Multiple Choice Questions

Opioid receptors

1. Correct receptor–ligand pairs include:
   (a). The nociceptin (NOP) receptor and endomorphin.
   (b). The κ opioid (KOP) receptor and dynorphin.
   (c). The μ opioid (MOP) receptor and nociceptin/orphanin FQ (N/OFQ).
   (d). The δ opioid (DOP) receptor and naloxone.
   (e). The NOP receptor and naloxone.

2. Activation of NOP receptors causes:
   (a). Activation of voltage-sensitive calcium channels.
   (b). Stimulation of potassium efflux.
   (c). Inhibition of cAMP formation.
   (d). Stimulation of adenylyl cyclase.
   (e). Reduced neuronal cell excitability.

3. Analgesia would result from supraspinally (i.e. intracerebroventricularly) administered:
   (a). Morphine.
   (b). Nociceptin/orphaninFQ (N/OFQ).
   (c). Naltrindole.
   (d). Naloxone.
   (e). Fentanyl.

4. Bivalent opioid activity that leads to analgesia and a reduced tolerance profile includes a combination of:
   (a). MOP antagonism and KOP agonism.
   (b). MOP antagonism and NOP antagonism.
   (c). MOP agonism and NOP antagonism.
   (d). MOP agonism and DOP antagonism.
   (e). NOP agonism and MOP antagonism.

Appropriate statements regarding this patient’s peripheral vascular disease include:

   (a). His symptoms are consistent with disease in the distal tibial arteries.
   (b). Compared with peripheral vascular revascularization, angioplasty is associated with better outcomes and is likely to be the mainstay of treatment for peripheral vascular disease.
   (c). The severity of his peripheral arterial disease and the likelihood of hospital admission are associated with the magnitude of his HbA1c level.
   (d). Compared with the general population, his plasma homocysteine level is likely to be high.
   (e). Compared with non-smokers, he is likely to be 10 years younger at the time of diagnosis.

Anaesthesia for Infra-Inguinal Revascularisation Surgery

1. A 67-year-old male presents with a history of rest pain in the calf and necrotic toes. He has a history of ischaemic heart disease and type 1 diabetes mellitus. He is a smoker of 50 pack years and his exercise tolerance is limited to 200–300 yards because of claudication pain. His angigram and general health suggest that he is suitable for either peripheral vascular revascularization or angioplasty.

   Appropriate statements regarding the preoperative management of this patient include:

   (a). As he has not had angina-like symptoms for the last 2 years, the risk of cardiovascular-related morbidity and mortality is likely to be low.
   (b). The patient’s blood pressure is inadequately controlled.
   (c). Owing to the deterioration in his symptoms of claudication, discontinuation of bisoprolol is indicated.
   (d). The HbA1c level suggests that he does not need referral to a diabetic specialist before surgery.
   (e). Non-invasive cardiac testing, such as an echocardiography, is unlikely to be indicated.

2. The above patient thinks that he had a myocardial infarction 7 years ago but has been free of angina-like symptoms for at least 2 years. In the last 5 years he has had several transurethral procedures for prostate cancer. His drug history includes aspirin, bisoprolol, ramipril, a statin, tamsulosin and insulatard. His HbA1c is 6.4% and his blood pressure measurements are stable at approximately 139/89 mm Hg. The surgical team have requested routine blood tests, a chest radiograph and an electrocardiogram.

   Appropriate statements regarding this patient include:

   (a). His symptoms are consistent with disease in the distal tibial arteries.
   (b). Compared with peripheral vascular revascularization, angioplasty is associated with better outcomes and is likely to be the mainstay of treatment for peripheral vascular disease.
   (c). The severity of his peripheral arterial disease and the likelihood of hospital admission are associated with the magnitude of his HbA1c level.
   (d). Compared with the general population, his plasma homocysteine level is likely to be high.
   (e). Compared with non-smokers, he is likely to be 10 years younger at the time of diagnosis.

3. A 56-year-old man is listed for femoral crossover grafting and right iliac angioplasty. He has rest pain of the calf and difficulty sleeping due to pain. He has a smoking history of 45 pack years and has had several hospital admissions caused by infective exacerbations of chronic pulmonary disease. He becomes breathless after climbing one flight of stairs at home and is unable to walk more than 100 metres on level ground. His surgical history includes two previous
iliac angioplasties. His drug history consists of digoxin, ramipril, atorvastatin, warfarin, gabapentin, paracetamol, morphine sulphate, salbutamol, salmeterol and tiotropium. His electrocardiogram shows atrial fibrillation at an average heart rate of 80 beats min⁻¹. Given this presentation, appropriate statements regarding the anaesthetic technique for this gentleman include:

(a). In view of the severity of his obstructive airway disease, a combined spinal-epidural technique is indicated.
(b). Since administration of warfarin should be continued throughout the perioperative period to reduce thromboembolism and graft occlusion, he is unlikely to be a suitable candidate for epidural anaesthesia.
(c). Compared with regional anaesthesia, general anaesthesia is preferable owing to reductions in the risk of major adverse cardiac events and mortality.
(d). Even if perioperative episodes of tachycardia and hypotension are short, he is still likely to develop myocardial ischaemia and infarction.
(e). Owing to critical limb ischaemia and the possibility of tissue damage in his poorly perfused leg, a forced-air warming blanket would be contraindicated during surgery.

4. Appropriate statements regarding the postoperative care of the patient described in the previous question include:

(a). In the postoperative period he is at significant risk of developing a respiratory complication and should receive oxygen therapy for 72 h.
(b). He does not need to be reviewed by the acute pain service after his operation. His analgesic requirements are likely to be halved as reperfusion of the lower limbs should alleviate most of his symptoms.
(c). He is likely to require admission to the critical care unit.
(d). Owing to the increased risk of bleeding from peripheral vascular revascularization surgery, he should not receive thromboprophylaxis therapy with low molecular weight heparin for 48 h.
(e). One year after surgery, his risk of death is less than 1%.

Human Factors in Complex Trauma

1. Statements referring to appropriate practice when waiting for a patient to arrive during a trauma call include:

(a). Once they have signed in, members of the team are allowed to return to the ward to complete other jobs as long as they return in time for the patient to arrive.
(b). Members of the trauma team are likely to make themselves known to the trauma team leader and state their name and designated role.
(c). The trauma team leader is likely to just call the personnel that they need based on the prehospital alert and then can call further people when required.
(d). Telephone calls to the transfusion laboratory and radiology are likely to be first made when the patient arrives so that an accurate handover is given.
(e). The paramedics are likely to hand over to the team leader to allow the rest of the trauma team to proceed with the assessment of the patient.

2. The trauma team leader is likely to:

(a). Maintain optimal situational awareness if he or she performs the primary survey.
(b). Ensure that he or she knows the names and competencies of all members in their team.
(c). Be responsible for co-ordinating a horizontal approach to the assessment and treatment of a casualty.
(d). Be responsible for the patient whilst in the emergency department but not at other locations.
(e). Talk infrequently during the resuscitation of the patient.

3. In the emergency department, the trauma team anaesthetist is likely to:

(a). Assess the airway and ventilation immediately rather than listening to the prehospital handover.
(b). Make the decision to perform a rapid sequence induction (RSI) of general anaesthesia without bothering the trauma team leader, who is busy and who is not directly involved in the anaesthetic.
(c). Leave the cervical spine collar in situ and not use a gum-elastic bougie when intubating a patient with blunt trauma.
(d). Receive information that is given to him or her when busy as long as it is said loudly enough.
(e). Understand the patient’s cardiovascular status and actual and potential injuries before performing an RSI.

4. During emergency trauma surgery:

(a). In a difficult situation, the anaesthetist is likely to avoid speaking to the surgeon even if the information is about situational issues.
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(b). The lead anaesthetist should concentrate on inserting an arterial line before or as soon as the patient arrives in the operating room.
(c). Assistant anaesthetists will be of most use if they are allowed to find their own role within the team.
(d). Regular, structured communication between the anaesthetist and the surgeon is helpful in maintaining situational awareness.
(e). Handover of leadership from the trauma team leader of the emergency department (ED) is best delayed, if possible, until the patient is positioned on the operating table and established on the anaesthetic machine.

Laryngeal Clefts

1. Laryngeal clefts are associated with congenital conditions called:
   (a). Opitz G syndrome.
   (b). DiGeorge syndrome.
   (c). Pallister–Hall syndrome.
   (d). Vertebral anomalies, anal atresia, tracheo-oesophageal fistula (TOF), renal anomalies (VATER).
   (e). Velo-cardio-facial syndrome.

2. You are called to the neonatal intensive care unit to assist a 2-week-old male infant who weighs 2.8 kg. He presents with failure to thrive, hypersecretion and cyanotic spells during feeding. He had been diagnosed with an atrial septal defect and is fed via a nasogastric tube. Appropriate statements regarding your assessment and anaesthetic plan include:
   (a). This presentation is consistent with the diagnosis of a laryngeal cleft.
   (b). Compared with referrals of infants who are 4 weeks old, this early presentation is likely to be associated with a better prognosis.
   (c). Hypospadias is likely to be noticed on examination.
   (d). Successful airway management in both emergency and elective settings is likely to be achieved using a laryngeal mask airway.
   (e). The diagnosis of laryngeal cleft is likely to be made at the time of laryngoscopy and tracheal intubation by the anaesthetist.

3. You are asked to anaesthetize a 6-week-old infant for microlaryngeal bronchoscopy. She has a history of difficult and repeated intubations in the neonatal intensive care unit. She weighs 3.1 kg and you notice that there is breathing with subcostal and intercostal recession. Her respiratory rate is 78 bpm and her heart rate is 190 beats min–1. Your management plan is likely to include:
   (a). Administration of general anaesthesia with a muscle relaxant and control of ventilation with positive pressure to alleviate respiratory distress.
   (b). Topicalization of the larynx with 1.8 ml of lignocaine 1%.
   (c). Monitoring of effective ventilation by capnography.
   (d). Maintenance of oxygenation by jet ventilation.
   (e). Administration of dexmedetomidine in preference to an opioid.

4. A baby girl aged 1 month is admitted for respiratory distress during feeding since she was 5 days old. On microlaryngeal bronchoscopy under general anaesthesia, a type IV laryngotracheal cleft extending to a point 4 mm proximal to the carina is diagnosed. After initiation of antibiotic therapy and total parental nutrition, an open repair of the cleft with an interposition graft is performed on cardiopulmonary bypass. Appropriate statements regarding the perioperative period include:
   (a). Her risk of mortality is likely to be at least 80%.
   (b). It would have been preferable to delay the timing of surgery for further medical optimization.
   (c). Postoperative evidence of continued aspiration from a barium study is likely to indicate failure of the repair.
   (d). If dehiscence occurs, it is likely to be observed distal to the vocal cords.
   (e). Her symptoms are most unlikely to be relieved by surgery.

Malignant mesothelioma and its management

1. Mesothelioma is associated with:
   (a). Asbestos.
   (b). Erionite.
   (c). Fibreglass.
   (d). Cigarette smoke.
   (e). Intrapleural talc.

2. A 72-year-old former shipbuilder presents with suspected malignant pleural mesothelioma. Features of the history, examination and investigations are likely to include:
   (a). Superior vena cava obstruction.
   (b). Hoarseness.
   (c). Chest pain.
   (d). Dyspnoea.
   (e). Pleural effusion.

3. A 61-year-old construction worker is scheduled for a radical pleurectomy and decortication. This operation:


(a). Aims to microscopically clear all evidence of tumour.
(b). Aims to alleviate pain.
(c). Removes the lung and surrounding pleura.
(d). Should be performed for sarcomatoid tumours.
(e). Is performed bilaterally.

4. Appropriate statements regarding perioperative care for radical pleurectomy and decortication include:

(a). Paravertebral catheters should be used for postoperative analgesia.
(b). Blood transfusion is uncommon.
(c). Postoperative ventilation is not usually required.
(d). Central venous lines should be placed on the contralateral side to surgery.
(e). Non-steroidal anti-inflammatory drugs should be avoided.

The patient with Hyponatraemia

1. A healthy 25-year-old woman becomes unwell and is admitted with meningitis. On examination she is tachycardic and hypotensive and has a capillary refill time of 5 s. Her urine output is 300 ml h\(^{-1}\) for 3 h. Her blood tests show:
   - Na 125 mmol litre\(^{-1}\) (normal range 134–146 mmol litre\(^{-1}\))
   - K 4.2 mmol litre\(^{-1}\) (normal range 3.5–5.0 mmol litre\(^{-1}\))
   - Urea 16.4 mmol litre\(^{-1}\) (normal range 2.5–7.8 mmol litre\(^{-1}\))
   - Creatinine 180 μmol litre\(^{-1}\) (normal range 55–125 μmol litre\(^{-1}\))

Appropriate statements regarding this patient include:

(a). These initial findings are consistent with a diagnosis of diabetes insipidus.
(b). The next day, further tests show a serum osmolality of 265 mOsm kg\(^{-1}\) (normal range 280–295 mOsm kg\(^{-1}\)), urine osmolality of 590 mOsm kg\(^{-1}\) and urinary sodium of 58 mmol litre\(^{-1}\). Given such additional information, she is likely to have cerebral salt-wasting syndrome (CSWS).
(c). Other investigations should include thyroid-stimulating hormone, adrenocorticotropic hormone and cortisol.
(d). The following conditions could cause an identical clinical picture: epilepsy, cerebral infarction, subarachnoid haemorrhage and intracranial surgery.
(e). As part of her treatment, you are likely to administer isotonic saline.

2. You have been asked to review a 75-year-old lady on the medical assessment unit. She was admitted 24 h ago with confusion, weakness and significant weight loss. She is a smoker and takes regular anti-hypertensive medications. Blood tests show:

- Na 115 mmol litre\(^{-1}\) (normal range 134–146 mmol litre\(^{-1}\))
- K 4.3 mmol litre\(^{-1}\) (normal range 3.5–5.0 mmol litre\(^{-1}\))
- Urea 3.5 mmol litre\(^{-1}\) (normal range 2.5–7.8 mmol litre\(^{-1}\))
- Creatinine 54 μmol litre\(^{-1}\) (normal range 55–125 μmol litre\(^{-1}\))
- Hb 102 mmol g litre\(^{-1}\) (normal range 115–160 g litre\(^{-1}\))
- White cell count 15.3 × 10\(^9\) g litre\(^{-1}\) (normal range 4.0–11.0 × 10\(^9\) g litre\(^{-1}\))

Appropriate statements regarding your assessment and management include:

(a). Capillary refill time is likely to be useful when making the diagnosis.
(b). A serum osmolality of 264 mOsm kg\(^{-1}\) is likely to confirm the diagnosis of syndrome of inappropriate antidiuretic hormone secretion (SIADH).
(c). Urinary sodium of 55 mmol litre\(^{-1}\) could be caused by her antihypertensive medications.
(d). If you think that she has SIADH, then you are likely to restrict her fluid intake to 1000 ml day\(^{-1}\).
(e). If her serum sodium is unchanged after 72 h of fluid restriction, then your next therapeutic intervention should be tolvaptan.

3. You are assessing a patient for a gynaecological diagnostic laparoscopy. Her past history includes epilepsy that is well controlled on carbamazepine. She is otherwise well. Preoperative blood tests have shown Na 122 mmol litre\(^{-1}\) (normal range 134–146 mmol litre\(^{-1}\)) and that K, urea, creatinine and full blood count are normal. The following statements are appropriate:

(a). This patients’ epilepsy is a cause of the hyponatraemia.
(b). Carbamazepine is a cause of the hyponatraemia.
(c). Serum osmolality is likely to be more than 295 mOsm kg\(^{-1}\).
(d). The surgery should be postponed until investigations and normalization of sodium have been completed.
(e). If no other causes are found, then a change of medication should make up part of the management strategy.

4. A 50-year-old patient presents to the accident and emergency department with a 5-day history of diarrhoea
and vomiting. She appears to be mildly confused and is hypotensive with a low urine output. Her past medical history is unremarkable. Her blood results include:

- Na 109 mmol litre\(^{-1}\) (normal range 134–146 mmol litre\(^{-1}\))
- K 4.1 mmol litre\(^{-1}\) (normal range 3.5–5.0 mmol litre\(^{-1}\))
- urea 15.9 mmol litre\(^{-1}\) (normal range 2.5–7.8 mmol litre\(^{-1}\))
- creatinine 147 μmol litre\(^{-1}\) (normal range 55–125 μmol litre\(^{-1}\))
- serum osmolality 258 mmol litre\(^{-1}\) (normal range 280–295 mmol litre\(^{-1}\))
- urine osmolality 565 mOsm litre\(^{-1}\)
- urine Na <10 mmol litre\(^{-1}\)
- blood glucose 5 mmol litre\(^{-1}\)
- thyroid-stimulating hormone 2.4 mU litre\(^{-1}\) (normal range 0.4–4.5 mU litre\(^{-1}\))
- cortisol 665 nmol litre\(^{-1}\) (normally >550 nmol litre\(^{-1}\)) at 9 a.m.

You are likely to:

- (a). Administer saline 0.9% for rehydration
- (b). Administer saline 3% to increase serum sodium to 120 mmol litre\(^{-1}\).
- (c). Allow the rate of increase of serum sodium to be up to 8–10 mmol litre\(^{-1}\) in the first 24 h.
- (d). Request a computed tomogram of her chest and abdomen in the next few days so that you are able to rule out possible malignancy.
- (e). Have her admitted to your critical care unit.

### Predicting the Difficult Airway

1. You are asked to anaesthetize a 35-year-old man for an anterior cervical disc fixation. His height is 171 cm and he weighs 106 kg. A brief airway examination carried out by the preassessment clinic staff documents a thyromental distance of 6 cm. A cervical spine radiograph was carried out as part of his surgical work-up. He is also on a waiting list to be seen by maxillofacial surgeons for an arthroscopy of his left temporomandibular joint. In view of these findings you are likely to consider that:

- (a). His BMI is an independent predictor of difficult laryngoscopy.
- (b). Airway difficulty is more likely to occur when there is android-shaped rather than gynaecoid-shaped distribution of fat.
- (c). His thyromental distance is a reassuring component of the assessment.
- (d). He will be difficult to ventilate by mask and thus requires an awake technique for his procedure.
- (e). His pending arthroscopy of the temporomandibular joint is a cause of significant concern and further assessment is required.

2. A 65-year-old man presents to your orthopaedic list for a revision arthroplasty of the right hip. Eight months ago the patient’s initial hemi-arthroplasty was performed successfully under a subarachnoid block, which he now requests. His past medical history includes an unresolved hoarse voice for 2 years. On examination he has a BMI of 24 kg m\(^{-2}\) and a full range of movement of his neck. You find that there is no stridor, his Mallampati grade is 2 and his thyromental distance is 7 cm. In these circumstances:

- (a). A full airway assessment is unlikely to be required as he is going to have the operation under spinal anaesthesia.
- (b). He is likely to benefit from further airway investigation before surgery.
- (c). Difficult laryngoscopy is likely to be expected.
- (d). Hoarseness is likely to be associated with supraglottic pathology.
- (e). His anaesthetic is unlikely to be affected by airway disease.

3. A 40-year-old man of BMI 35 kg m\(^{-2}\) is due to have a laparoscopic cholecystectomy. He has a past medical history comprising hypertension, diabetes mellitus type 2, hypercholesterolaemia and an appendicectomy at the age of 38 years. On inspection, he has a beard and normal dentition. His mouth opening is 2.2 cm and his Mallampati grade is 3. You decide to measure his thyromental distance. Appropriate statements regarding this situation include:

- (a). The thyromental distance is a measure of vertical height from the anterior border of the thyroid cartilage to the anterior border of the mentum when the neck is fully extended and the mouth is closed.
- (b). Using a Mackintosh laryngoscope with a size 4 blade, inspection of the larynx under general anaesthesia is likely to be difficult.
- (c). A size 4 classic laryngeal mask airway is likely to be difficult to insert.
- (d). Documentation from his previous anaesthetic is likely to be a better predictor of difficult intubation than this current clinical examination.
- (e). His Mallampati class is likely to be associated with both difficult mask ventilation and difficult laryngoscopy.

4. A 45-year-old female with a diagnosis of granulomatosis with polyangiitis presents with hoarseness and dyspnoea on exertion. She had been added to your elective ear, nose and throat (ENT) list as an urgent case for panendoscopy. She is slim, has a previously documented grade 1
laryngoscopy from 6 years ago and is found to have no concerning external features of difficult mask ventilation. In respect of this case, you consider that:

(a). A plain chest radiograph is likely to be useful in planning airway management.
(b). Nasoendoscopy should be carried out before general anaesthesia.
(c). Her previous laryngoscopy grade is not useful as she now has probable new pathology.
(d). Computed tomography scans are likely to influence airway strategy planning.
(e). Lateral cervical spine radiographs should to be requested to assist in airway planning.

**Sepsis in Obstetrics**

1. Appropriate statements regarding the epidemiology and diagnosis of sepsis in obstetrics include:

(a). Sepsis was the leading cause of indirect but not direct maternal death in the recent report of the Centre for Maternal and Child Enquiries (CMACE).
(b). The incidence of maternal deaths due to sepsis is likely to be 1 per 100 000 maternities.
(c). Diagnosis of sepsis is likely to be excluded if the patient's white cell count is 3 × 10⁹ litre⁻¹.
(d). If a patient presents with a temperature of 39.0°C, then the diagnosis of sepsis is confirmed.
(e). The persistence of low blood pressure in a septic patient in spite of intravenous fluid resuscitation is likely to be diagnosed as septic shock.

2. A 35-year-old primiparous woman has had prolonged labour followed by normal vaginal delivery. Her pregnancy was uneventful. Her booking weight was 90 kg and her height is 160 cm. On the second postpartum day, she complains of abdominal pain. Her vital observations are: systolic blood pressure 100 mm Hg, pulse rate 92 beats min⁻¹ and core body temperature 38.1°C. Intravenous fluid and oral paracetamol have been prescribed by one of the junior doctors. Statements referring to appropriate management of this lady include:

(a). The guidance relating to surviving sepsis is activated when the current management strategy does not lead to clinical improvement.
(b). Corticosteroids are likely to be considered if haemodynamic instability persists despite fluid resuscitation.
(c). Administration of antibiotics is likely to be followed by obtaining blood and sputum for microscopy, culture and sensitivity.
(d). Multimodal analgesia comprising paracetamol, non-steroidal anti-inflammatory drugs and an opioid are likely to be needed for pain.
(e). Empirical treatment with antifungals is likely to influence the success of treatment.

3. You are called to see a 29-year-old lady who had an emergency caesarean section for fetal distress at 39 weeks of gestation, 2 days ago. The surgery was under spinal anaesthetic and was uneventful. She delivered a female baby weighing 3.8 kg. She has no significant medical history. Her obstetric history includes two normal vaginal deliveries. Her children, who are 6 and 2 years old, had upper respiratory infection 1 week ago. On examination, she has cough with secretions. Her vital signs are: systolic blood pressure 100 mm Hg, pulse rate 92 beats min⁻¹ and core body temperature 38.1°C. Intravenous fluid and oral paracetamol have been prescribed by one of the junior doctors. Statements referring to appropriate management of this lady include:

(a). If a patient presents with a temperature of 39.0°C, then the diagnosis of sepsis is confirmed.
(b). Computed tomography scans are likely to influence airway strategy planning.
(c). Lateral cervical spine radiographs should to be requested to assist in airway planning.
(d). Compared with the non-pregnant state, clinical features of sepsis during pregnancy are more distinctive.
(e). According to one CMACE report, tachypnoea and hypothermia are premonitory signs of sepsis.

4. Appropriate statements regarding sepsis in the labour ward and theatre include:

(a). β-Haemolytic Streptococcus, Lancefield Group A, is likely to be the most common causative organism.
(b). Prevention of sepsis is likely to be achieved by educating staff, patients and visitors about basic aspects of hand hygiene.
(c). In women without other comorbidity, obesity and caesarean section are likely to predispose them to the development of sepsis.
(d). Compared with general anaesthesia, a regional method is likely to be used when an anaesthetic is required for surgical intervention.
(e). To reduce the risk of infection in women undergoing caesarean section, antibiotics are likely to be administered after delivery of the baby.
**Oesophageal Injury**

1. The common sites of oesophageal injury are:

   (a). The lower oesophagus proximal to the gastro-oesophageal junction.
   (b). Oesophageal adenocarcinomas at the level of the mid-oesophagus.
   (c). At the level of the cricopharyngeus.
   (d). At the level of the gastro-oesophageal junction.
   (e). Above the level of the cricopharyngeus.

2. The appropriate investigations to use in diagnosing an oesophageal injury are:

   (a). Posterior–anterior and lateral chest X-rays.
   (b). Gastrografin oesophagography.
   (c). Flexible endoscopy.
   (d). Computed tomography (CT).
   (e). Barium oesophagography.

3. In adults the most frequent causes of oesophageal injury are:

   (a). Diagnostic oesophagogastroduodenoscopy.
   (b). Caustic ingestion.
   (c). Spontaneous (Boerhaave’s syndrome).
   (d). Transoesophageal echocardiography.
   (e). Therapeutic.

4. A patient presents with overt sepsis after an episode of vomiting. The history, symptoms and signs are consistent with oesophageal rupture (Boerhaave’s syndrome). Management options include:

   (a). Oesophagectomy.
   (b). Oesophagostomy with a distal feeding tube.
   (c). Primary repair.
   (d). Closure of the defect over a T-tube.
   (e). Stent insertion.