candidates are directed to the Veterinary Pharmacology Study Course run by the Chapter which is broken into modules with numerous relevant articles that are accessible through the study site. The course contents are regularly reviewed by a member of The Veterinary Pharmacology Chapter of ANZCVS.

<https://www.anzcv.org.au/chapters/veterinary+pharmacology+chapter>

Contact the chapter secretary for further information: [secretarypharmacology@anzcv.org.au](mailto:secretarypharmacology@anzcv.org.au)

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## FURTHER INFORMATION

For further information contact the College Office:

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