AUSTRALIAN AND NEW ZEALAND COLLEGE OF VETERINARY SCIENTISTS FELLOWSHIP GUIDELINES

Avian Medicine and Surgery

ELIGIBILITY

1. The candidate shall meet the eligibility prerequisites for Fellowship outlined in the *Fellowship Candidate Handbook.*

2. Membership of the Avian Health Chapter, Australian and New Zealand College of Veterinary Scientists must be achieved by examination prior to the Fellowship examination.

OBJECTIVES

To demonstrate that the candidate has sufficient knowledge, training, experience, and accomplishment in Avian Medicine and Surgery to meet the criteria for registration as a specialist in Avian Medicine and Surgery. To demonstrate this standard, the candidate must achieve 70% in the examinations.

RESPONSIBILITY

It is the candidate's responsibility to ensure they have fulfilled all the requirements of the training program guidelines prior to submitting their credentials for eligibility for examination.

These guidelines relate to the discipline of Avian Medicine and Surgery which includes veterinary care for companion, aviary and wild birds which are likely to be encountered in avian specialist practice in Australia and New Zealand including:

- Native and exotic bird species which are kept as companion or aviary birds
- Backyard, show and pet poultry, including waterfowl and game birds (but not commercial poultry)
- Pigeons
- Native and non-native wild birds found in Australia and New Zealand

- Other species such as ratites (ostrich, emu, cassowary and kiwi) and other birds kept as zoological specimens.

The candidate will have a **detailed**[1] knowledge of birds commonly kept in Australia and New Zealand of:

1. Principles of Avian Medicine and Surgery
    a. Anatomy and physiology, including knowledge of significant differences between genera and species where clinically relevant
    b. Taxonomy
    c. Nutrition and husbandry
    d. Organ systems – gastrointestinal, musculoskeletal, respiratory, cardiovascular, integument, urinary, reproductive, nervous and special senses (somatosensory, ophthalmic, auditory, neurological), endocrine, haematological and immune.
    e. The aetiology, pathogenesis, pathophysiology, and epidemiology of infectious and non-infectious avian diseases and disorders.
2. Application of Avian Medicine and Surgery
    a. Clinical techniques for avian patients including, but not limited to:
        i. Restraint and handling
        ii. The conduct of a detailed physical examination
        iii. Supportive care, fluid therapy, blood transfusion
        iv. Administration of medication
        v. Collection of diagnostic samples
    b. Diagnostic tests applied to the diagnosis of disease conditions in birds, including, but not limited to:
        i. Clinical pathology (haematology; biochemistry; cytology; bacterial, fungal and viral culture and interpretation; serology; molecular diagnostics)
        ii. Necropsy and histopathology
        iii. Endoscopy
        iv. Electrocardiology
    c. Diagnostic imaging including radiology, ultrasound, echocardiography, fluoroscopy, computed tomography, and magnetic resonance imaging

[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 major literature.

d. Therapeutics and pharmacology, including knowledge of the pharmacokinetics and the pharmacodynamics of drugs which are commonly used in avian medicine

e. Anaesthesia and analgesia

f. Surgery, both soft tissue and orthopaedic

g. Oncology

h. Avicultural medicine, including artificial incubation and paediatrics

i. Behaviour of commonly kept bird species, including:

    i. Normal species appropriate behaviour and how it relates to captivity

    ii. The principles and application of behavioural analysis and behavioural modification

    iii. Principles of animal welfare as applied to birds kept in captivity

The candidate will have a **sound** knowledge of:

1. Principles of Avian Medicine and Surgery

    a. The embryology of avian organ systems

    b. The nutrition and husbandry of less commonly kept species (native wild birds, ratites and other birds kept as zoological specimens)

2. Infectious diseases of birds currently exotic to Australia and New Zealand but which could be of potential significance or importance to avian health if introduced, including those of importance to poultry. This includes:

    a. Knowledge of the aetiology, epidemiology, and diagnosis of exotic infectious disease
    b. Government controls including
        i. Import risk assessment procedures
        ii. Legislative responses to exotic disease incursion
        iii. Export requirements for native and non-native species

3. Application of Avian Medicine and Surgery

    a. Applied avicultural techniques such as genetic selection (including colour mutation, sex-linked genes and heritable diseases) and aviary design and management.

    b. Biosecurity principles as they relate to the management of avian collections, either small or large.

    c. Measures to reduce the public health significance of those diseases of birds that are zoonotic.

d. Welfare and legislative issues relevant to the avian species and the provision of veterinary services.

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

1. Poultry vaccination (for those relevant to backyard poultry) protocols and their application in a non-commercial setting.
2. Other avian vaccinations for commonly encountered diseases in clinical practice (excluding commercial poultry).

The candidate will be able to do the following with **detailed**[2] expertise:

1. Catch and handle birds,
2. Perform a clinical examination and obtain diagnostic samples
3. Apply splints and bandages
4. Perform necropsies of birds
5. Perform soft tissue and orthopaedic surgery
6. Display knowledge and sufficient understanding of relevant literature to be able to investigate, diagnose and formulate sound and rational approaches to new and/or rare avian diseases
7. Maintain currency with the relevant refereed scientific literature, using library and computer-based searching skills, and to critically evaluate current concepts on avian health and medicine.
8. Perform and advise on appropriate patient positioning for diagnostic imaging, with an understanding of settings used for avian radiography and ultrasonography and the reasoning behind these settings.

The candidate will be able to do the following with **sound expertise**:

1. Express and support views on current issues relevant to avian medicine such as animal welfare, antibiotics and human health, the import and export of avian genetic material and conservation issues relevant to aviculture
2. Advance knowledge in their field through clinical innovation, research and publication.

[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.

EXAMINATIONS

Refer to the *Fellowship Candidate Handbook*, Section 5.
The Fellowship examination has **four separate, autonomous components**:

1. **Written Paper 1** *(Component 1)*
   Basic science and principles of Avian Medicine and Surgery (three hours)
2. **Written Paper 2** *(Component 2)*
   Applied Avian Medicine and Surgery (three hours)
3. **Practical Examination** *(Component 3)*
   Practical (two hours)
4. **Oral Examination** *(Component 4)*
   Oral (one and a half to two hours)

The written examination will comprise of two separate three-hour digital papers taken on two consecutive days. There will be an additional 20 minutes perusal time for each paper, during which no typing is permitted. In each paper you must answer all questions; there is no choice of questions. Each question is equally weighted, giving a total of 180 marks per paper. The examination may include a series of short answer questions, multiple choice questions or may require an essay-type response. The examination is worth a total of 180 marks; the number of marks allocated to each question and any sub questions will be clearly indicated within the written examinations. Formal, technical terminology should be used in all examinations. 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 Avian Medicine and Surgery 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 test the Candidate's ability to apply the principles of Avian Medicine and Surgery to particular cases/problems or tasks and to test the candidate's familiarity with the current practices and current issues that arise from activities within the discipline of Avian Medicine and Surgery in Australia and New Zealand.

Practical Examination:

The practical examination will consist of short questions with written answers of a practical and clinical nature relating to images, videos, test results, and/or examples of clinical material. It will be composed of a number of questions of equal weighting, with a total examination time of two hours (120 minutes). The examination may be arranged to be accessed at a single bench, be set out over several stations or be presented as an online examination using audio-visual aids.

Oral Examination:
The oral examination will consist of verbal questions delivered to the candidate, requiring verbal answers. This will be conducted mainly as a power point presentation, but may include other physical aids, such as images, videos, test results, and/or examples of clinical material. The scope of the examination includes clinical, theoretical and ethical subjects, as delineated in the above guidelines. The duration will be a minimum of 90 minutes, with a maximum of 120 minutes. The examination is worth a total of 90 marks. The format of the oral examination allows the candidate to ask clarifying questions about the content provided, but not to solicit additional information to their advantage. Examiners adhere to the College Examiners Guidelines.

TRAINING PROGRAMS

Refer to the *Fellowship Candidate Handbook*, Section 3.3.

In addition to the requirements of the *Fellowship Candidate Handbook* , the Chapter imposes the following:

1. Poultry must be included in the training program to the extent that such contact improves the candidate's ability to deal with individual, pet poultry cases and small-scale backyard operations.

2. The training program must include provision for developing skills in oral presentation to both veterinary and non-professional audiences. The candidate must have given at least one oral presentation at a scientific meeting prior to the examination, and this should be recorded in the candidate's Curriculum Vitae that is submitted for credentialing.

3. The training program must include provisions for the development of research and enquiry skills, including a primary research publication (outlined in section 2.10 – The *Fellowship Candidate Handbook*). The candidate should submit a plan outlining the research they will be undertaking during their training program, and include a timeline for research milestones. This allows feedback from the Chapter and acceptance of the research plan as well as an opportunity for independent feedback to the candidate.

4. The supervisor must ensure that an adequate range, number and complexity of cases is included in the training program. Perceived deficiencies must be corrected by the candidate seeking training by an approved alternative avian medicine facility and supervisor.

    4.1. Candidates should see 15 – 25 cases per week (DST, part-time or full time) with a minimum of 2,000 cases over the whole training program (excluding TRD).

5. In cases where the candidate elects to undertake a part-time training program, training must be completed while the candidate is working in a practice setting with at least 25 hours per week working in the clinical and technical aspects of the discipline. Please see the Fellowship Candidate Handbook for further details on part-time training program

requirements.

TRAINING IN RELATED DISCPLINES

Refer to the *Fellowship Candidate Handbook*, Section 2.4.2

Candidates must spend time in the three following: general small animal surgery, pathology (1 week anatomic pathology, 1 week clinical pathology) and diagnostic imaging. Each require two weeks (or 10 full time working days) of training, in a single institution. This is currently more than the minimum four weeks stipulated by the *Fellowship Candidate Handbook*.

In addition to the compulsory Training in Related Discipline requirements, candidates may, at their own discretion, but with mutual agreement from their supervisors, do up to another 12 weeks of additional Training in Related Discipline requirements in the following related disciplines: anaesthesiology, general medicine, cardiology, ophthalmology, oncology, behaviour, wildlife, epidemiology, and poultry medicine. This brings the total allowable maximum of TRD to 18 weeks, comprising 6 weeks of compulsory TRD, with the option of up to a further 12 weeks.

EXTERNSHIPS

Refer to the *Fellowship Candidate Handbook*, Section 2.4.1

All candidates must complete at least one externship (four weeks continuously) in Avian Medicine, supervised by an Avian Specialist veterinarian from any of the following Colleges; ANZCVS, ACZM, ECZM.

ACTIVITY LOG SUMMARY

Candidates are required to submit an Activity Log Summary (ALS) covering the whole of the residency period. The ALS should be kept in the format of Appendix 1 of these guidelines. A list of species seen should be included.

PUBLICATIONS AND PRESENTATION

Refer to the *Fellowship Candidate Handbook*, Section 2.10

READING LIST

This document is intended to assist residents in compiling a list of text books and journals that should be read prior to sitting the ANZCVS (Avian Medicine and Surgery) examination. It is important that the resident has access to the entire reading list as this forms the basis of the examination. The page numbers on this list add- up to approximately 10,000 pages. The resident should ensure they have the latest (current years) edition of this Reading List for examination preparation as additional texts and journals may have been added by the examination team up to 6 months prior to the examination. It is impossible for such a list to be comprehensive and cover all current information on the discipline. It is the resident's responsibility (with the assistance of their supervisors) to ensure they are current on relevant information for their subject. While most questions in the exam are extracted from this Reading List, some questions may be generated from other sources e.g. where the subject matter pertains to emerging, or important disease incursions relevant to the specialty in Australia and New Zealand.

Core textbooks[3]

Campbell TW. Exotic Animal Hematology and Cytology, 4th edition, Wiley and Blackwell, Oxford, 2015 (190 p.) Avian related topics only

Chitty J and Lierz M. BSAVA Manual of Raptors, Pigeons and Passerine Birds. British Small Animal Veterinary Association, Quedgeley, Gloucester, 2008. (256 p.)

Excluding the following Chapters

- Chapter 5 (Anatomy and Physiology)
- Chapter 6 (Transport and Handling)
- Chapter 7 (Examination, triage and hospitalization)
- Chapter 10 (Anaesthesia and Analgesia)
- Chapter 11 (Radiography)
- Chapter 12 (Advanced non-invasive imaging techniques)
- Chapter 14 (Soft Tissue Surgery)

Harcourt Brown N and Chitty J. BSAVA Psittacine Birds, British Small Animal Veterinary Association, Quedgeley, Gloucester, 2005. (25 p.)

Selected chapters

- Chapter 14 Respiratory disease
- Chapter 15 Gastointestinal disease
- Chapter 21 The sick small psittacid

[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.

Harrison G and Lightfoot T. Clinical Avian Medicine, Spix Publications, Palm Beach, Florida, 2005 (104 p.)

Selected Chapters Volume II

- Chapter 21 Preventive Medicine and Screening (14 p.)
- Chapter 39 Management of Canaries, Finches and Mynahs (36 p.)
- Chapter 41 Management of Captive Ratites (24 p.)

King AS and McLelland J. Birds: Their structure and function, 2nd edition, Ballière Tindall, London, 1984. (314 p.)

König HE, Korbel R, Liebig HJ. Chapter 15: The Eye. Avian Anatomy : Textbook and Colour Atlas, Second Edition. 5mPublishing, 2016. (27 p)

Ophthalmology chapter only (pp.216-242)

Krautwald-Junghanns M-A, Pees M, Reese S and Thomas T. Diagnostic Imaging of Exotic Pets, Schlütersche, Hannover, 2011 (141 p.)

Avian chapters only

Luescher AU. Manual of parrot behaviour. Blackwell publishing, Oxford, 2006. (105 p.)

Selected Chapters

- Chapter 10 Hand-Rearing: Behavioral Impacts and Implications for Captive Parrot Welfare
- Chapter 16 Clinical Evaluation of Psittacine Behavioural Disorders
- Chapter 17 Diagnostic Workup of Suspected Behavioural Problems
- Chapter 18 Aggressive Behaviour in Pet Birds
- Chapter 19 Parrot Vocalization
- Chapter 20 Parrots and Fear
- Chapter 21 Problem Sexual Behaviours of Companion Parrots
- Chapter 22 Mate Trauma
- Chapter 23 Feather-Picking Disorder in Pet Birds
- Chapter 24 Psittacine Behavioural Pharmacotherapy

Lumeij JT. Avian Clinical Biochemistry. In: Kaneko JJ, Harvey JW and Bruss ML (ed). Clinical Biochemistry of Domestic Animals, 6th edition, pp 839-872, Elsevier/Academic Press, Amsterdam/Boston, 2008. (33 p.)

Orosz SE et al. Avian Surgical Anatomy, WB Saunders, Philadelphia, 1992. (129 p.)

Poland G, Raftery A. BSAVA Manual of Backyard Poultry Medicine and Surgery. British Small Animal Veterinary Association, Quedgeley, Gloucester, 2019 (376 p.)

Ritchie BW, Harrison GJ and Harrison LR. Avian Medicine: Principles and Application, Wingers Publishing, Lake Worth, Florida, 1994. (1170 p.) Available online at: http://avianmedicine.net/ publication_cat/clinical-avian-medicine/

Excluding Section 7 on Comparative Medicine and Management

Samour J (ed). Avian Medicine, 3rd edition, Elsevier, London, 2016. (580 p.)

Excluding

- Chapter 7 (Anesthesia and Analgesia)
- Chapter 13 (Systemic Diseases - Disorders of the Cardiovascular System)

Scanes CG and Dridi S (eds). Sturkie's Avian Physiology 7th Edition (195 p.)

Selected Chapters

- Chapter 19 Renal and extrarenal regulation of body fluid composition pp 411-434 (23 p.)
- Chapter 20 Respiration pp 445-477 (32 p.)
- Chapter 21 Gastrointestinal anatomy and physiology pp 485-518 (33 p.)
- Chapter 35 Reproduction in the female pp 941-985 (44 p.)
- Chapter 36 Reproduction in male birds pp 987-1008 (21 p.)
- Chapter 38 Stress ecophysiology pp1049-1090 (41 p.)

Schmidt RE, Reavill DR and Phalen, DN. Pathology of Pet and Aviary Birds, 2nd edition, Wiley Blackwell, 2015. (312 p.)

Speer B. Current Veterinary Therapy in Avian Medicine and Surgery. Elsevier, 2016. (928 p.)

Therio KA, McAloose D, St Leger J. Pathology of Wildlife and Zoo Animals. Elsevier, San Diego, 2018. (197 p.)

Avian chapters :

- Chapter 27 - Sphenisciformes, Gaviiformes, Podicipediformes, Procellariiformes, and Pelecaniformes
- Chapter 28 - Phoenicopteriformes
- Chapter 29 - Anseriformes, Ciconiiformes, Charadriiformes, and Gruiformes
- Chapter 30 - Birds of Prey
- Chapter 31 - Galliformes and Columbiformes
- Chapter 32 - Psittacines, Coliiformes, Musophagiformes, Cuculiformes
- Chapter 33 - Passeriformes, Caprimulgiformes, Coraciiformes, Piciformes, Bucerotiformes, and Apodiformes

West G, Heard DJ and Caulkett N (eds). Zoo Animal and Wildlife Immobilization and Anesthesia, Second Edition. Blackwell Publishing, Oxford, 2014. (45 p.)

Selected chapters:

- Chapter 25 - Penguins
- Chapter 26 - Ratites
- Chapter 29 - Free-Living Waterfowl and Shorebirds

Core journals[4]

Fellowship candidates should be familiar with Avian Medicine and Surgery literature from the 5 years preceding their examination; publications relating to wild, aviary and pet birds, as well as backyard poultry.

- Avian Diseases
- Avian Pathology
- Journal of Avian Medicine and Surgery
- Australian Veterinary Journal
- New Zealand Veterinary Journal
- Veterinary Clinics of North America, Exotic Animal Practice

Recommended self-assessment books, considered useful during the preparation for the specialty exam

Altman RB and Forbes NA. Self-Assessment Color Review of Avian Medicine, Manson Publishing, London, 1998.

Coles BH, Krautwald-Junghanns ME and Herman TJ. Self-Assessment Picture Tests in Avian Medicine, Mosby, London, 1998.

Forbes NA, Sanchez-Migallon Guzman D, Avian Medicine and Surgery: Self-Assessment Color Review, Second Edition, CRC Press Taylor & Francis Group, LLC, 2017; 198 pgs.

Rosenthal KL, Forbes NA, Frye F L and Lewbart GA. Rapid Review of Exotic Animal Medicine and Husbandry, Manson Publishing, London, 2008. Section Birds pp 99 - 150

Samour J. Exotic Animal Medicine: Review and Test, Elsevier, Oxford, 2012. Section - Birds pp 109 – 300

[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 additional.

FURTHER INFORMATION

These guidelines will be updated at least every three (3) years and changes supplied to all current candidates once approved. The Reading List will be updated annually to ensure they remain fit-for-purpose.

For further information contact the College Office

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Appendix 1: Avian Medicine and Surgery Activity Log Summary

See attached Excel spreadsheet template.