



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 considered by colleagues and the general public as an advanced practitioner representing a middle-tier of knowledge, competence and experience in the subject of Veterinary Anaesthesia and Analgesia.

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.
 - 1.4.1 Cardiovascular system – pulse/heart rate, arterial blood pressure, pulse assessment, electrocardiogram (ECG) and perfusion parameters (mucous membrane colour, capillary refill)
 - 1.4.2 Respiratory system – end-tidal carbon dioxide, pulse oximetry, respiratory rate and respiratory patterns.
 - 1.4.3 Central nervous system (CNS) – reflexes associated with depth of anaesthesia
 - 1.4.4 Thermoregulation
- 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.
- 1.11. The assessment and management of pain including the use of pain scales, analgesic drugs and locoregional techniques for routine surgical procedures.
2. The candidate will have a **basic** knowledge of:
 - 2.1. The performance of sedation, local and or general anaesthesia in production animals (sheep, cattle, pigs goats, alpacas), birds, guinea pigs, mice, rats and rabbits.
 - 2.2. The function of respiratory ventilators for the use in general anaesthesia.
 - 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 sensitisation.

- 2.3. The anaesthesia considerations associated with common co-morbidities in patients undergoing routine surgical or medical procedures.
3. The candidate will have a **sound** knowledge of:
 - 3.1 The function of anaesthetic machines and routine monitoring equipment used for general anaesthesia of large and small animals.
4. The candidate will **be able to, with sound expertise**²:
 - 4.1. Develop a range of appropriate anaesthetic protocols for animals undergoing anaesthetic procedures with physical status ratings of ASA 1-5E.
 - 4.2. Develop appropriate protocols for perioperative analgesia including commonly used regional analgesic techniques.
 - 4.3. Diagnose and manage common problems/complications that arise under anaesthesia and during the immediate post-operative period.
 - 4.4. Perform venous catheterisation of peripheral veins in both front and hind legs in dogs, cats, horses, and sheep.
 - 4.5. Perform over-the-needle catheters used in jugular veins.
 - 4.6. Perform intubation of dogs, cats horses, birds and rabbits.
 - 4.7. Perform manual ventilation in clinical cases.
 - 4.8. Perform the administration of gaseous anaesthesia using a mask in appropriate species.
 - 4.9. 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.
 - 4.10. Describe the use and indications of the following equipment:
 - 4.10.0. Laryngoscope
 - 4.10.1. Non-invasive blood pressure monitoring
 - 4.10.2. ECG

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.

- 4.10.3. Pulse oximetry
- 4.10.4. Capnography
- 4.10.5. Gaseous anaesthetic machine with vaporiser out-of- circuit
- 4.11. Administer fluid therapy and continuous rate infusions and be aware of the use of appropriate giving sets, pumps and syringe drivers.
- 4.12. Interpret blood pressure and pulse oximetry readings
- 4.13. Perform calculations for drug doses and fluid therapy
- 4.14. Communicate effectively with clients, peers and other staff members.
- 4.15. Interpret basic capnography traces and ECG traces of common arrhythmias
- 4.16. Interpret a basic ECG trace and common arrhythmias such as second-degree atrioventricular blocks, VPCs and cardiopulmonary arrest rhythms.
- 5. The candidate will **be able to, with basic expertise**²
 - 5.1. Interpret blood work, uncomplicated arterial blood gas analysis and radiographs relating to patients presenting for sedation or anaesthesia.
 - 5.2. Discuss and describe a gaseous anaesthetic machine with an in-circuit vaporiser
 - 5.3. Perform intubation of cattle, small ruminants and pigs

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 typing is permitted. In each paper you are provided with a series of short answer questions, multiple choice questions or may require an essay-type response. Each paper is worth a total of 120 marks and all questions must be answered. Allocated marks to each questions/subquestions will be clearly indicated.

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. A series of cases will be presented using powerpoint slides with supporting questions asked verbally. Images are likely to be shown such as equipment, radiographs and blood results. 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 should also 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:

Clarke, K.W., Hall, L.W., Trim, C.M., 2014. Veterinary anaesthesia, 11th edition. Saunders/Elsevier, Edinburgh ; New York.[#]

Dugdale, A., Beaumont, G., Bradbrook, C., Gurney, M., 2020. Veterinary anaesthesia: principles to practice, Second edition. Wiley-Blackwell, Hoboken, NJ.[#]

Duke-Novakowski, T., Vries, M. de, Seymour, C. (Eds.), 2016. BSAVA manual of canine and feline anaesthesia and analgesia, Third edition. ed. British Small Animal Veterinary Association, Quedgeley, Gloucester [United Kingdom].

Gaynor, J.S., Muir, W.W. (Eds.), 2015. Handbook of veterinary pain management, Third edition. ed. Elsevier, St. Louis, Missouri.[#]

Muir, W.W., Hubbell, J.A.E., Bednarski, R.M., Lerche, P. (Eds.), 2013. Handbook of veterinary anesthesia, Fifth Edition. ed. Elsevier Mosby, St. Louis.

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.

current or previous edition suitable

Additional References:

Campoy, L., Read, M.R. (Eds.), 2013. Small Animal Regional Anesthesia and Analgesia. John Wiley & Sons, Inc., West Sussex, UK.

Flecknell, P.A., 2023. Laboratory animal anaesthesia, Fifth edition. ed. Elsevier/AP, Academic Press is an imprint of Elsevier, Amsterdam ; Boston.

Lerche, P, Aarnes, TK, Covey-Crump, G, & Martinez Taboada, F, 2016, Handbook of small animal regional anesthesia and analgesia techniques, John Wiley & Sons, Ltd, Chichester, West Sussex, UK;

Silverstein, D.C., Hopper, K., 2022. Small animal critical care medicine, Third edition. Elsevier/Saunders, St. Louis, Mo.

Taylor, P.M., Clarke, K.W., 2007. Handbook of equine anaesthesia, 2nd edition. Elsevier Saunders, Edinburgh; New York.

current or previous edition suitable

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>

Association of Veterinary Anaesthetists <https://ava.eu.com/resources/>

FURTHER INFORMATION

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