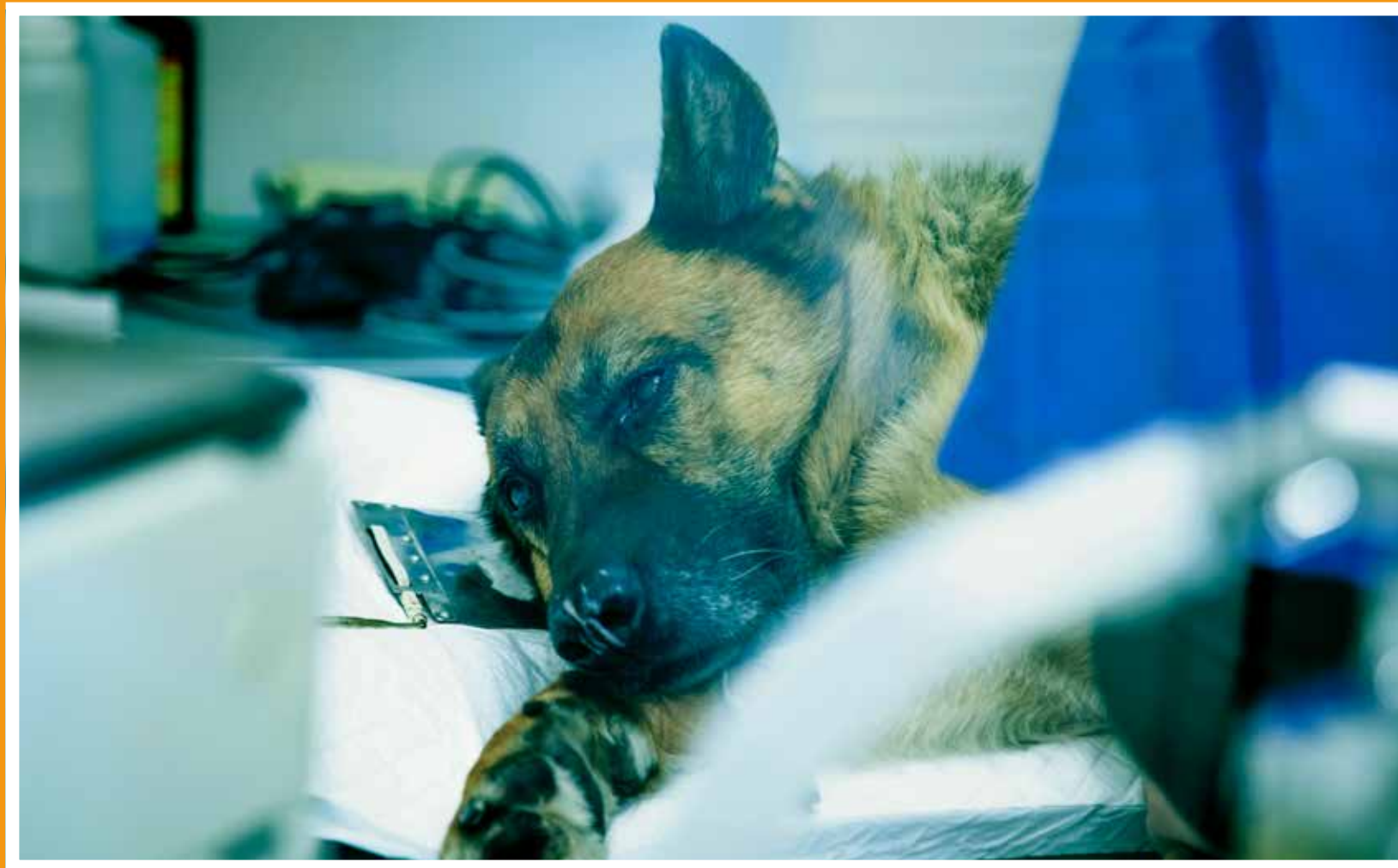


Postgraduate Certificate in Small Animal

EMERGENCY AND CRITICAL CARE

BSAVA
postgraduate
programme



NOTTINGHAM
TRENT UNIVERSITY 

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 **BSAVA**
BRITISH SMALL ANIMAL VETERINARY ASSOCIATION

Introduction to Emergency Medicine

Speaker: Aoife O'Sullivan MVB Cert AVP (ECC) MRCVS

- Triage/MBS assessment
 - Primary survey
 - Capsule history
 - Secondary survey
 - Primary stabilisation
- Problem-based approach
 - Problem lists/differential diagnoses
 - Diagnostic plan
 - Therapeutic plan
- Vascular access
 - Peripheral catheters
 - Central lines
 - Intraosseous access
- Minimum database
 - PCV/TS
 - Electrolytes
 - Glucose
 - Lactate
 - Acid base
- Ethics
 - How the law applies to ECC
- CPR
 - Expected outcomes
 - Basic life support
 - Advanced life support
 - Post-recovery management

Cardiovascular medicine – the vasculature

Speaker: Amanda Boag MA VetMB DipACVIM DipACVECC FHEA MRCVS

- Examination of the patient
- Causes of hypoperfusion
 - Dehydration
 - Hypovolaemic shock
 - Cardiogenic shock
 - Metabolic shock (*covered in Endocrine unit in more detail*)
 - Vasodilatory shock; sepsis, SIRS, ARDS, MODS
- Monitoring blood pressure; including CVP, pulmonary wedge pressure
- Treatment of hypoperfusion
 - Review of the use of fluid therapy
 - Vasopressors and inotropes
- Systemic hypertension
 - Causes and treatment

Cardiovascular medicine – the heart

Speaker: Kieran Borgeat BSc BVSc M VetMed CertVC DipACVIM DipECVIM MRCVS

- Clinical examination of the cardiovascular system in the dog and cat
- Classification of heart disease/failure
- Diagnostic tests
 - Clinical pathology
 - Cardiac biomarkers
 - Blood pressure
 - ECG
 - Diagnostic imaging
- Causes of heart failure
- Cardiac therapeutics
- Cardiac arrhythmias
 - Tachyarrhythmias
 - Bradyarrhythmias
 - Anti-arrhythmic treatments – drug therapy and pacing
- Cardiac therapeutics
- Pericardial effusions

Fluid therapy and transfusion medicine

Speaker: Emily Thomas BA VetMB MRCVS

- Principles of fluid therapy
 - Body fluid compartments
 - Basic physiological concepts
 - Perfusion and hydration
 - Electrolyte/acid-base composition of fluids
- Pathophysiology
 - Types of fluid loss
 - Haemorrhagic
 - Non-haemorrhagic
 - Increased vascular permeability
 - Isotonic vs hypotonic vs hypertonic
 - Homeostatic response to fluid loss
- Types of fluid
 - Crystalloids
 - Maintenance
 - Replacement
 - Free water solutions
 - Synthetic colloids
 - Blood products
 - Haemoglobin-based oxygen carriers
- Decision-making in fluid therapy
 - Clinical examination
 - Impact of clinico-pathological testing
 - Fluid therapy for specific conditions
 - Perioperative
 - Hypo/hypernatraemia
 - Traumatic brain injury
- Practicalities of fluid administration
 - Routes of fluid administration
 - Intravenous catheter placement and maintenance
 - Intraosseous catheter placement and maintenance
 - Rate and volume of fluid administration
 - Monitoring plan
- Complications of fluid therapy and their treatment
- Transfusion medicine
 - Indications for transfusion
 - Component therapy
 - Blood collection
 - Blood typing
 - Cross-matching
 - Transfusion administration
 - Transfusion reactions and treatment
 - Autotransfusion

In-house diagnostics and endocrine

Speaker: Amanda Boag MA VetMB DipACVIM
DipACVECC FHEA MRCVS

- Minimum and extended database
- Blood gases
 - Arterial vs venous blood gas
 - Sampling techniques, sample handling and analysis
 - Acid-base
 - Definitions
 - Compensatory process and calculating compensation
 - Principles of interpretation
 - Common acid-base disorders
 - Principles of treatment
- Oxygenation and ventilation
- Lactate
 - Lactate physiology and metabolism
 - Measuring lactate
 - Causes and treatment of lactic acidosis
 - Other uses of lactate measurement
 - Electrolytes
 - Potassium
 - Sodium
 - Chloride
 - Calcium
 - Magnesium
 - Phosphorus
- Urinalysis
 - Specific gravity
 - Dipstick
 - Sediment exam
 - Fractional excretion
- Endocrine disease
 - Diabetic ketoacidosis
 - Hypoadrenocorticism
 - Hyperadrenocorticism
 - Hyperthyroidism
 - Hypothyroidism

Respiratory I

Speaker: Tobias Grave TA GPCert(SAP) DACVECC
MRCVS

Intended learning outcomes

- Knowledge and understanding of the functional anatomy of the respiratory system in the dog and cat
- Knowledge and understanding of the pathogenesis and measurement of hypoxaemia in the dog and cat
- Knowledge and understanding of the procedures and modalities available for investigation of the dyspnoeic dog and cat
- Ability to apply the knowledge and understanding defined above in simple and more complex clinical situations
- Ability to evaluate critically reports of studies or new advances in the scientific literature

Content

- Functional anatomy of the respiratory system
 - Anatomy of the ventilator apparatus and stimuli for breathing
 - Anatomy of the airway and alveoli
 - Why don't alveoli collapse?
 - Ventilation : perfusion zones
 - The breathing cycle
- Carriage of gases
- Hypoxaemia
 - Reduced F_iO_2
 - Hypoventilation
 - Diffusion impairment
 - V:Q mismatch

- Monitoring
 - Arterial blood gases, venous blood gases and the alveolar gas equation
 - Pulse oximetry
 - Capnography
 - Respirometers
- Examination and stabilisation of the dyspnoeic patient
 - Oxygen administration methods
 - Emergency procedures
 - Difficult airway intubation techniques
 - Needle tracheostomy
 - Tracheotomy
 - Thoracocentesis and pleural drain placement
- Acute investigation of the dyspnoeic patient
 - Auscultation
 - Ultrasound – "kennel side" procedures
 - Thoracocentesis
 - Radiography – indications for performing radiography
 - Other imaging modalities – indications for performing other techniques
 - Transtracheal and endotracheal wash

Respiratory II

Speaker: Helen Wilson BVSc (Hons) MVetMed
DipACVECC DipECVECC MRCVS

Intended learning outcomes

- Knowledge and understanding of the aetiopathogenesis, clinical signs, diagnosis and management of diseases of the respiratory tract of the dog and cat
- Knowledge and understanding of the principles of positive pressure ventilation in the dog and cat
- Ability to apply the knowledge and understanding defined above in simple and more complex clinical situations
- Ability to evaluate critically reports of studies or new advances in the scientific literature

Content

- Diagnostic imaging in respiratory disease – beyond the thoracic FAST scan
 - Techniques for obtaining thoracic radiographs safely
 - Interpretation of thoracic radiographs
 - Ultrasound techniques beyond thoracic FAST
- Diseases of the upper respiratory tract
 - BOAS
 - Laryngeal paralysis
 - Tracheal collapse
 - Pharyngeal and tracheal injuries
- Diseases of the lower respiratory tract
 - Allergic airway diseases
 - Inhaled foreign bodies
- Parenchymal disease
 - Pulmonary oedema (cardiogenic, non-cardiogenic)
 - Aspiration pneumonitis and pneumonia
 - Bacterial / infectious pneumonias
 - Pulmonary contusions / haemorrhage
 - Smoke inhalation
 - ALI / ARDS
 - Pulmonary thromboembolism
 - Lung lobe torsion

- Pleural space disease
 - Pleural fluid – haemothorax, chylothorax, pyothorax, pleural effusion
 - Pneumothorax
 - Neoplasia
- Ventilatory disease
 - Chest wall injury
 - Diaphragmatic rupture, PPDH
 - Peripheral neuromuscular disorders
 - Central neurological disorders
- Therapy for respiratory disease
 - Longer term pleural space drainage
 - Care of tube
 - Drainage options including three chamber technique
 - Principles of positive pressure ventilation
 - When is it appropriate to discuss PPV
 - Prognosis associated with long term PPV in different disease states and patient populations
 - Drug therapy in respiratory disease (discussed throughout the course - opioids and sedatives, diuretics, beta agonists, corticosteroids, antimicrobial selection, inhaled/nebulised drugs)

Neurology

Speaker: Rita Gonçalves DVM Dip ECVN MVM
FHEA MRCVS

- Neurological examination and localisation
- Investigative techniques
 - MRI
 - CSF analysis
 - EEG
 - EMG
 - Other tests
- Seizures
 - Extra-cranial causes
 - Intra-cranial causes
 - Emergency treatment/management
- Brain diseases
 - Traumatic brain injury
 - Inflammatory
 - 'Vestibular disease'
- Spinal diseases
 - Trauma, disc disease, ischaemic myelopathy
- PNS and neuromuscular diseases
 - Tetraparesis
 - Myopathies
 - Junctionopathies

Infectious diseases

Speaker: Simon Tappin MA VetMB CertSAM
DipECVIM-CA MRCVS

- Diagnostic tests available for infectious disease in dogs and cats
- Endemic infectious disease in dogs
 - Parvovirus
 - Leptospirosis
 - Kennel cough
 - Tetanus
 - Angiostrongylosis
- Endemic infectious disease in cats
 - Feline respiratory viruses
 - FeLV/FIV
 - FIP
- Emerging infectious diseases in dogs and cats
 - Leishmaniosis
 - Dirofilariasis
 - Babesiosis
- Antimicrobials – prescribing, choosing and optimising therapy
- Hospital management
 - Acquired infection MRSA/MRSP
 - Isolation protocols

Toxicology and environmental & reproduction and neonatology

Speaker: Dan Lewis MA VetMB DipACVECC MRCVS

- Approach to the poisoning case
 - Techniques for confirming intoxication
 - Decontamination techniques
- Specific toxins
 - Ethylene glycol
 - Paracetamol
 - Rodenticides
 - Organophosphates
 - Metaldehyde
 - Illicit substances
- Environmental mishaps
 - Heat stroke
 - Hypothermia
 - Near drowning
 - Electrocutation
 - Snake bites
- Reproductive emergencies in the male
 - Paraphimosis
 - Priapism
 - Testicular torsion
 - Urethral prolapse
- Reproductive emergencies in the non-pregnant female
 - Pyometra/cystic endometrial hyperplasia
 - Vaginal hyperplasia
- Reproductive emergencies in the pregnant female
 - Hypocalcaemia
 - Hypoglycaemia
 - Hyperglycaemia
 - Dystocia
- Reproductive emergencies in the post-parturient female
 - Hypocalcaemia
 - Retained foetuses/foetal membranes
 - Metritis
 - Uterine haemorrhage
 - Uterine prolapse
 - Mastitis
- Neonatal emergencies
 - Physiological, haematological and biochemical differences between paediatric patients and adults
 - Pharmacological consideration
 - Emergency approach to the paediatric patient
 - Physical examination
 - Vascular access
 - Minimum database
 - Fluid therapy
- Common emergency conditions
 - Hypoglycaemia
 - GI disease
 - Dehydration and hypovolaemia
 - Hypothermia
 - Respiratory distress

Urinary tract

Speaker: Adam Mugford BVetMed MVetMed
DipACVECC MRCVS

- Diagnostic assessment of renal function in dogs and cats
- Imaging of the urinary tract
- Causes and management of pre-renal disease
- Renal disease
 - Review of the causes of intrinsic renal failure
 - Management of acute kidney injury (including an awareness of dialysis and understanding when it may be appropriate)
 - Recognition and management of acute on chronic renal failure
 - Pyelonephritis
 - Nephrotic syndrome
- Post renal
 - Causes and management of ureteral obstruction
 - Causes and management of urethral obstruction
 - Prostatic disease
 - Lower urinary tract neoplasia
 - Cystitis/FLUTD
 - Urolithiasis
 - Urethral spasm/dyssynergia
 - Urinary tract diversion techniques

Anaesthesia and analgesia

Speaker: Georgie Beaumont BVSc(Hons.)
MANZCVS(VA&CC) Dip.ECVAA MRCVS

- General principles of anaesthesia
 - Good anaesthetic technique
 - Preparation
 - Balanced anaesthesia
 - What makes an ECC patient different?
 - Cardiovascular compromise
 - Respiratory compromise
 - Electrolyte/blood protein abnormalities
- Monitoring the patient during anaesthesia
 - 'Hands on', oesophageal stethoscope
 - ECG
 - Capnography
 - Pulse oximetry
 - CVP
 - Urine output
 - Record keeping
- Complications and their management
- Analgesia
 - Pain scoring and recognition of pain
 - Pathophysiology of pain
 - Pharmacological agents for the control of pain
 - Opioids
 - NSAIDs
 - Local anaesthetics
 - Others
 - Practical aspects of ensuring analgesia
 - CRIs

Haematology and haemostasis

Speakers: Lindsay Kellett-Gregory BSc(Hons)
BVetMed(Hons) DACVECC, MRCVS and
Mayank Seth BSc(Hons), BVetMed(Hons),
DACVIM(SAIM), MRCVS

- Anaemia
 - Regenerative
 - Haemolysis
 - Blood loss
 - Non-regenerative
 - Renal failure
 - Bone marrow disorders
- White blood cell abnormalities
 - Leukopenia
 - Leukocytosis
- Coagulopathies
 - Review of the coagulation pathways
 - Tests of coagulation
 - Primary
 - Thrombocytopenia
 - Thrombocytopathia/von Willebrands disease
 - Secondary
 - Inherited coagulopathy
 - Rodenticides
 - Liver disease
 - Tertiary
- Pro-thrombotic states
 - DIC
 - Thromboembolic disease
 - Feline aortic thromboembolism
 - Pulmonary thromboembolism
 - Anticoagulants

Ophthalmology & Nutrition

Speakers: Cristina Serruca DVM DipECVO MRCVS and

Isuru Gajanayake BVSc CertSAM DipACVIM DipECVIM-CA MRCVS

- Examination of the patient presenting as an ocular emergency
 - Systematic approach
 - Testing
 - Fluorescein
 - Schirmer tear test
 - IOP
- The red eye
 - Distinguishing between glaucoma and uveitis
 - Diagnosis and treatment
- Trauma
 - Penetrating foreign bodies
 - Trauma to the eyelids or nictitating membrane
 - Proptosis
- Ulcers
 - Types of ulcer; diagnosis and management
- Lens luxation
 - Should I refer?
 - Stabilization
- Blindness
 - Medical work-up
- Ophthalmic manifestations of systemic disease
- Nutritional requirements of critically ill patients
- Patient assessment and assessment of nutritional need
- Enteral nutrition
 - Appetite stimulants
 - Feeding tube use (placement on practical day)
 - NO, oesophagostomy, PEG/Gastrostomy, jejunostomy tubes
- Parenteral feeding
- Re-feeding syndrome

Acute abdomen

Speaker: Emily Thomas BA VetMB MRCVS

- The vomiting patient
 - Pathophysiology of vomiting
 - Differentiating vomiting and regurgitation
 - Physical examination
 - Diagnostic plan
 - General approach to treatment
 - Antiemetics – what and when to use
 - GI protectants
 - Rational use of antibiotics
- The acute abdomen
 - Definition
 - Medical vs surgical conditions
 - Diagnostic plan
 - Baseline emergency diagnostics
 - A-FAST
 - Abdominocentesis
 - Diagnostic peritoneal lavage
 - Fluid analysis
 - Survey radiography
 - General approach to stabilization
 - Diagnosis and stabilization of specific surgical conditions
 - GDV
 - Gastrointestinal obstruction
 - Peritonitis
 - Haemoabdomen
 - Uroabdomen
 - Penetrating wounds
- Pancreatitis
 - Physiology and pathophysiology of the canine and feline pancreas
 - Diagnostic plan
 - Management
 - Nutrition
 - Role of surgery

Surgery I – abdominal

Speaker: Richard Coe MA VetMB CertSAS DipECVS MRCVS

- The exploratory coeliotomy
 - Approach and technique
 - Haemostasis
 - Lavage
 - Suture materials and closure options
 - Drainage
- Gastrointestinal tract surgery
 - Gastrotomy
 - Partial gastrectomy
 - Enterotomy
 - Enterectomy and anastomotic techniques
 - Serosal patching
 - Intussusception and enteroplication
 - GDV correction and pexy
 - Mesenteric torsion
 - Rectal prolapse
- Reproductive surgery
 - Caesarean section
 - Emergency ovariohysterectomy
 - Management of paraphimosis
- Urinary tract surgery
 - Urethrotomy and urethrostomy in dogs
 - Cystotomy and tube cystotomy
 - Nephrectomy
 - Prostatic abscess
- Liver/pancreas/spleen/other viscera
 - Liver biopsy and controlling haemorrhage
 - Liver lobectomy
 - Biliary tract surgery and bile aspiration
 - Pancreatic surgery
 - Splenectomy
 - Lymph node biopsy

Surgery II

Speaker: Jon Hall MA VetMB CertSAS DipECVS MRCVS

- Wounds – initial management
 - Investigating penetrating injuries
 - How to clean a wound
 - To close or not
 - Dressings
 - Drains
- Bite wounds
 - Anatomy of a dog bite
 - Systemic and antimicrobial considerations
 - Exploration and repair
 - Thoracic bites
 - Abdominal bites
 - Head and neck bites (including tracheal injuries)
- Orthopaedics
 - Classification and description of fractures
 - Consideration of co-existing injuries
 - Managing open fractures
 - Stabilising fractures
 - Spinal disease (fractures/intervertebral disc disease/vascular events), assessment and decision making
 - Limb amputation
 - Luxations
 - Miscellaneous orthopaedic conditions:
 - Polyarthropathies – infectious, immune mediated
 - Septic arthritis
 - Developmental bone disease – panosteitis, hypertrophic osteodystrophy
 - Flare-ups of chronic OA
 - Arthrocentesis
 - Treatment
- Principles of thoracic surgery
 - Surgical approaches
 - Postoperative management
 - Chest drainage
 - Postoperative monitoring
 - Analgesia
 - Diaphragmatic rupture
 - Lung lobectomy
 - Principles of oesophageal surgery
 - Miscellaneous
 - Penetrating chest wounds
 - Pellet wounds
 - Tracheal foreign bodies

Surgery practical I – abdominal

Speakers: Richard Coe MA VetMB CertSAS DipECVS MRCVS and **Jon Hall** MA VetMB CertSAS DipECVS MRCVS

Students should be familiar with the principles of all the listed procedures after studying this unit, but will not have the opportunity to carry out every procedure during the practical session.

- Exploratory coeliotomy
 - Incision techniques
 - Systematic abdominal exploration
 - Abdominal lavage
 - Abdominal closure
- Drainage options postoperatively
- Splenectomy
- Liver biopsy, controlling haemorrhage from the liver, and lobectomy *
- GI surgery
 - Gastrotomy/enterotomy
 - Resection/partial resection/invagination
 - Gastrotomy tube placement
 - GDV derotation and gastropexy
 - Intussusception and bowel plication
 - Serosal patching
 - The colon
- Urinary tract surgery
 - Nephrectomy
 - Urinary diversion from renal pelvis using a pigtail catheter
 - Cystotomy
 - Retrograde urinary catheterisation
 - Cystotomy tube placement
- Principles of biliary tract surgery *
- Diaphragmatic surgery

Surgery practical II – extra abdominal

Speakers: Richard Coe MA VetMB CertSAS DipECVS MRCVS and **Jon Hall** MA VetMB CertSAS DipECVS MRCVS

Students should be familiar with the principles of all the listed procedures after studying this unit, but will not have the opportunity to carry out every procedure during the practical session.

- Placement of thoracic drains
 - Trochar placement
 - Non-trochar (surgical) placement
 - Seldinger (over-a-wire) technique
- Intravenous access
 - Jugular central lines – Seldinger technique
 - Cut down for jugular venous access
 - Cut down for peripheral access (cephalic/lateral saphenous)
- Feeding tubes
 - Placement of naso-oesophageal tube
 - Placement of oesophagostomy tube
- Tracheostomy
 - Surgical placement
 - Exploration of the ventral neck
- Open-chest CPR
 - Approach
 - Closure
- Miscellaneous procedures
 - Amputation
 - Enucleation
 - Epidural injection
 - Cisternal puncture

Exotics

Speaker: Neil Forbes BVetMed DipECZM (avian)
FRCVS

- Principles of safe and effective anaesthesia in small animals other than dogs and cats
- Hamsters
 - Cheek pouch eversion
 - Gastrointestinal problems
 - Hibernation
 - Supportive care (including analgesia)
- Guinea pigs
 - Enterotoxaemia
 - Dental problems
 - Urinary issues
 - Pregnancy and dystocia
 - Vitamin C deficiency
 - Supportive care (including analgesia)
- Rabbits
 - GI stasis/SI obstruction
 - Dental problems
 - Respiratory tract disease
 - Neurological problems
 - Urinary tract issues
 - Myiasis/fly strike
 - Supportive care (including analgesia)
- Ferrets
- Birds
 - Managing the sick bird
 - Respiratory disease
 - Crop impaction
 - Cloacal prolapse
 - Egg binding
 - Trauma and haemorrhage control
 - Use of feeding tubes and other supportive care (including analgesia)
- Reptiles
 - Husbandry problems and metabolic bone disease
 - Respiratory disease
 - Stomatitis
 - Cloacal prolapse
 - Egg binding
 - Trauma and wounds
- Indigenous wildlife casualties
 - General principles, legal aspects and information/rehabilitation
 - Hedgehogs
 - Wild birds
 - Other species

Please note that elements marked (*) are considered advanced techniques, which would normally be beyond certificate level. They are included here so that you can understand the principles, appreciate when it may be appropriate to offer referral, and are able to discuss options fully with clients.