

C – ECC.1

Ref. No.	C –ECC.1
Title:	Critical Care
Value:	10 credits
Notional Study Hours:	100

Candidates working towards the designated Certificate in Advanced Veterinary Practice (Emergency and Critical Care) should refer to the modular combinations document which can be found on the RCVS website. Upon completion of all the necessary modules, a further synoptic assessment will also be required.

General guidance notes

Please refer to the General Guidance and Assessment for all Modules document.

Standards

The aim of this module is to enable the candidate to extend and consolidate clinical knowledge and skills gained at undergraduate level, so that they can apply this knowledge to patients who have simultaneous problems in multiple body systems over multiple days. Through review and adaptation of existing knowledge, the candidate will develop an understanding of what is and is not being assessed in a patient within their own practice. The candidate will be able to evaluate their own standards of critical care and to develop strategies for continuous improvement in the future.

Area covered

The module is one of three C- level modules in Emergency and Critical Care. This module is focused upon the physiology, pharmacology and management of the critically ill patient with multisystem disease.

The module is aimed at veterinary surgeons in general small animal practice or at an emergency service who are seeing and managing critically ill small animal patients. The module is written from a small animal perspective. The majority of the material will apply to the dog or cat, with a minority of the material addressing common conditions of rabbits and other species.

Learning outcomes

This module will enable the candidate to:

- Gain a sound understanding of the interplay between the cardiovascular, respiratory, renal and endocrine systems that controls cardiopulmonary homeostasis in the critically ill patient
- Develop a variety of skills that can be used in treating and monitoring critically ill patients
- Thoughtfully appraise their current working practices with regard to monitoring, treatment and communication issues surrounding the critically ill patient

Assessment strategy for this module

It is suggested that this module could be assessed by the following methods:

- A case book of three cases, each of up to 1500 - 2000 words in length. These cases should be selected to demonstrate the candidate's ability to use his/her acquired competencies to manage a patient that has multiple systemic problems. The case book should also include comparative aspects with other cases and other species (including humans) as evidence of learning.
- A reflective essay, of about 800 words, completed at the end of the module, reflecting upon how the course of study has resulted in a more competent practitioner. This may include a detailed review of a specific aspect of assessment or monitoring of the critically ill patient.
- Candidates working towards a designated certificate in Emergency and Critical Care will be required to undertake a synoptic assessment once all modules are completed.

Module content

1. Physiology, Pharmacology and Assessment of the Critically Ill Patient

At the end of the module, candidates should be able to:

- Document an understanding of the cardiac cycle, principles of oxygen delivery and oxygen consumption, homeostatic and compensatory control of blood pressure.
- Describe methods of assessing cardiovascular status such central venous pressure, pulmonary capillary wedge pressure, ECG, echocardiography and arterial blood gases
- Discuss common cardiovascular drugs, including anti-arrhythmics, vasopressors, inotropes and anti-hypertensives drugs.
- Document an understanding of the factors controlling respiratory function and how to assess ventilation-perfusion mismatches
- Describe methods of delivering oxygen and assisted ventilation over hours or days, and using blood gas analysis to monitor a patient
- Document an understanding of the principles and methods of enteral and parenteral nutritional support
- Document an understanding of the pathophysiology of vomiting, diarrhoea and ileus, and the mechanisms by which commonly-used pharmacotherapeutics act to control these derangements
- Document an understanding of renal physiology, including factors that control sodium, potassium, chloride and bicarbonate excretion, and the mechanisms by which commonly-used pharmacotherapeutics act to influence these factors
- Document a thorough understanding of fluid therapy, including crystalloid, colloid and blood products, linear and non-linear methods of calculating fluid requirements, calculation of electrolyte replacement requirements, fluid compartments in the body, factors controlling fluid shifts within the body, calculating fluid balance, calculating constant rate infusion dosages and volumes, using fluid pumps and syringe pumps, and treating common acid-base disturbances

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- Show a practical understanding of clinical pathology as it applies to the assessment of critically ill patients, including microscopic evaluation of blood smears, methods of assessing coagulation status, evaluation of body fluids and basic cytology.
- Discuss the indications, contra-indications, routes of delivery and adverse effects of anaesthetics and analgesics available for use in the critically ill patient, such as alfaxalone, propofol, benzodiazepines, ketamine, lidocaine, bupivacaine, morphine, methadone, fentanyl, butorphanol, acepromazine, buprenorphine, dexmedetomidine, medetomidine, non-steroidal anti-inflammatory drugs (NSAIDs) and paracetamol.
- Document an understanding of the basic physiology of pain transmission pathways within the body and how different classes of analgesics block those pathways.
- Discuss the risk factors, pathophysiology, clinical signs and treatment options for systemic inflammatory response syndrome, sepsis, septic shock and refractory septic shock.

2. Communication Strategies

On completion of the module, the candidate must be able to discuss and present information that reflects a thorough understanding of patient, client, referral and team communication issues. The candidate should:

- Review and assess issues and solutions regarding patient information management, such as records management, tracking therapies, ways of documenting findings, and clinical audit methods
- Develop skills that address client communication issues, such as the process and sequence of grief, bereavement behaviours, managing client anger, communicating financial information, communicating patient progress, and ways of documenting client consent and deferment
- Develop skills that facilitate excellent referral and colleague communication, such as writing clear, concise patient summaries, communicating suggestions for ongoing therapy, and strategies for avoiding misunderstandings.
- Demonstrate an understanding of team management issues, such as understanding both hidden and obvious stressors, managing stress, interpersonal communication strategies, communicating expectations, and preparation for emergencies

Recommended reading list

ECC textbooks

Handbook of Veterinary Procedures and Emergency Treatment, 8th edition - Ford & Mazzaferro

Veterinary Emergency & Critical Care Procedures, Hackett & Mazzaferro

Emergency and Critical Care Manual – K Mathews

Small Animal Emergency & Critical Care Medicine – Macintire, Drobatz et al

Veterinary Emergency Medicine Secrets - Wingfield

Textbook of Small Animal Surgery - Fossum

Fluid Therapy in Small Animal Practice, DiBartola

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Journals

Candidates are encouraged to review recent issues of the Journal of Veterinary Emergency and Critical Care.

Online resources

www.medscape.com

www.webmd.com

www.pubmed.gov