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• An adult Jehovah's witness requires surgery during which significant blood loss is probable. Describe your management. • For what reasons should general anaesthesia for elective cases be postponed? • What are the causes and management of hypoventilation immediately following anaesthesia? • What are the problems of anaesthetising patients in the magnetic resonance imaging unit? • What are the problems of monitoring patients in the magnetic resonance imaging unit? • How may coagulation be assessed in the perioperative period? • What causes bradycardia during general anaesthesia? What is its management? • An adult patient develops tachycardia during general anaesthesia. Outline the causes and briefly note your management. • How would you determine the causes of arterial hypotension (80/60 mmHg) during a transurethral prostatectomy (TURP)? • What methods are available for the prevention of venous thromboembolism in routine surgical practice? Which patients are at particular risk? • What factors are associated with perioperative myocardial infarction? • What is the role of the laryngeal mask in difficult intubation? • What problems does morbid obesity present to the anaesthetist? • Outline the methods for detecting awareness during general anaesthesia and give a brief account of their effectiveness. • What are the causes of awareness under general anaesthesia? • What do you understand by the 'stress response' to surgery? Outline briefly the effects of anaesthesia on this response. • Describe the diagnosis and management of local anaesthetic toxicity. • Describe the complications associated with abdominal laparoscopy. • What signs would lead you to suspect that a patient under general anaesthesia was developing malignant hyperthermia? Describe your immediate management. • What is the pathophysiology of malignant hyperthermia? How does dantrolene affect the process? How would you investigate a patient in whom the diagnosis is suspected and who presents for non-urgent surgery? • What features would lead you to suspect that a patient undergoing surgery had suffered venous air embolism? With what procedures may this complication be associated?	

- Outline the diagnosis and management of massive venous air embolism.
- Describe the anaesthetic arrangements involved in a gynaecology day-case list of 15 patients.
- A patient requiring surgery claims to be allergic to latex. How would you confirm the diagnosis? Outline your perioperative management.
- What are the causes of heat loss during general anaesthesia? What are the effects of hypothermia in the perioperative period?
- What hazards does a patient encounter when they are positioned in the lithotomy position for surgery? What additional hazards are introduced when the operating table is tilted head-down? Describe briefly how these hazards may be minimised.
- What factors predispose a patient to aspirate gastric contents into the lungs during general anaesthesia? How can the risk be minimised? How should pulmonary aspiration be treated?
- What factors contribute to postoperative cognitive deficits in elderly surgical patients? How may these risks be minimised?
- What immunological consequences may follow homologous blood transfusion?
- Outline the effects of old age upon morbidity and mortality in anaesthesia.
- What are the risks associated with carotid endarterectomy? How may anaesthetic technique reduce these risks?
- What is the glucocorticoid response to surgery? Describe your approach to steroid replacement both in patients who are currently receiving corticosteroids and in those who have discontinued treatment.
- What are the implications of anaesthetising a patient in the prone position?
- A patient presenting for total hip replacement tells you that he has a pacemaker. What further information do you require and how will this influence your anaesthetic management?
- What factors would alert you to the fact that a patient might be difficult to intubate?
- A patient proves impossible to intubate. What factors determine the rate of haemoglobin desaturation? What can be done to maintain oxygenation in this situation?
- What safety features should be incorporated into a patient controlled anaesthesia (PCA) system for adults and what is the purpose of each? Having sent a patient to the ward with PCA what instructions would you give to the nursing staff?
- You plan to anaesthetise a patient for total hip replacement under subarachnoid block with sedation. What do you understand by the term 'sedation' in this context, and what drugs and techniques are available?
- Outline the causes and the physiological effects of hypercapnia. A patient has a P_{aCO_2} of 12 kPa. How does this affect oxygenation?
- What are appropriate criteria for the selection of adult patients for day-case surgery under general anaesthesia?
- An 8-year-old child presents for extraction of four deciduous molar teeth in the dental chair. Describe the anaesthetic management and identify the problems that may be encountered.
- What are the physiological changes that occur when a patient undergoes electroconvulsive therapy (ECT)? What are the potential complications and in which patients is ECT contra-indicated?
- List the factors which may cause atrial fibrillation. How would you recognise the onset of this rhythm during anaesthesia and how would you treat it?
- What are the indications for induced hypotension? What drugs may be used to achieve it? What are the problems with the technique and how can they be minimised?
- What criteria are appropriate for the discharge of patients who have undergone day-case surgery? Why might overnight admission be necessary?
- What place does preoperative medication (premedication) have in current adult anaesthetic practice?
- An adult patient is known to be very difficult to intubate. Describe a technique of awake fibreoptic intubation. What supplemental nerve blocks may be needed?
- What factors may lead to inadvertent intra-arterial injection of a drug? How would you recognise it? Describe your management of such an event.
- Describe the complications of tracheal intubation.
- Describe the anaesthetic management of a patient undergoing elective thyroid surgery.
- A 45-year-old woman with type 1 diabetes mellitus which is controlled by insulin requires total abdominal hysterectomy. Describe the anaesthetic management.
- What is the anaesthetist's contribution to safe intraocular surgery under general anaesthesia?

3. Anaesthesia and Medical Disease

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- A patient who has undergone heart transplantation requires non-cardiac surgery. What problems may this present for the anaesthetist?
- What are the anaesthetic implications of dystrophia myotonica?
- What are the anaesthetic considerations in a patient with autonomic neuropathy?
- Describe your management of a patient who requires surgical removal of a pheochromocytoma.
- A patient who is HIV sero-positive is scheduled for laparotomy. What factors determine the risks of transmission to anaesthetic staff? How may this risk be minimised?
- A 20-year-old patient requires open reduction and fixation of a forearm fracture sustained 12 hours previously. He has sickle cell disease. Describe the anaesthetic management.
- A 38-year-old woman requires total abdominal hysterectomy. She has multiple sclerosis. How does this influence your anaesthetic management?
- A 75-year-old man with chronic obstructive airways disease requires a transurethral resection of the prostate. Outline the advantages and disadvantages of subarachnoid anaesthesia for this patient.
- A 25-year-old intravenous drug abuser requires surgery for a compound tibial fracture. What problems may this present for the anaesthetist?
- What features are important in the anaesthetic management of a patient with myasthenia gravis?
- A patient with hepatic porphyria requires general anaesthesia. Why may this be significant?
- A patient presenting for elective surgery is found to be anaemic. What are the implications for anaesthetic management?
- How would you assess a patient with chronic obstructive pulmonary disease (COPD) who presents for laparotomy? What are the major perioperative risks and how may they be reduced?
- A surgical patient smokes 20–30 cigarettes a day and requires a general anaesthetic. Does this have any significance?
- A patient in chronic renal failure requires a laparotomy. What are the anaesthetic implications?
- Outline the anaesthetic implications of managing patients with thyroid disease who require non-thyroid surgery.
- Describe the assessment of a patient with arterial hypertension. Why is it important that it should be treated preoperatively?
- A patient has a history of chronic alcohol abuse. What are the anaesthetic implications?

4. Medicine and Intensive Care

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- Describe the diagnosis and management of Guillain–Barré syndrome.
- Outline your management of a patient with status asthmaticus whom you are asked to see in the A&E department.
- What are the indications for tracheostomy in adults?
- Classify each type of heart block and describe the appropriate treatment in the perioperative period.
- What are the causes of muscle weakness in the intensive care patient?
- List the indications for renal support in intensive care patients? What are the principles of haemofiltration? What complications may be associated with the technique?
- What factors influence your decision to wean an intensive care patient from mechanical ventilation?
- What are the indications for nutritional support in the critically ill? Outline the advantages and disadvantages both of parenteral and of enteral nutrition.
- What can be measured directly and what can be derived from pulmonary artery catheters? What is the clinical value of these measurements?
- What is the aetiology and pathogenesis of Acute Lung Injury (ARDS)? How is it diagnosed? Outline its management.
- What factors determine oxygen delivery? How might you optimise this prior to major surgery?
- Under what circumstances does oxygen have adverse effects? What are the symptoms of toxicity? Outline the underlying mechanisms.
- What are the indications for cricothyroidotomy and for percutaneous

tracheostomy? Describe a technique for performing these procedures with reference to the anatomy involved. List the main complications.

5. Obstetric Anaesthesia and Analgesia 155

- A woman complains of persistent headache following a regional anaesthetic for obstetric delivery. What are the distinguishing clinical features of the likely causes?
- What are the anaesthetic options for manual removal of retained placenta?
- A fit primigravida suffers inadvertent dural puncture with a 16G Tuohy needle during attempted epidural insertion for analgesia in the first stage of labour (cervix 4 cm dilated). What is your management?
- A fit multigravida complains of a typical post dural puncture headache 24 hours after inadvertent dural puncture with a 16G Tuohy needle during attempted epidural insertion for analgesia. What is your management?
- What are the advantages of retaining motor power in a woman having an epidural for normal labour? How can this be achieved? What checks should be made before allowing the woman to get out of bed?
- A fit primigravida is undergoing elective caesarean section for breech presentation under subarachnoid anaesthesia and suffers amniotic fluid embolism. What is the pathophysiology? How may it present and what is the differential diagnosis?
- What is the aetiology of pre-eclampsia? List the clinical features of severe pre-eclampsia and outline the relevance of the condition for anaesthesia.
- You have sited a lumbar epidural catheter for pain relief in the first stage of labour but the midwife tells you that it is ineffective. Why might it have failed and what is your management?
- What clinical features would alert you to the fact that a woman undergoing caesarean section under subarachnoid anaesthesia was developing a high block? Describe your management.
- A woman undergoing caesarean section under subarachnoid anaesthesia complains of pain. Describe your management. How may this situation be prevented?
- What are the pathophysiological and clinical features of HELLP syndrome? What are the diagnostic laboratory findings and the priorities in management?
- Describe the anaesthetic management of major intrapartum haemorrhage requiring emergency operation.
- Describe the management of emergency caesarean section for cord prolapse in a fit 21-year-old primigravida.

6. Paediatric Anaesthesia 177

- How does the physiology of an infant aged 6 months differ from that of an adult?
- What are the anatomical differences of relevance to the anaesthetist between an infant aged 6 months and an adult?
- Describe the anaesthetic management for a 5-year-old patient who requires re-operation for haemorrhage an hour after tonsillectomy
- A 6-week old child presents for pyloromyotomy (for pyloric stenosis). Describe the management of this case.
- What are the problems associated with anaesthetising patients with Down syndrome?
- Describe your procedure for cardiac life support of a child aged 5 years.
- You are called to A&E to see a 3-year-old child with stridor. What are the principal differential diagnoses?
- A 3-year-old child presents to A&E with a presumptive diagnosis of acute epiglottitis. List the differential diagnoses. How would you manage this condition?
- A 10-year-old boy is brought into A&E unconscious, having been found at the bottom of an outdoor swimming pool. His rectal temperature is 30°C and his heart rate is 25 b.p.m. Describe your management.
- A 5-year-old girl is brought into A&E, having been rescued from a house fire. An estimated 20% of her body surface area has been affected and she has burns to face, neck and torso. Describe your management.
- A 2-year-old child is believed to have inhaled a foreign body two days ago, although there are no signs of upper airway obstruction. The child requires bronchoscopy: outline your anaesthetic management.

- What are the choices for postoperative analgesia for a child aged 4 years presenting for repair of inguinal hernia as a day case? State briefly the advantages and disadvantages of each method.
- Outline the circulatory changes that take place at birth. What problems may congenital heart disease present to the anaesthetist?
- An 8-week-old male infant weighing 3.0 kg is scheduled for inguinal hernia repair. He was delivered prematurely at 34 weeks. List the risk factors and state how these can be minimised.
- How does the common cold influence fitness for anaesthesia in children?

7. Neuroanaesthesia 203

- What are the causes of raised intracranial pressure? Describe the clinical features and explain the underlying pathophysiological mechanisms.
- A young adult requires intramedullary nailing of a femoral fracture 18 hours after an accident in which he was knocked unconscious. What are the anaesthetic options in this case?
- A young adult is admitted with an acute head injury. What are the indications for tracheal intubation, ventilation and transfer to a neurosurgical unit.
- How would you manage the transfer of a patient to a regional neurosurgical unit for evacuation of an extradural haematoma?
- A patient is admitted to the ITU with a severe closed head injury. There is no focal lesion requiring neurosurgical intervention. What principles govern your management during the first 24 hours?
- What are the pathophysiological insults which exacerbate the primary brain injury following head trauma? How can these effects be minimised?
- What particular problems may occur during lower abdominal surgery in a patient who suffered a traumatic transection of the spinal cord at the level of C6 four weeks previously? How would you minimise them?
- Describe how cerebral blood flow is regulated. How may it be influenced by general anaesthesia?
- What are the pathophysiological insults which exacerbate the primary brain injury following head trauma? How can these effects be minimised?

8. Acute and Chronic Pain 215

- What methods of pain relief are available following abdominal hysterectomy?
- What is meant by 'neuropathic' pain? What symptoms does it produce? Outline with brief examples the major causes.
- List with brief examples the causes of neuropathic pain. What treatments are available?
- What are the clinical features of post-herpetic neuralgia? How may it be treated?
- A 62-year-old man is to undergo an above-knee amputation. What can be done to relieve any pain he may experience thereafter?
- What are the clinical features of trigeminal neuralgia and what is its pathogenesis? Describe the main treatments that are available.
- Outline the causes and the clinical features of the 'Complex Regional Pain Syndrome'? How is it managed?
- What are the principles of the management of cancer pain?
- A 62-year-old man presents for major gastrointestinal surgery. How may the choice of pain management influence his recovery from surgery?

9. Trauma and Emergency Anaesthesia 231

- What fluids are available for the restoration of circulating volume in a patient suffering from acute blood loss? Discuss the advantages and disadvantages of each.
- A 25-year-old man is admitted with a fracture of the cervical spine at C5/6 with spinal cord trauma. There are no other injuries. Describe the management of this patient in the first 48 hours after injury.
- Describe the anaesthetic management of a patient with a perforating eye injury who had a large meal about an hour before the accident.
- Describe the diagnosis and immediate assessment of a patient with smoke inhalation injury.
- Outline the key points in the management of a patient with massive haemorrhage.

- What is the physiological response to the rapid loss of 1 litre of blood in the adult?
- Explain, with examples, the mechanisms by which a pneumothorax may occur.
- List the important causes of pneumothorax. What are the diagnostic features and what is the immediate management?
- For what reasons may a central venous catheter be inserted? Describe the normal pressure waveform and outline the value of central venous pressure monitoring. List the factors that may decrease and increase central venous pressure.

10. Anatomy, Applied Anatomy and Regional Anaesthesia 247

- Describe the anatomy of the coeliac plexus. What are the indications for its therapeutic blockade?
- Describe the innervation of the larynx. What are the clinical consequences of damage to motor nerves?
- Describe the arterial blood supply of the myocardium. What are the consequences of occlusion in the main parts of this arterial supply?
- Describe the anatomy of the nerves at the ankle which supply the foot. List the techniques that can be used to provide analgesia for surgery on the forefoot.
- Describe the anatomy of the femoral nerve relevant for the performance of a femoral nerve block. What is a 'three-in-one block' and for what may it be used?
- Describe, with reference to the anatomical landmarks, the different approaches which are used commonly for local anaesthetic block of the sciatic nerve. Why is this block performed?
- Describe how the main nerves which innervate the upper limb are formed from the brachial plexus. List the common approaches to local anaesthetic block of the plexus together with the main indications for their use.
- Describe the anatomy of the internal jugular vein. List the complications of cannulation of this vessel and outline how each may be avoided.
- Prior to subarachnoid or extradural block what landmarks are guides to the vertebral level? What are the main determinants of block height following subarachnoid injection of local anaesthetic solution?
- Describe the anatomy of the sacrum. What are the clinical differences between sacral extradural (caudal) block in adults and in children?
- Describe the anatomy of the epidural space at the level of the fourth lumbar vertebra. What are the main complications of extradural analgesia?
- Describe the anatomy of the stellate ganglion and outline how you would perform a block. What are the indications for stellate ganglion block? List the main complications.
- Describe how you would perform an interscalene block. What are the main indications and advantages? What are its disadvantages and specific complications?
- A patient requires open reduction and internal fixation (ORIF) of fractured radius and ulna, but refuses general anaesthesia. Compare the local anaesthetic blocks that might be considered suitable for this procedure.
- What are the advantages of subarachnoid (spinal) anaesthesia compared with general anaesthesia? Outline the contraindications and list the main complications.

11. Pharmacology and Applied Pharmacology 273

- Compare and contrast 'Ametop' (amethocaine gel) and EMLA cream. Are there any dangers associated with their use?
- A patient with a history of depression requires a hemicolectomy for likely carcinoma. He is taking a monoamine oxidase inhibitor (MAOI). What is your anaesthetic management?
- Describe the advantages and disadvantages of nitrous oxide in modern anaesthetic practice.
- Give an account of the mechanisms of action of nitrous oxide. Explain why it is a potentially toxic agent.
- What drugs are used to treat hypotension caused by subarachnoid block? What factors influence your choice of agent in this situation?
- Compare the pharmacology of atropine, hyoscine and glycopyrrolate. Outline their main uses in anaesthetic practice.
- Outline the pathways which mediate nausea and vomiting. Which groups of patients are particularly at risk in the perioperative period? Where do the commonly used anti-emetic drugs exert their actions?

- Describe the effects of magnesium sulphate. What are its uses in the acutely ill?
- Describe the pharmacology of propofol.
- Describe the pharmacology of ketamine.
- What drugs may be used for the immediate control of acute hypertension or to induce deliberate hypotension? What is their mechanism of action?
- What is meant by 'chirality'? What is its relevance for anaesthetic drugs?

12. Clinical Measurement and Equipment **297**

- Describe the physical principles of the pulse oximeter. What are the limitations of the technique?
- Describe the physical principles which underlie the function of a 'Rotameter' flowmeter. What factors may lead to inaccuracies in its use?
- How does a capnometer or capnograph measure CO₂ concentration? What useful information is conveyed by the capnogram (the graph of CO₂ against time)?
- How can jugular venous bulb oxygen saturation be measured? What is the purpose of this investigation? What factors cause it to increase or decrease?
- Explain the basic principles of surgical diathermy. What are its potential problems?
- Outline ways of measuring humidity and evaluate the methods by which gases can be humidified in clinical practice. Why is this important?
- Describe the features of a modern anaesthetic machine that contribute to the safety of a patient undergoing general anaesthesia.
- Classify the common types of hypoxia. What are the features of an anaesthetic machine which are designed to minimise the risk of delivering hypoxic gas mixtures?
- What factors associated with the anaesthetic machine and patient breathing system may cause barotrauma? How is the risk reduced? Why is a high airway pressure alarm system important during general anaesthesia?

13. Cardiac and Thoracic Anaesthesia **313**

- What are the main postoperative problems which occur in the first 24 hours following a coronary artery by-pass graft? Outline their management
- What are the principles of cardiopulmonary bypass in the adult? What are the main complications of this technique?
- What are the anaesthetic implications of mitral stenosis?
- What are the anaesthetic implications of aortic stenosis?
- How do you confirm that a double-lumen endobronchial tube has been placed correctly? Outline the possible complications associated with this procedure.
- What physiological changes are associated with one-lung anaesthesia? Describe the management of a patient in this situation who becomes hypoxic.

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