



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

MEMBERSHIP GUIDELINES
Veterinary Anaesthesia and Analgesia

INTRODUCTION

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

ELIGIBILITY

Refer to the Membership Candidate Handbook.

OBJECTIVES

To demonstrate that the candidate has sufficient knowledge of and experience in Veterinary Anaesthesia and Analgesia, to be able to give advice in this field to veterinary colleagues to the level of knowledge as listed under the learning outcomes.

LEARNING OUTCOMES

1. The candidate will have a **sound**¹ knowledge of:
 - 1.1. The performance of sedation, local and or general anaesthesia in animals including appropriate analgesic drug protocols. The candidate should be familiar with commonly used techniques in cats, dogs, and horses.
 - 1.2. Pre-anaesthetic assessment (including the use and assignment of the ASA 1-5 rating) and preparation for anaesthesia of animals with medical and surgical conditions including the trauma patient.

¹ **Knowledge Levels:**

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 core literature.

- 1.3. Pre and post-operative intensive care management of the critically ill cats, dogs, and horses that need to undergo anaesthesia during the illness.
 - 1.4. Monitoring of physiological variables during anaesthesia as well as the pre and postoperative period. This should include interpretation and appropriate management of changes in these physiological variables.
 - 1.5. Post-operative care required for an animal to recover fully from anaesthesia.
 - 1.6. Methods for providing pre-, intra- and post-operative analgesia and the pharmacology of the drugs used.
 - 1.7. The recognition and management of complications associated with local and general anaesthesia including current recommendations for the performance of cardiopulmonary resuscitation.
 - 1.8. Principles of the management and monitoring of critically ill patients including animals with fluid, electrolyte and acid-base disturbances.
 - 1.9. Occupational and health hazards related to anaesthesia.
 - 1.10. The pharmacology of drugs used for sedation, analgesia and anaesthesia including the treatment of the critical care patient. This knowledge should include possible adverse effects of these drugs and important interactions between sedative, anaesthetic and analgesic drugs and unrelated drugs used for treatment of medical and surgical conditions of animals requiring anaesthesia. An understanding of how to manage adverse drug effects and interactions is required.
2. The candidate will have a **basic** knowledge of:
- 2.1. The performance of sedation, local and or general anaesthesia production animals (sheep, cattle, pigs goats, alpacas), birds, guinea pigs, mice, rats and rabbits.
 - 2.2. The function of machines and equipment used for general anaesthesia and resuscitation of large and small animals. This should include respiratory ventilators and equipment related to anaesthesia and monitoring.
 - 2.3. The anatomy and physiology of those body systems relevant to anaesthesia, including differences that occur in the foetus, neonate, geriatric and pregnant animal. The physiology of positive pressure ventilation and of fluid, electrolyte and acid-base balance is necessary. Physiology of pain including pathophysiology of hyperalgesia, allodynia, peripheral and central sensitization
 - 2.4. The anaesthesia considerations associated with concurrent disease and particular surgical procedures.

3. The candidate will **be able to, with sound expertise**²:
 - 3.1. Develop a range of appropriate anaesthetic protocols for animals undergoing anaesthetic procedures with physical status ratings of ASA 1-5.
 - 3.2. Develop appropriate protocols for perioperative analgesia including commonly used regional analgesic techniques.
 - 3.3. Diagnose and manage common problems/complications that arise under anaesthesia and during the immediate post-operative period.
 - 3.4. Discuss venous catheterisation of peripheral veins in both front and hind legs in dogs, cats, horses, and sheep.
 - 3.5. Discuss over-the-needle catheters used in jugular veins.
 - 3.6. Discuss intubation of dogs, cats, horses, cattle, sheep and birds.
 - 3.7. Discuss the application of manual ventilation in clinical cases.
 - 3.8. Discuss the administration of gaseous anaesthesia using a mask in appropriate species.
 - 3.9. Describe how to inspect an anaesthetic machine, fill the vaporizer, change over gas tanks (oxygen/nitrous) and perform leak tests of the anaesthetic machine, and discuss the importance of these procedures.
 - 3.10. Discuss and describe the use and indications of the following equipment:
 - 3.10.1. Laryngoscope
 - 3.10.2. Non-invasive blood pressure monitoring
 - 3.10.3. ECG
 - 3.10.4. Pulse-oximetry
 - 3.10.5. Gaseous anaesthetic machine with vaporizer both in and out of circuit
 - 3.11. Discuss the administration of fluid therapy including colloids and continuous rate infusions and be aware of the use of appropriate giving sets, pumps and syringe drivers.
 - 3.12. Interpret blood pressure and pulse oximetry readings
 - 3.13. Perform calculations for drug doses and fluid therapy

² **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.

- 3.14. Communicate effectively with clients, peers and other staff members.
4. The candidate will **be able to, with basic expertise**²
- 4.1. Interpret a basic capnography trace, ECG trace.

EXAMINATIONS

For information on the standard and 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 minutes 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. Questions may be long essay type, a series of shorter answer sub-questions, 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 Anaesthesia and Analgesia as described in the Learning Outcomes. 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 Veterinary Anaesthesia and Analgesia 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 Veterinary Anaesthesia and Critical Care in Australia or New Zealand.

Oral Examination:

This examination requires the candidate to demonstrate achievement of the above-mentioned Learning Outcomes. The duration of this examination is approximately one (1) hour. Images may be shown of equipment as well as diagnostic imaging such as radiographs, CT or MRI. Blood results may be presented as well as electrocardiographs. Up to 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.

RECOMMENDED READING MATERIAL³

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.*

Recommended Text Books:

Grimm KA, Thurmon J C, Tranquilli WJ. *Lumb and Jones' Veterinary Anesthesia and Analgesia* 4th edition. Blackwell Publishing. 2007 (or the most recent edition)

Hall W L, Clarke K W. *Veterinary Anaesthesia*. 10th or 11th Edition. Bailliere Tindall 2001 – 2014.

Dugdale A. (2010) *Veterinary Anaesthesia Principles to Practice*. Wiley Blackwell
Seymour C, Duke-Novakovski T. Editors

BSAVA Manual of Small Animal Anaesthesia and Analgesia 3rd ed. BSAVA 2016

Clark KW, Taylor PM. *Handbook of Equine Anaesthesia* 2nd Edition Saunders London

Muir WW, Hubble JAE. *Hand book of Veterinary Anesthesia* 4th or 5th edition Mosby 2007 -2013

Gaynor J, Muir W. *Handbook of Veterinary Pain Management* 2nd or 3rd Ed. Mosby 2008-2015.

Muir W W, and Hubbell J A E. *Equine Anaesthesia Monitoring and Emergency Therapy* 2nd ed. Mosby Elsevier. 2008.

Stoelting *Pharmacology and Physiology in Anaesthetic Practice* 4th or 5th Edition. J B Lippincott Williams & Wilkins. 2005 -2014.

West J. *Respiratory physiology: The essentials* 9th ed. Williams &Wilkins, 2011.

MacIntire DK, Dobratz KJ, Haskins SC, Saxon WD. *Manual of Small Animal Emergency and Critical Care* 2nd ed . Blackwell publishing 2012.

Silverstein D, Hopper K. *Small Animal Critical Care Medicine*, 2ed 2014 Elsevier

Dibartola S. *Fluids, Electrolytes and Acid Base disorders in Small Animal*. Practice 3rd or 4th edition Elsevier, 2006- 2011.

³ **Definitions of Textbooks**

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 References:

Veterinary Clinics of North America. *Contributions and issues relevant to anaesthesia and critical care of animals and analgesia*. (Small animals, equine, food animals and wildlife series)

Campoy L, Matt R. (2013) *Small Animal Regional Anesthesia and Analgesia*; Iowa State University Press.

Flecknell P A. (1996) *Laboratory Animal Anaesthesia* 2nd ed. Elsevier.

Hall L W and Taylor P. (editors) (1994) *Anaesthesia of the Cat*. Bailliere Tindall.

Paddleford, R B (Editor) *Manual of Small Animal Anaesthesia*. Churchill-Livingstone, 1999.

Reibold T W, Geiser D R and Goble D O. (1995) *Large Animal Anesthesia*. Principles and Techniques. 2nd edition

Riviere JE and Papich MG. *Veterinary Pharmacology and Therapeutics*. 9th Edition. State University Iowa Press 2009.

Tranquilli WJ, Grimm KA, Lamont LA. *Pain Management of the Small Animal Practitioner* 2nd ed. (Made Easy Series) Teton new Media, 2004.

Veterinary Anesthesia and Pain management secrets; 2002 SA Greene Hanley&Belfus Inc Philadelphia

Southwood L, Wilkins P.A. Equine Emergency and Critical Care Medicine. Nov 2014

University of Sydney Centre of Veterinary Education 2014 Emergency. Conference Proceedings Feb 2014

Web sites:

Capnography <http://www.capnography.com>

International veterinary academy for pain management <http://www.ivapm.org/>

International veterinary information service <http://www.ivis.org/home.asp>

Virtual anesthesia textbook <http://www.virtual-anesthesia-textbook.com/index.shtml>

Additional Journals:⁴

Compendium of Continuing Education for the Veterinary Practitioner

Journal of Veterinary Anaesthesia and Analgesia

Journal of Veterinary Emergency and Critical Care

⁴ **Definitions for journals:**

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.

FURTHER INFORMATION

For further information contact the College Office

Telephone: International +61 (07) 3423 2016

Email: admin@anzcvs.org.au

Web: www.anzcvs.org.au

Postal Address: Building 3, Garden City Office Park, 2404 Logan Road
EIGHT MILE PLAINS QLD 4113 Australia

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