Reference Number	C-VC.1
Module Title	Cardiovascular Anatomy, Physiology and Pathology
Category and Value	C – 10 credits
Study Hours	100

Introduction

This module on Cardiovascular Anatomy, Physiology and Pathology can be taken from a small animal or large animal perspective. It is intended to cover the anatomy, physiology and general pathology of the heart, and cardiovascular systems, including relevant aspects of the respiratory system, with application to all major species of veterinary concern. This module will extend and consolidate clinical knowledge and skills gained at undergraduate level, to allow application of this knowledge to the initial assessment of patients and their subsequent management. The candidate will be able to evaluate critically their own standards of practice and develop strategies for continuous improvement in the future.

This is an optional module for those wishing to obtain a Certificate in Advanced Veterinary Practice (Veterinary Cardiology).

Aims

The aim of this module is to:

1. Increase the student's depth of knowledge and understanding of the normal anatomy and physiology of the cardiovascular systems of veterinary species;
2. Develop the student's knowledge and understanding of pathological changes to the cardiovascular systems in veterinary species.

Learning Outcomes

1. Critically evaluate the anatomy and physiology of the cardiovascular systems and apply this understanding of normal anatomy to appreciate how alterations in the normal structure and function of these systems contributes to clinical disease manifestations.
2. Apply clinical reasoning skills and evidence-based medicine in the diagnostic approach and management of diseases relevant to the topic covered.
3. Critically appraise the literature relevant to clinical cases in the topics covered, and how the literature can be used to inform practice.

Module Content

Anatomy:

- The gross anatomy of the mammalian heart, pericardium, and great vessels
- The microscopic anatomy of the myocardium and the myocyte

- The cardiac pacemaker, conduction system and autonomic nerves supplying the heart.
- The gross anatomy of the respiratory tract including the trachea, bronchi, alveoli, thoracic cavity, pulmonary parenchyma and pulmonary vessels.
- The organisation of the circulation in utero, before birth, and the changes that occur after birth.
- Characteristic congenital abnormalities of the heart and circulation such as patent ductus arteriosus, pulmonic stenosis, ventricular septal defect, aortic stenosis, vascular 'ring' abnormalities and Tetralogy of Fallot.
- Breed or species predispositions to certain congenital abnormalities.
- Comparative anatomy covering species of major veterinary interest.

Physiology:

- The cardiac cycle.
- Myocardial function
- Impulse conduction
- Vascular microanatomy and physiology
- Central/neural control of the heart and circulation
- Blood pressure control and fluid balance
- Cardiovascular effects of exercise, trauma, anaesthesia, pregnancy, age
- The physiology of the pericardium
- The physiology of the airways
- Electrolytes, blood gases and acid-base balance in relation to the cardiovascular system
- Integrative physiology: CNS, CVS, respiratory and renal function

Pathology:

- Shock and circulatory failure
- Blood clotting and clotting defects
- Hypertension and hypotension
- Heart failure
- Tachycardia, bradycardia, arrhythmia and conduction disturbance
- Pre-load and afterload

- Valvular incompetence
- Dilated cardiomyopathy
- Hypertrophic cardiomyopathy
- Intra- and extra-cardiac shunting of blood
- Myocarditis
- Neoplasia and the heart
- Pericardial disease
- Parasitology in relation to respiratory and cardiac disease
- Comparative aspects of cardiovascular disease
- Disorders of the respiratory system and pleural space / thorax in relation to cardiovascular effects
- Systemic disease and the CVS / respiratory system

Strategy

Module providers are responsible for deciding on assessment strategies and methods, subject to accreditation by RCVS.