

FExNet 2026

Collated SAQs: Ear, Nose and Throat

ANSWER BOOKLET

Model answers for the 20 ENT SAQs. References cited at the foot of each question. Items marked [core] are required for full marks. Drug doses and protocols confirmed with current eTG Therapeutic Guidelines (Antibiotic), ACEM clinical policies, and Royal Children's Hospital and RACGP guidelines.

20 questions • 207 marks

ACEM-aligned format. Sub-questions labelled a) b) c). Mark allocations indicative; references cited in the Answer Booklet. Question and answer indexes are clickable.

Answer Index

Click any entry to jump to its answer. Marks shown right.

Q1. Anterior Epistaxis on Anticoagulation	12	Q11. Benign Paroxysmal Positional Vertigo	10
Q2. Posterior Epistaxis	10	Q12. Sudden Sensorineural Hearing Loss	9
Q3. Peritonsillar Abscess (Quinsy)	11	Q13. Nasal Foreign Body in a Child	10
Q4. Adult Acute Epiglottitis	12	Q14. Aural Foreign Body	10
Q5. Paediatric Retropharyngeal Abscess	11	Q15. Auricular Haematoma	10
Q6. Ludwig's Angina	12	Q16. Nasal Septal Haematoma	9
Q7. Secondary Post-Tonsillectomy Haemorrhage	12	Q17. Temporomandibular Joint Dislocation	10
Q8. Acute Otitis Media	10	Q18. Pharyngitis and the Centor Criteria	10
Q9. Acute Mastoiditis	10	Q19. Acute Sialadenitis	9
Q10. Otitis Externa and Malignant Otitis Externa	10	Q20. Cervical Lymphadenopathy in an Adolescent	10

Question 1 | Anterior Epistaxis on Anticoagulation (12 marks)

A 68-year-old man presents to your emergency department with ongoing spontaneous-onset epistaxis for 90 minutes. He has a history of chronic atrial fibrillation managed with warfarin, treated hypertension, and aspirin for previous myocardial infarction. On arrival his vital signs are: heart rate 110 beats per minute (irregular), blood pressure 165/95 millimetres of mercury, respiratory rate 18 breaths per minute, peripheral oxygen saturation 98 percent on room air. He is alert and is leaking blood from his right nostril and into his oropharynx with intermittent swallowing of clots. He has lost approximately 200 millilitres into a basin.

a) List 4 important historical features for assessment of this patient. (4 marks)

- **Anticoagulant / antiplatelet use** — agent, dose, time of last dose, INR if known (this patient is on both warfarin AND aspirin); concurrent novel oral anticoagulants **[core]**
- **Estimated blood loss and duration**; any haemodynamic compromise; hypovolaemic symptoms (dizziness, syncope) **[core]**
- **Hypertension** — uncontrolled blood pressure prolongs bleeding; current and recent control **[core]**
- **Recent trauma, surgery (sinus, septoplasty), or nasal procedures**; foreign body; occupational exposures (cocaine, intranasal steroid) **[core]**
- Bleeding diathesis — known coagulopathy, recurrent epistaxis, family history
- Past episodes of epistaxis and previous treatments
- Medications — non-steroidal anti-inflammatory drugs, intranasal preparations
- Symptoms suggesting posterior bleed — bleeding predominantly into oropharynx, swallowed blood, haematemesis

b) Outline 6 stepwise interventions to control anterior epistaxis from Kiesselbach's plexus (Little's area). (6 marks)

- **Sit the patient upright leaning forward** with mouth open (allows spitting of blood and reduces aspiration); apply firm pressure to the soft cartilaginous part of the nose for 10-20 minutes **[core]**
- **Topical vasoconstrictor and local anaesthetic** on cotton pledgets or spray — co-phenylcaine (lidocaine 5 percent + phenylephrine 0.5 percent) OR oxymetazoline 0.05 percent; 5-10 minutes contact **[core]**
- **Direct cautery** with silver nitrate stick to the bleeding point — only if vessel visualised under good lighting; AVOID bilateral septal cautery (cartilage necrosis / perforation) **[core]**
- **Anterior nasal packing** if cautery fails — Rapid Rhino balloon (preferred — less traumatic), Merocel sponge, or ribbon-gauze pack with bismuth iodoform paraffin paste; lubricate; admit if posterior pack also placed **[core]**
- **Tranexamic acid** — 5 mL of 100 mg/mL solution applied topically on a soaked pledget; oral 500-1000 mg three times daily (reduces re-bleed; particular benefit if anticoagulated) **[core]**
- **Reverse anticoagulation** if INR elevated AND bleeding ongoing — vitamin K 5-10 mg intravenous + 4-factor prothrombin complex concentrate 25-50 IU/kg; consider platelet support if antiplatelet-related and refractory **[core]**
- Posterior pack (Foley catheter or balloon) and ENT consultation if bleeding from posterior septum
- Investigate hypertension — treat if systolic blood pressure greater than 180 millimetres of mercury with controlled antihypertensive (e.g. labetalol 10 mg intravenous bolus)

c) List 2 discharge instructions. (2 marks)

- **Avoid blowing nose, picking, or vigorous exertion for 7-14 days**; avoid hot drinks, smoking, alcohol; sleep with head elevated **[core]**

- **Outpatient ENT follow-up at 24-72 hours** for pack removal (if anterior packed); review of anticoagulation and antihypertensive management **[core]**
- Antibiotic prophylaxis (amoxicillin / amoxicillin-clavulanate or cephalexin) if anterior pack in situ greater than 24 hours (toxic shock syndrome risk)
- Re-presentation criteria — heavy re-bleeding, syncope, breathlessness

References: eTG Therapeutic Guidelines — Antibiotic • eTG (Therapeutic Guidelines, current) • ACEM clinical policies and statements • Tintinalli's Emergency Medicine 9e Ch 245 • RACGP / ENT Society of Australia clinical guidelines

Question 2 | Posterior Epistaxis (10 marks)

A 75-year-old female with hypertension and atrial fibrillation (anticoagulated with apixaban) presents with significant epistaxis that has failed to respond to anterior nasal packing applied 1 hour ago. She is now bleeding profusely from the posterior oropharynx and has swallowed an estimated 500 millilitres of blood. Her vital signs are: heart rate 120 beats per minute, blood pressure 95/60 millimetres of mercury, respiratory rate 26 breaths per minute, peripheral oxygen saturation 96 percent on 6 litres oxygen via Hudson mask, temperature 36.5 degrees Celsius.

a) List 3 features distinguishing posterior from anterior epistaxis. (3 marks)

- **Bleeding predominantly into the oropharynx** (rather than from the nostril) — patient may be vomiting blood (haematemesis) or coughing it **[core]**
- **Failure of standard anterior pack** to control bleeding (this patient — pack in situ but ongoing bleeding) **[core]**
- **Larger volume blood loss with haemodynamic compromise** (hypotension, tachycardia) **[core]**
- Origin from sphenopalatine artery branches (posterior nasal cavity) rather than Kiesselbach's plexus
- Older patient, hypertension, anticoagulation, atherosclerosis

b) State 5 management priorities. (5 marks)

- **Posterior nasal pack** — Foley catheter (12-14 French) inserted along the floor of the nose until visible in the oropharynx, balloon inflated with 5-10 mL saline, withdrawn until snug against posterior choana; OR commercial balloon (Brighton epistaxis catheter, Rapid Rhino posterior); follow with an anterior pack **[core]**
- **Reverse anticoagulation** — apixaban reversal: andexanet alfa if available, OR **4-factor prothrombin complex concentrate 50 IU/kg intravenous**; tranexamic acid 1 g intravenous **[core]**
- **Resuscitation** — two large-bore intravenous access; bloods including full blood count, coagulation, group and crossmatch (4 units); fluid / blood transfusion guided by haemodynamics **[core]**
- **Urgent ENT consultation** for definitive intervention — endoscopic cautery, embolisation by interventional radiology, or surgical ligation of sphenopalatine artery **[core]**
- **Admit to high-dependency / monitored bed** — risk of airway compromise from posterior pack (vagal-mediated apnoea, hypoxia, hypoventilation, dislodgement); continuous SpO₂ and cardiorespiratory monitoring **[core]**
- Oxygen, anti-emetics; control hypertension if severe (cautious — avoid further hypotension)
- Prophylactic antibiotics (amoxicillin-clavulanate) while pack in situ

c) List 2 complications of posterior nasal packing. (2 marks)

- **Airway compromise** — pack dislodgement, naso-pulmonary reflex (vagally mediated apnoea / bradycardia), hypoxia, hypoventilation **[core]**
- **Toxic shock syndrome** from prolonged packing (*Staphylococcus aureus*); pressure necrosis of nasal alae, soft palate, septum **[core]**
- Sinusitis, otitis media (Eustachian tube obstruction)
- Aspiration pneumonia from swallowed blood
- Complications of intervention (embolisation — stroke, arterial injury)

References: eTG Therapeutic Guidelines — Antibiotic • eTG (Therapeutic Guidelines, current) • ACEM clinical policies and statements • Tintinalli's Emergency Medicine 9e Ch 245

Question 3 | Peritonsillar Abscess (Quinsy) (11 marks)

A 22-year-old man presents to your emergency department with a 5-day history of severe sore throat, fever, dysphagia, drooling, and trismus. He describes pain that is markedly worse on the right side of his throat and reports that his voice sounds different ('hot potato' speech). On examination he is unwell with a temperature of 39.0 degrees Celsius, heart rate 120 beats per minute, blood pressure 110/65 millimetres of mercury, respiratory rate 22 breaths per minute, and peripheral oxygen saturation 98 percent on room air. Mouth opening is limited to approximately 2 centimetres. The right tonsil is markedly enlarged with displacement of the uvula to the left and fluctuance of the soft palate above the right tonsil.

a) List 3 examination features supporting peritonsillar abscess. (3 marks)

- **Unilateral tonsil enlargement with deviation of the uvula to the contralateral side** (mass effect from peritonsillar collection) **[core]**
- **'Hot potato' or muffled voice** due to pharyngeal swelling **[core]**
- **Trismus** (limited mouth opening) from irritation / inflammation of the pterygoid musculature; drooling from inability to swallow **[core]**
- Fluctuance over the soft palate above the affected tonsil
- Fever and ipsilateral cervical lymphadenopathy
- Foul breath (feter)

b) State 5 management priorities (with antibiotic regimen). (5 marks)

- **Drainage** — needle aspiration (18-gauge needle through tonsillar pillar after topical and infiltrative local anaesthesia) OR incision and drainage by ENT team; both diagnostic and therapeutic; send pus for culture **[core]**
- **Intravenous antibiotics** — **benzylpenicillin 1.2 g intravenous every 4-6 hours + metronidazole 500 mg intravenous every 12 hours** (per eTG); alternative amoxicillin-clavulanate 1.2 g intravenous every 8 hours; clindamycin if penicillin-allergic **[core]**
- **Analgesia and supportive care** — intravenous paracetamol 1 g + opioid (morphine titrated); intravenous fluids for dehydration; anti-emetics **[core]**
- **Corticosteroids** — single intravenous dose of dexamethasone 8-10 mg (reduces swelling and pain; evidence for shorter symptom duration) **[core]**
- **ENT consultation** for drainage and ongoing care; admission for monitoring given dysphagia, drooling, and dehydration **[core]**
- Outpatient follow-up if discharged after needle aspiration; complete oral antibiotic course 10-14 days

c) List 3 important differential diagnoses. (3 marks)

- **Severe tonsillitis / pharyngitis** without abscess (no displacement of uvula, less trismus) **[core]**
- **Retropharyngeal abscess** (more common in young children; posterior pharyngeal swelling, neck stiffness) **[core]**
- **Lemierre's syndrome** (thrombophlebitis of internal jugular vein secondary to pharyngitis; Fusobacterium; associated with tonsillitis history) **[core]**
- Lateral pharyngeal / parapharyngeal abscess
- Lymphoma or tonsillar carcinoma
- Infectious mononucleosis with significant tonsillar swelling (consider monospot)

References: eTG Therapeutic Guidelines — Antibiotic • eTG (Therapeutic Guidelines, current) • Tintinalli's Emergency Medicine 9e Ch 244 • RACGP / ENT Society of Australia clinical guidelines

Question 4 | Adult Acute Epiglottitis (12 marks)

A 48-year-old man presents to your regional emergency department with a 24-hour history of severe sore throat, dysphagia, fever, and new respiratory distress. He has no significant past medical history. On arrival he is sitting upright in the tripod position, drooling, with marked anxiety and unwillingness to lie flat. He has a soft inspiratory stridor and a hoarse voice. His vital signs are: heart rate 90 beats per minute, blood pressure 140/80 millimetres of mercury, respiratory rate 24 breaths per minute, peripheral oxygen saturation 99 percent on room air, temperature 37.8 degrees Celsius. The nearest tertiary centre is 2 hours' drive away.

a) List 4 features assessing the severity of upper airway obstruction in this patient. (4 marks)

- **Stridor at rest** versus only on exertion (rest stridor is concerning); biphasic (inspiratory + expiratory) indicates severe obstruction **[core]**
- **Drooling and inability to swallow secretions** — severe epiglottic / pharyngeal swelling **[core]**
- **Tripod position and reluctance to lie supine** — patient autonomous compensation for partial obstruction; haemodynamic / respiratory deterioration with positional change is a red flag **[core]**
- **Voice change / muffling**, hoarseness, altered cry / cough; agitation suggests hypoxia **[core]**
- Tachycardia, tachypnoea, paradoxical breathing, accessory muscle use
- Cyanosis (very late sign), exhaustion, decreased level of consciousness

b) State the likely diagnosis AND list 4 components of immediate management. (4 marks)

- **Acute epiglottitis** — supraglottitis with rapidly progressive airway compromise; in adults usually *Streptococcus pneumoniae* or *Haemophilus influenzae* **[core]**
- **Avoid stressing or examining the patient** until airway secured — no tongue depressor, no laryngoscopy other than by senior airway operator with surgical back-up; humidified oxygen by face mask if tolerated **[core]**
- **Activate ENT and anaesthetic teams urgently** — gold standard: gas-induction intubation in operating theatre with double set-up (anaesthetist + ENT surgeon ready for tracheostomy); only proceed in ED if patient deteriorating **[core]**
- **Empirical intravenous antibiotics** — **ceftriaxone 2 g intravenous** (covers *S. pneumoniae*, *H. influenzae*); **dexamethasone 8 mg intravenous** for swelling **[core]**
- **Lateral neck radiograph** may show 'thumbprint sign' but is INFERIOR to direct visualisation; do NOT delay definitive management
- Monitor in resuscitation bay with airway equipment ready (sized endotracheal tubes from one size smaller, video laryngoscope, surgical airway kit)

c) List 4 considerations for transferring this patient to the tertiary centre. (4 marks)

- **Secure the airway BEFORE transfer if any deterioration** — avoid attempting intubation in moving aircraft or ambulance; if patient deteriorating, intubate at your facility with senior airway operator (double set-up) **[core]**
- **Activate retrieval service / aeromedical transfer** with experienced airway operator and ENT-capable receiving facility **[core]**
- **Prepare for can't intubate, can't oxygenate** — surgical cricothyroidotomy kit available throughout transport; specific marker on the cricothyroid membrane prior to drape **[core]**
- **Continuous monitoring** — electrocardiogram, peripheral oxygen saturation, end-tidal carbon dioxide throughout transfer; minimise position changes; consider intubation prior to movement **[core]**
- Communicate clearly with receiving team — clinical details, anticipated needs, ETA
- Antibiotics, dexamethasone, tranexamic acid drawn up; sedation drugs and rocuronium ready

References: eTG Therapeutic Guidelines — Antibiotic • eTG (Therapeutic Guidelines, current) • Tintinalli's Emergency Medicine 9e Ch 244 • ACEM clinical policies and statements

Question 5 | Paediatric Retropharyngeal Abscess (11 marks)

A 4-year-old girl is brought to your emergency department by her parents with a 3-day history of fever, neck pain, and reluctance to swallow. She has had two recent bouts of upper respiratory tract infection. On examination she is febrile (38.8 degrees Celsius), holding her neck stiff with extension, and refuses to move her neck. She has stridor when crying. Vital signs: heart rate 145 beats per minute, respiratory rate 30 breaths per minute, peripheral oxygen saturation 98 percent on room air. Lateral soft-tissue neck radiograph shows widening of the prevertebral space at C2-C4 level.

a) List 4 features supporting retropharyngeal abscess. (4 marks)

- **Neck stiffness with limitation of extension** (rather than flexion as in meningism); patient may hold neck rigid **[core]**
- **Fever, dysphagia, drooling, refusal to feed**; muffled voice or 'hot potato' voice **[core]**
- **Lateral soft-tissue neck radiograph** showing prevertebral soft-tissue widening (more than half of the C2 vertebral body width at C2 level, OR more than the C7 body width at C7 level) **[core]**
- **Computed tomography of the neck with contrast** (definitive — shows rim-enhancing collection in retropharyngeal or parapharyngeal space) **[core]**
- Bulging posterior pharyngeal wall on direct examination
- Recent upper respiratory tract infection or pharyngitis (typical antecedent)

b) State 4 immediate management priorities. (4 marks)

- **Avoid airway manipulation that could rupture abscess** — no tongue depressor examination; minimise distress; senior ENT and anaesthetic involvement **[core]**
- **Empirical intravenous antibiotics** — amoxicillin-clavulanate 25 mg/kg intravenous every 8 hours (per eTG) OR clindamycin 10 mg/kg every 6 hours if penicillin-allergic; cover Staphylococcus, Streptococcus, anaerobes **[core]**
- **Computed tomography of neck with intravenous contrast** — confirms diagnosis and characterises collection; guides operative drainage **[core]**
- **ENT consultation for surgical drainage** in operating theatre; admission to appropriate paediatric ward / paediatric intensive care depending on airway concern **[core]**
- Adequate analgesia, intravenous fluids, anti-emetics
- Continuous monitoring; airway equipment ready in case of acute deterioration

c) List 3 complications of retropharyngeal abscess. (3 marks)

- **Airway compromise / asphyxiation** from spontaneous rupture or progressive swelling **[core]**
- **Mediastinitis** — extension of infection through danger space to mediastinum (high mortality) **[core]**
- **Septicaemia and septic shock** **[core]**
- Aspiration pneumonia (rupture into pharynx)
- Internal jugular vein thrombosis (Lemierre's syndrome)
- Vertebral osteomyelitis or epidural abscess
- Carotid artery erosion / pseudoaneurysm

References: eTG Therapeutic Guidelines — Antibiotic • eTG (Therapeutic Guidelines, current) • Tintinalli's Emergency Medicine 9e Ch 109 • Royal Children's Hospital Melbourne CPG

Question 6 | Ludwig's Angina (12 marks)

A 25-year-old woman presents to your emergency department with a 3-day history of severe jaw pain and rapidly progressive facial / neck swelling. She had a dental extraction 1 week ago. On examination she has bilateral diffuse swelling and induration of the floor of the mouth and submandibular regions, with elevation and posterior displacement of the tongue. She is drooling with a muffled voice. Vital signs: heart rate 120 beats per minute, blood pressure 130/75 millimetres of mercury, respiratory rate 24 breaths per minute, peripheral oxygen saturation 99 percent on room air, temperature 38.5 degrees Celsius.

a) Define Ludwig's angina AND list 3 supporting examination findings. (3 marks)

- **Ludwig's angina** = bilateral cellulitis of the submandibular space (sublingual and submylohyoid) typically secondary to dental infection (lower molars) **[core]**
- **'Bull-neck' bilateral firm woody swelling** of the floor of mouth and submandibular region **[core]**
- **Tongue elevation and posterior displacement** with potential airway obstruction; trismus (mouth opening limited) **[core]**
- Drooling, muffled voice, dysphagia
- Fever, raised inflammatory markers, immunocompromise risk factors (diabetes, alcohol use, immunosuppression)

b) State 5 management priorities. (5 marks)

- **Airway management is paramount** — involve senior anaesthetist and ENT; consider awake fibre-optic intubation (direct laryngoscopy may be impossible) OR pre-emptive surgical tracheostomy; avoid blind nasal intubation **[core]**
- **Empirical broad-spectrum intravenous antibiotics** — **benzylpenicillin 1.8 g every 4 hours + metronidazole 500 mg every 12 hours intravenous** OR amoxicillin-clavulanate 1.2 g every 8 hours; cover polymicrobial oral flora including anaerobes **[core]**
- **Imaging with computed tomography of neck** with intravenous contrast — delineates extent of cellulitis / abscess; should NOT delay airway management or antibiotic administration **[core]**
- **Surgical drainage** — operative decompression of submandibular space if abscess present; performed by ENT or maxillofacial surgical team **[core]**
- **Intensive care unit admission** for ongoing airway monitoring; intravenous fluids, analgesia, anti-emetics; tetanus update **[core]**
- Identify and treat underlying dental source
- Consider odontogenic source — refer to maxillofacial for definitive dental treatment after stabilisation

c) List 4 indications for emergency cricothyroidotomy AND describe 4 key steps of Seldinger cricothyroidotomy. (4 marks)

- **Indications:** 'cannot intubate, cannot oxygenate' situation (failed bag-mask, supraglottic airway, and intubation); severe airway distortion making oral intubation impossible; impending arrest from upper airway obstruction **[core]**
- **Step 1:** identify cricothyroid membrane (depression below thyroid cartilage, above cricoid); stabilise larynx with non-dominant hand **[core]**
- **Step 2:** insert needle attached to saline-filled syringe through cricothyroid membrane (45° caudally) until air aspirated; thread guide-wire through needle **[core]**
- **Step 3:** vertical skin incision; advance dilator + airway tube assembly over guide-wire into trachea; remove guide-wire and dilator; inflate cuff **[core]**
- **Step 4:** confirm placement with end-tidal carbon dioxide; secure tube; ventilate **[core]**

- Alternative scalpel-bougie cricothyroidotomy may be faster (Difficult Airway Society guideline)

References: *eTG Therapeutic Guidelines — Antibiotic* • *eTG (Therapeutic Guidelines, current)* • *Tintinalli's Emergency Medicine 9e Ch 244* • *Australian and New Zealand Anaesthetic Society difficult airway guidance*

Question 7 | Secondary Post-Tonsillectomy Haemorrhage (12 marks)

A 12-year-old boy is brought to your emergency department by his parents with profuse blood loss from his mouth. His clothes are covered in blood. He had undergone tonsillectomy at your hospital 7 days earlier (uncomplicated procedure). On arrival, he is alert (Glasgow Coma Score 15) but pale and sweaty. Vital signs: heart rate 160 beats per minute, blood pressure 75/40 millimetres of mercury, respiratory rate 30 breaths per minute, peripheral oxygen saturation 99 percent on room air. Your initial assessment is that he does not require immediate intubation. Estimated blood loss is approximately 300 millilitres.

a) State 5 initial management steps with drug, dose, and end-point. (5 marks)

- **Two large-bore intravenous access** (consider intraosseous if peripheral fails); **0.9 percent saline 20 mL/kg** intravenous bolus (= 600-800 mL for a 30-40 kg child); blood products via massive transfusion if shocked despite fluid **[core]**
- **Tranexamic acid 15 mg/kg intravenous** (maximum 1 g) over 10 minutes; effective for post-tonsillectomy bleeding **[core]**
- **Position the patient sitting forward** with mouth open to allow blood to drain (prevents aspiration); have suction at head of bed **[core]**
- **Direct pressure on the bleeding tonsillar fossa** with gauze on Magill forceps OR with the patient's gloved finger if cooperative; topical 1:10,000 adrenaline soaked gauze may help **[core]**
- **Urgent ENT consultation** for theatre (definitive management) — bleeding sites may need cautery, suture, ligation; anaesthetic team alerted **[core]**
- Bloods: full blood count, coagulation, group and crossmatch (4 units); reverse anticoagulation if any
- Anti-emetics — anti-emesis is critical (vomiting blood worsens and triggers re-bleed)
- Analgesia — cautious opioid (avoid NSAIDs)

b) List 4 anticipated difficulties when intubating this patient AND state your solution for each. (4 marks)

- **Active bleeding obscuring view** — difficulty visualising vocal cords. Solution: large-bore suction (Yankauer); consider 'two-suction' technique; have a second operator (suction operator) dedicated **[core]**
- **Aspiration of blood / clot** — high risk of pulmonary aspiration with subsequent hypoxaemia. Solution: rapid sequence intubation with cricoid pressure; left lateral position for induction may reduce aspiration; pre-empty stomach with nasogastric tube **[core]**
- **Reduced gastric emptying with swallowed blood** — full stomach. Solution: nasogastric or orogastric tube to drain stomach pre-induction; cricoid pressure **[core]**
- **Cardiovascular instability** from hypovolaemia. Solution: fluid pre-load and blood product administration before induction; ketamine (1-2 mg/kg) preferred induction agent (haemodynamic-sparing); have noradrenaline drawn up **[core]**
- Difficult airway anatomy from oedema / clot — video laryngoscopy first-line, ENT and surgical back-up ready for surgical airway

c) List 3 risk factors / aetiological considerations for post-tonsillectomy bleeding. (3 marks)

- **Day of presentation** — primary (within 24 hours) typically surgical-site bleed; **secondary (5-10 days; this patient day 7)** typically due to slough separation and unmasked vessel; less common after day 14 **[core]**
- **Infection of tonsillar bed** (secondary bleed) — consider antibiotic treatment **[core]**
- **Poor oral intake / dehydration** post-operatively delaying healing **[core]**
- Coagulation disorder (von Willebrand disease, haemophilia) — review pre-operative screen

- Aspirin / non-steroidal anti-inflammatory drug use (generally contraindicated post-tonsillectomy)
- Adult patients have higher risk than children (5-10 percent vs 0.5-3 percent)

References: *eTG Therapeutic Guidelines — Antibiotic* • *eTG (Therapeutic Guidelines, current)* • *Tintinalli's Emergency Medicine 9e Ch 109* • *ACEM clinical policies and statements*

Question 8 | Acute Otitis Media (10 marks)

A 3-year-old girl is brought to your emergency department by her parents with a 2-day history of right ear pain, fever, and decreased oral intake. She is alert and active but fussy, holding her right ear. Her vital signs are: heart rate 130 beats per minute, blood pressure 90/55 millimetres of mercury, respiratory rate 28 breaths per minute, peripheral oxygen saturation 99 percent on room air, temperature 38.6 degrees Celsius. Otoscopy reveals a bulging, erythematous, opacified tympanic membrane with loss of normal landmarks; the membrane is intact.

a) List 3 components of management AND state 3 options for analgesia (with paediatric doses). (3 marks)

- **Analgesia first-line:** paracetamol 15 mg/kg orally every 4-6 hours (max 4 doses per day) + ibuprofen 10 mg/kg orally every 6-8 hours (max 30 mg/kg per day); topical anaesthetic eardrops are NOT routinely recommended **[core]**
- **Reassurance and follow-up;** majority of acute otitis media (60-80 percent) resolves spontaneously in 24-72 hours without antibiotics; 'wait-and-see' approach with safety net for low-risk uncomplicated cases **[core]**
- **Antibiotic therapy** if criteria met (see part b) — first-line: amoxicillin 30 mg/kg orally every 8 hours for 5-7 days (7-10 days for <2 years, severe disease, perforation, or recurrent) **[core]**
- Hydration and oral intake encouragement
- Outpatient review at 24-48 hours; safety-net advice

b) List 4 indications for antibiotic treatment. (4 marks)

- **Age <2 years (especially <6 months)** — higher risk of complications **[core]**
- **Bilateral acute otitis media** in child <2 years **[core]**
- **Severe disease** — high fever (>39 degrees Celsius), severe pain, systemic toxicity **[core]**
- **Perforation with otorrhoea** (always treat); recurrent acute otitis media **[core]**
- Indigenous Australian children (higher risk of complications and chronic otitis media in this population)
- Immunocompromised host, craniofacial abnormalities, cleft palate, Down syndrome
- Failure to improve after 48-72 hours of watchful waiting

c) List 3 potential complications. (3 marks)

- **Tympanic membrane perforation with chronic otorrhoea** (chronic suppurative otitis media) **[core]**
- **Mastoiditis** — extension of infection to mastoid air cells; pinna displacement, post-auricular swelling, fluctuance **[core]**
- **Intracranial complications** — meningitis, brain abscess, lateral sinus thrombosis (rare but life-threatening) **[core]**
- Conductive hearing loss; speech / language delay
- Facial nerve palsy
- Petrositis, labyrinthitis
- Cholesteatoma (chronic disease)

References: eTG Therapeutic Guidelines — Antibiotic • eTG (Therapeutic Guidelines, current) • Royal Children's Hospital Melbourne CPG • Tintinalli's Emergency Medicine 9e Ch 244 • RACGP Otitis Media Guidelines

Question 9 | Acute Mastoiditis (10 marks)

A 5-year-old boy presents to your emergency department with a 7-day history of right ear pain, fever, and now post-auricular swelling. He has been on amoxicillin for the past 5 days for diagnosed acute otitis media but symptoms are worsening. On examination, the right pinna is displaced anteriorly and laterally, with marked post-auricular swelling, erythema, and fluctuance. Otoscopy shows a bulging tympanic membrane with otorrhoea. Vital signs: heart rate 140 beats per minute, blood pressure 95/60 millimetres of mercury, respiratory rate 30 breaths per minute, peripheral oxygen saturation 98 percent on room air, temperature 39.0 degrees Celsius.

a) List 3 examination features of acute mastoiditis. (3 marks)

- **Pinna displaced anteriorly and laterally** by post-auricular swelling (loss of normal auriculo-mastoid sulcus) **[core]**
- **Post-auricular fluctuance, erythema, and tenderness** **[core]**
- **Tympanic membrane abnormalities** — bulging, perforation with otorrhoea, otitis media **[core]**
- Fever, systemic features (irritability, decreased feeding)
- Hearing loss (conductive)
- Cervical lymphadenopathy

b) State 4 management priorities. (4 marks)

- **Intravenous broad-spectrum antibiotics** — cefotaxime 50 mg/kg every 6 hours OR ceftriaxone 50 mg/kg every 24 hours; consider adding flucloxacillin or vancomycin if MRSA or Staphylococcus suspected **[core]**
- **Computed tomography of the temporal bones with contrast** — confirms diagnosis (coalescent mastoiditis with destruction of mastoid trabeculae); identifies subperiosteal abscess and intracranial extension **[core]**
- **ENT consultation** for surgical drainage — myringotomy with grommet placement; mastoidectomy if abscess or intracranial complications **[core]**
- **Admission for inpatient management** with intravenous antibiotics for at least 48-72 hours, then transition to oral; duration 14 days minimum **[core]**
- Adequate analgesia (paracetamol + ibuprofen + consider opioid)
- Send pus for culture / sensitivity if drained

c) List 3 intracranial complications of mastoiditis. (3 marks)

- **Meningitis** — extension through tegmen tympani or hematogenous spread **[core]**
- **Brain abscess** — temporal lobe or cerebellar abscess **[core]**
- **Lateral (sigmoid) sinus thrombosis** — picket-fence fever, septic emboli; magnetic resonance imaging with venography for diagnosis **[core]**
- Subdural / epidural empyema
- Petrositis (Gradenigo's syndrome — facial pain, abducens palsy, otorrhoea)
- Facial nerve palsy

References: eTG Therapeutic Guidelines — Antibiotic • eTG (Therapeutic Guidelines, current) • Tintinalli's Emergency Medicine 9e Ch 244 • Royal Children's Hospital Melbourne CPG

Question 10 | Otitis Externa and Malignant Otitis Externa (10 marks)

A 72-year-old woman with poorly controlled type 2 diabetes mellitus (HbA1c 9.5 percent) presents to your emergency department with a 2-week history of severe right ear pain that wakes her at night. The pain has been progressively worsening despite topical corticosteroid and antibiotic ear drops. On examination she is afebrile but appears unwell with marked tenderness over the mastoid and right temporomandibular joint. The external auditory canal is oedematous, erythematous, and contains granulation tissue with purulent discharge.

a) Define malignant (necrotising) otitis externa AND list 3 risk factors. (3 marks)

- **Malignant (necrotising) otitis externa** = invasive infection of the external auditory canal extending to involve the temporal bone, skull base, and adjacent soft tissues; can progress to skull-base osteomyelitis. *Pseudomonas aeruginosa* is the predominant organism (greater than 95 percent) [core]
- **Diabetes mellitus** (especially poorly controlled) — most important risk factor (present in over 90 percent of cases) [core]
- **Immunocompromise** — HIV, post-chemotherapy, post-transplant, haematological malignancy [core]
- Elderly patients with comorbidities
- Recent ear instrumentation, water exposure
- Microvascular disease

b) List 4 management priorities. (4 marks)

- **Ear culture and biopsy of granulation tissue** — confirms diagnosis and excludes alternative diagnoses (carcinoma, tuberculosis); *Pseudomonas aeruginosa* most common [core]
- **Empirical intravenous anti-pseudomonal antibiotics** — **ceftazidime 2 g intravenous every 8 hours** OR ciprofloxacin 750 mg orally twice daily (good bone penetration); consider piperacillin-tazobactam; minimum duration 6 weeks [core]
- **Imaging** — computed tomography of temporal bones for bony erosion; magnetic resonance imaging or technetium-99m bone scan for skull-base osteomyelitis [core]
- **Glycaemic control** — optimise blood glucose; admit for diabetic management; address other immunocompromise causes [core]
- ENT consultation; aural toilet (microsuction); consider surgical debridement
- Consider hyperbaric oxygen therapy for refractory cases
- Hearing assessment and cranial nerve examination (facial nerve palsy is poor prognostic feature)

c) List 3 complications. (3 marks)

- **Facial nerve (CN VII) palsy** — most common cranial neuropathy; occurs with stylomastoid foramen involvement [core]
- **Other lower cranial nerve palsies** (IX, X, XI, XII via jugular foramen / hypoglossal canal) [core]
- **Skull-base osteomyelitis with extension** to dural sinuses — sigmoid sinus thrombosis, meningitis, brain abscess [core]
- Death (mortality 10-20 percent in advanced disease)
- Hearing loss
- Carotid artery erosion (rare)

References: eTG Therapeutic Guidelines — Antibiotic • eTG (Therapeutic Guidelines, current) • Tintinalli's Emergency Medicine 9e Ch 244 • ACEM clinical policies and statements

Question 11 | Benign Paroxysmal Positional Vertigo (10 marks)

A 55-year-old woman presents to your emergency department with a 3-day history of brief episodes of severe vertigo (lasting 30-60 seconds), triggered by changes in head position (rolling in bed, looking up). She has no associated hearing loss, tinnitus, or focal neurological symptoms. She is symptom-free between episodes. Her medical history includes treated hypertension. On examination, neurological examination is normal; gait is normal between episodes.

a) Describe the pathophysiology of BPPV. (3 marks)

- **Otoconia (calcium carbonate crystals) displaced from utricular maculae** into the semicircular canals (most commonly the posterior canal — 85-90 percent of cases) **[core]**
- **Free-floating otoconia (canalithiasis)** shift with gravity in response to head movements, generating abnormal endolymph currents that stimulate the affected canal's cupula **[core]**
- **This produces brief episodes of vertigo lasting less than 60 seconds;** resolves when otoconia settle **[core]**
- Cupulolithiasis variant — otoconia adherent to cupula (longer duration, persistent positional nystagmus)

b) Describe the Dix-Hallpike manoeuvre AND state the expected positive findings. (4 marks)

- **Method:** patient sits upright on examination couch with legs extended; turn head 45° to the suspected affected side; rapidly lay patient supine with head extended over edge of bed (head 20° below horizontal) **[core]**
- **Maintain position 30 seconds;** observe eyes for nystagmus; ask about vertigo **[core]**
- **Positive findings:** brief latency (2-20 seconds), **upbeating-torsional (geotropic) nystagmus** with the upper pole of the eye beating toward the affected (lower) ear; vertigo synchronous with nystagmus **[core]**
- **Self-limiting:** nystagmus and vertigo subside within 30-60 seconds; fatigues on repeated testing **[core]**
- Repeat for opposite ear if first side negative

c) Describe the Epley manoeuvre — name the steps. (3 marks)

- **Step 1:** Begin in Dix-Hallpike position (head turned 45° to affected side; supine with head extended) **[core]**
- **Step 2:** Rotate head 90° towards the unaffected side (now turned 45° towards unaffected); hold 30 seconds **[core]**
- **Step 3:** Roll patient onto side of unaffected ear with head turned a further 90° (head facing the floor); hold 30 seconds; sit patient up **[core]**
- Each position maintained for at least 30 seconds; may need repeat sessions for complete resolution
- Avoid bending forward, sudden head movements, and sleeping on affected side for 24 hours post-procedure

References: eTG (Therapeutic Guidelines, current) • ACEM clinical policies and statements • Tintinalli's Emergency Medicine 9e Ch 169 • RACGP / ENT Society of Australia clinical guidelines

Question 12 | Sudden Sensorineural Hearing Loss (9 marks)

A 55-year-old man presents to your emergency department with sudden-onset right-sided hearing loss that he noticed on waking this morning. He describes associated tinnitus and aural fullness but no vertigo. He has no recent ear infection, trauma, or noise exposure. On examination, his external auditory canals and tympanic membranes appear normal bilaterally. Tuning fork testing (512 Hz) reveals: Weber test lateralises to the LEFT ear; Rinne test is positive (air conduction greater than bone conduction) bilaterally.

a) Define sudden sensorineural hearing loss AND state 3 audiometric criteria. (3 marks)

- **Sudden sensorineural hearing loss** = abrupt-onset hearing loss occurring within 72 hours, due to dysfunction of the cochlea, auditory nerve, or central auditory pathways **[core]**
- **Audiometric criteria:** ≥ 30 decibel loss across at least 3 contiguous frequencies **[core]**
- **Tuning fork tests support sensorineural loss** in the affected ear: Weber lateralises to the GOOD ear (sensorineural loss in right means perception of vibration in left); Rinne test positive bilaterally in pure SNHL (air conduction > bone conduction in both ears) **[core]**
- If conductive loss, Weber lateralises to the AFFECTED ear; Rinne is NEGATIVE on the affected side (bone > air conduction)

b) List 3 important differential diagnoses. (3 marks)

- **Idiopathic sudden sensorineural hearing loss** (presumed viral or autoimmune-mediated; greater than 70 percent of cases) **[core]**
- **Acoustic neuroma (vestibular schwannoma)** — typically gradual progression but may rarely present as sudden loss; magnetic resonance imaging required **[core]**
- **Cerebellar / brainstem stroke** (anterior inferior cerebellar artery territory) — associated focal neurological signs; consider in vascular risk patients **[core]**
- Ménière's disease (typically with vertigo and fluctuating hearing loss)
- Autoimmune inner ear disease (e.g. Cogan's syndrome)
- Trauma — barotrauma, perilymphatic fistula, head injury
- Ototoxicity (aminoglycosides, cisplatin, salicylates)
- Lyme disease, neurosyphilis, HIV

c) State 3 management priorities. (3 marks)

- **Urgent ENT referral within 24-48 hours** for formal audiometry and treatment; prognosis improves with early intervention **[core]**
- **Oral corticosteroids** — prednisolone 1 mg/kg daily (max 60 mg) for 10-14 days, then taper; intratympanic steroid injection alternative or adjunct **[core]**
- **Magnetic resonance imaging of internal auditory canal** — exclude acoustic neuroma; should be performed within weeks (non-urgent unless other neurological signs) **[core]**
- Investigate for underlying causes — vascular risk factors, autoimmune screen
- Counsel re prognosis: ~50-70 percent recovery with treatment; younger age, mild loss, absence of vertigo predict better outcome

References: eTG (Therapeutic Guidelines, current) • ACEM clinical policies and statements • Tintinalli's Emergency Medicine 9e Ch 169 • American Academy of Otolaryngology guidelines

Question 13 | Nasal Foreign Body in a Child (10 marks)

A 4-year-old male is brought to your emergency department by his mother who saw him push a green plastic bead into his right nostril 2 hours ago. He is now uncomfortable but otherwise well. Vital signs are within normal limits. On examination of the right nostril, you can see a green spherical foreign body in the anterior portion of the right nasal cavity. The child is mildly cooperative.

a) List 2 clinical features suggesting an occult (non-visualised) nasal foreign body. (2 marks)

- **Unilateral foul-smelling nasal discharge or unilateral epistaxis** (sentinel features — high specificity) **[core]**
- **Unilateral nasal obstruction or snoring; halitosis** **[core]**
- Unilateral facial pain or pressure
- History of object insertion (often denied; observe child's behaviour)
- Recurrent unilateral sinusitis

b) List 4 techniques for nasal foreign body removal AND state an advantage and disadvantage of each. (4 marks)

- **Positive pressure ('parent's kiss' or bag-mask):** occlude unaffected nostril, deliver puff of air through mouth (parent's kiss) or bag-mask. **Pro:** non-invasive, no equipment, no pain. **Con:** less effective for non-spherical objects, deeply embedded foreign bodies, or when nostril is fully occluded **[core]**
- **Direct removal with forceps** (alligator, Magill, hooked instrument): **Pro:** immediate; works for graspable objects. **Con:** requires cooperation; risk of pushing foreign body further posteriorly (into nasopharynx → aspiration); good lighting and equipment essential **[core]**
- **Suction catheter (ear or nose suction):** **Pro:** useful for non-graspable objects; less traumatic. **Con:** fixed-tip design; foreign body may not seal against tip **[core]**
- **Foley catheter / Fogarty technique:** pass small (5-6 French) catheter past foreign body, inflate balloon (1-2 mL), withdraw catheter, dragging foreign body anteriorly. **Pro:** useful for round or smooth objects. **Con:** requires cooperation; balloon may puncture **[core]**
- Cyanoacrylate (super-glue) on a stick — for non-graspable objects (rare in children — risk of tissue adhesion)
- Anatomical / topical preparation: vasoconstrictor (co-phenylcaine) reduces oedema; restraint or papoose may be needed in young children

c) List 4 indications to refer to an ENT surgeon (rather than attempt removal in the emergency department). (4 marks)

- **Button battery** in the nose — local necrosis from electrolytic injury; urgent ENT removal under direct visualisation **[core]**
- **Multiple or deeply embedded foreign bodies;** foreign bodies past the inferior turbinate (risk of aspiration) **[core]**
- **Failed attempts at ED removal** with ongoing risk of distal migration **[core]**
- **Uncooperative or distressed child** where general anaesthesia required **[core]**
- Magnets — bilateral or with battery (electrolytic injury)
- Penetrating or impaled object
- Active bleeding or significant swelling preventing direct visualisation

References: Royal Children's Hospital Melbourne CPG • eTG (Therapeutic Guidelines, current) • Tintinalli's Emergency Medicine 9e Ch 245

Question 14 | Aural Foreign Body (10 marks)

A 3-year-old boy is brought to your emergency department by his parents who saw him insert a kernel of uncooked popcorn into his right ear canal 1 hour ago. He is cooperative but mildly distressed. On otoscopy, you confirm a dry, light-coloured, round foreign body in the cartilaginous portion of the right external auditory canal. The tympanic membrane is not visualised.

a) List 4 techniques for aural foreign body removal AND state an advantage and disadvantage of each. (4 marks)

- **Direct grasping with alligator forceps:** **Pro:** immediate for soft, graspable objects (cotton, cloth). **Con:** ineffective for hard round objects (will be pushed further); risk of tympanic membrane injury **[core]**
- **Suction catheter (Yankauer or ear-specific suction):** **Pro:** useful for round, smooth objects; less traumatic. **Con:** requires appropriate seal; ineffective for soft / fragmenting objects **[core]**
- **Right-angled hook / curette behind the object:** **Pro:** useful for round objects in the cartilaginous canal. **Con:** risk of canal abrasion; requires direct visualisation and cooperation **[core]**
- **Irrigation with warm saline** (body temperature to avoid caloric stimulation): **Pro:** simple, low risk. **Con:** contraindicated for organic matter (vegetable, popcorn — swelling), perforated tympanic membrane, batteries **[core]**
- Cyanoacrylate on a swab — for non-graspable objects (rare; risk of glue contact with skin / membrane)
- Live insect — instil viscous lignocaine or mineral oil to kill insect first; then remove with forceps / suction
- General anaesthesia by ENT for difficult cases

b) List 3 considerations specific to organic matter (vegetable / popcorn) and 3 specific to button battery. (3 marks)

- **Organic matter:** avoid irrigation (swells); remove urgently before swelling occurs; soft tissue may fragment with mechanical removal **[core]**
- **Button battery:** TIME-CRITICAL EMERGENCY; remove within 2 hours if possible (electrolytic injury and pressure necrosis can perforate tympanic membrane); do NOT irrigate (worsens injury) **[core]**
- **Both:** refer to ENT if cannot be removed easily; document neurological examination, hearing assessment **[core]**
- Insect — kill before removal (mineral oil / viscous lignocaine) to prevent further canal trauma
- Sharp objects (small needles, glass) — extract carefully or refer to ENT

c) List 3 indications for referral to ENT for removal under general anaesthesia. (3 marks)

- **Failed initial removal attempt** with significant pain, bleeding, or risk of tympanic membrane injury **[core]**
- **Foreign body in deep / bony portion** of canal (medial third) — close to tympanic membrane; high risk of injury **[core]**
- **Uncooperative or young child** who cannot tolerate manual removal awake; papoose / sedation may be alternative in ED if unsuccessful **[core]**
- Button battery requiring careful removal
- Suspected tympanic membrane perforation
- Penetrating injury to canal

References: Royal Children's Hospital Melbourne CPG • eTG (Therapeutic Guidelines, current) • Tintinalli's Emergency Medicine 9e Ch 244

Question 15 | Auricular Haematoma (10 marks)

A 22-year-old man, an amateur rugby player, presents to your emergency department after sustaining a direct blunt blow to his left ear during a match approximately 6 hours ago. The auricle is grossly swollen, tense, with a fluctuant collection over the antihelix and scaphoid fossa. Normal contours of the cartilaginous auricle are obliterated. He has no other associated injuries.

a) Explain why an auricular haematoma requires drainage AND state the consequences of inadequate management. (3 marks)

- **Avascular auricular cartilage** depends on the overlying perichondrium for nutrition; haematoma between perichondrium and cartilage disrupts the blood supply **[core]**
- **Untreated haematoma** leads to fibrocartilaginous scar formation, with loss of normal contours and the development of 'cauliflower ear' (auricular deformity) **[core]**
- **Risk of secondary cartilage necrosis and chondritis**; permanent cosmetic deformity and potential functional impact **[core]**
- Ideally drain within 24-72 hours of injury before clot organisation

b) Describe the technique for drainage of an auricular haematoma in the emergency department (5 steps). (5 marks)

- **Local anaesthesia** — auricular block with 1 percent lidocaine without adrenaline (adrenaline in ear can cause ischaemia); ring block around the base of the auricle **[core]**
- **Aseptic preparation** with chlorhexidine; drape; senior involvement **[core]**
- **Aspirate large haematoma with 18-gauge needle and 10 mL syringe**, OR make a small incision (1-2 cm) along the helical line to evacuate clotted material **[core]**
- **Compression dressing** to prevent re-accumulation — through-and-through sutures over dental rolls (one anteriorly, one posteriorly); OR moulded silicone splint; OR plaster cast **[core]**
- **Antibiotic prophylaxis** with ciprofloxacin 500 mg orally twice daily for 5-7 days (Pseudomonas cover for auricular cartilage); review at 24-48 hours **[core]**
- Outpatient ENT or plastic surgery follow-up at 1-2 weeks; advise avoidance of contact sport for 2-4 weeks

c) List 2 indications for referral to ENT or plastic surgery rather than ED drainage. (2 marks)

- **Recurrent auricular haematoma** after initial drainage; failure of conservative approach; chronic / organised haematoma **[core]**
- **Associated complex cartilaginous injury or laceration** requiring formal repair; exposed cartilage; chondritis / cellulitis **[core]**
- Significant cosmetic deformity expected
- Patient preference / consent issues
- Bilateral haematomas

References: eTG Therapeutic Guidelines — Antibiotic • eTG (Therapeutic Guidelines, current) • Tintinalli's Emergency Medicine 9e Ch 244 • ANZ Burns Association / Plastic Surgery

Question 16 | Nasal Septal Haematoma (9 marks)

A 16-year-old boy presents to your emergency department after a direct blow to the nose during a basketball match 4 hours ago. He is complaining of pain and bilateral nasal obstruction. On examination, the nose is mildly deformed but no external laceration. Speculum examination of both nostrils reveals bilateral fluctuant swelling of the nasal septum, which is wider than the normal septal thickness.

a) Explain why a septal haematoma requires urgent drainage. (3 marks)

- **Septal cartilage is dependent on the overlying perichondrium** for blood supply; haematoma between perichondrium and cartilage disrupts nutrition **[core]**
- **Untreated haematoma** leads to septal cartilage necrosis and saddle-nose deformity (collapse of nasal bridge) **[core]**
- **Risk of septal abscess** with potential intracranial extension via venous drainage to cavernous sinus (rare but life-threatening) **[core]**

b) Describe the technique for drainage in the emergency department. (4 marks)

- **Local anaesthesia** with topical co-phenylcaine spray + infiltration of 1 percent lidocaine with adrenaline along the affected septum **[core]**
- **Vertical incision** along the most dependent / lower part of the haematoma with a #11 blade; aspirate clot with suction or by direct expression **[core]**
- **Bilateral approach** may be required for bilateral haematomas; staggered incisions to prevent septal perforation **[core]**
- **Bilateral nasal packing** (commercial nasal tampon or ribbon-gauze with bismuth iodoform paraffin paste) to compress the septum and prevent re-accumulation; for 24-48 hours **[core]**
- Antibiotic prophylaxis (amoxicillin-clavulanate or cephalexin) for the duration of nasal packing
- ENT consultation; outpatient follow-up at 24-48 hours

c) List 2 complications of untreated septal haematoma. (2 marks)

- **Saddle-nose deformity** from septal cartilage necrosis **[core]**
- **Septal abscess** with potential intracranial extension (cavernous sinus thrombosis, meningitis) **[core]**
- Septal perforation
- Chronic nasal obstruction

References: eTG Therapeutic Guidelines — Antibiotic • eTG (Therapeutic Guidelines, current) • Tintinalli's Emergency Medicine 9e Ch 244

Question 17 | Temporomandibular Joint Dislocation (10 marks)

A 23-year-old woman self-presents to triage with her partner. She is drooling and unable to close her mouth, appearing in significant discomfort. Her partner reports she had been well recently and her symptoms started after she yawned widely 30 minutes ago. On examination, her mouth is held open in an abnormal position, with the lower jaw protruding and the chin deviated. She is unable to bite down. Her vital signs are within normal limits.

a) State the diagnosis AND name the anatomical structures involved with direction of displacement. (3 marks)

- **Bilateral anterior temporomandibular joint dislocation** (most common; patient cannot close mouth) **[core]**
- **Mandibular condyles** dislocate ANTERIORLY past the articular eminences **[core]**
- **Pterygoid muscle spasm** and capsular stretch maintain the dislocation **[core]**
- Often triggered by wide mouth opening — yawning, laughing, dental procedure, vomiting
- Risk factors: hypermobile joints (Ehlers-Danlos), previous dislocation, neuroleptic-induced dystonia

b) Describe approach to imaging. (2 marks)

- **Clinical diagnosis is sufficient** in uncomplicated cases; reduction is the priority **[core]**
- **Pre-reduction radiograph** (orthopantomogram or panorex) only if concern for associated mandibular fracture (history of trauma, lateralised presentation, or unable to confirm diagnosis clinically) **[core]**
- Post-reduction film documents successful reduction

c) Describe 2 techniques for reduction (4 marks — 2 per technique). (4 marks)

- **Conventional (Hippocratic) technique:** sit patient with head supported (against a wall); operator stands in front, places thumbs (wrapped in gauze) on lower molars bilaterally; fingers cradle the mandible below; apply downward AND posterior pressure, simultaneously rotating mandible to allow condyles to slip back into the fossae **[core]**
- **Conventional benefits:** well-established; reliable for most dislocations. **Drawbacks:** requires patient cooperation; risk of operator bite; may require sedation **[core]**
- **Wrist-pivot (Awad) technique:** operator faces patient; fingers under chin / around mandible, thumbs over molars; rotate wrists downward to 'pivot' the mandible — chin lifts up and mandible moves posteriorly **[core]**
- **Wrist-pivot benefits:** less force required; less risk of operator bite. **Drawbacks:** less familiar; technique requires practice **[core]**
- Procedural sedation with midazolam ± fentanyl, OR ketofol, often required to relieve pterygoid muscle spasm
- Soft-tissue muscle relaxant (diazepam) or local anaesthetic injection into TMJ may be alternative

d) List 2 components of discharge advice. (1 mark)

- Soft diet for 1-2 weeks; avoid wide mouth opening (avoid laughing, yawning with wide-open mouth, hard biting) **[core]**
- Support jaw with hand when yawning, sneezing, or vomiting
- Outpatient ENT or maxillofacial follow-up if recurrent dislocations

References: eTG (Therapeutic Guidelines, current) • Tintinalli's Emergency Medicine 9e Ch 252 • ACEM clinical policies and statements

Question 18 | Pharyngitis and the Centor Criteria (10 marks)

A 16-year-old girl presents to your emergency department with a 3-day history of severe sore throat, fever, and dysphagia. On examination, she has a temperature of 38.5 degrees Celsius, tender anterior cervical lymphadenopathy, exudative tonsillitis, and no cough. Her tonsils are swollen and erythematous with white-yellow exudate bilaterally. She has no other features of upper respiratory tract infection.

a) Describe the modified Centor criteria AND state this patient's score. (4 marks)

- **Centor criteria (1 point each):** tonsillar exudate; tender anterior cervical lymphadenopathy; absence of cough; fever $>38^{\circ}\text{C}$ [core]
- **Modified Centor (Mclsaac) — adds age weighting:** age 3-14 years +1; age 15-44 years 0; age ≥ 45 years -1 [core]
- **This patient score = 4 (exudate, lymphadenopathy, no cough, fever) + 1 (age 16) —** Wait, age 15-44 is 0; score = 4 (high probability of GAS pharyngitis) [core]
- **Score 4-5:** 50-60 percent likelihood of Group A streptococcal pharyngitis — consider rapid strep test or treat empirically [core]

b) List 4 indications for antibiotic therapy in pharyngitis. (4 marks)

- **Centor / Mclsaac score 3-5** with positive rapid antigen detection test or throat swab culture for Group A streptococcus [core]
- **Severe symptoms** — toxicity, severe pain affecting hydration, peritonsillar complication [core]
- **High-risk populations** — Indigenous Australians, Pacific Islander, Maori (rheumatic fever risk); known rheumatic heart disease history [core]
- **Confirmed Group A streptococcus** on throat swab (treat all positive in high-risk populations to prevent rheumatic fever) [core]
- Suspected scarlet fever
- Persistent symptoms beyond 7 days

c) State the antibiotic regimen of choice. (2 marks)

- **Phenoxymethylpenicillin (penicillin V) 500 mg orally twice daily for 10 days** (per eTG); benzathine benzylpenicillin 1.2 million units intramuscular single dose as alternative [core]
- **If penicillin allergy: cephalexin 500 mg orally twice daily for 10 days OR azithromycin 500 mg orally daily for 5 days** [core]
- Avoid amoxicillin if Epstein-Barr virus considered (rash precipitation)

References: eTG Therapeutic Guidelines — Antibiotic • eTG (Therapeutic Guidelines, current) • Tintinalli's Emergency Medicine 9e Ch 244 • RHD Australia / NHMRC RHF Prevention Guidelines

Question 19 | Acute Sialadenitis (9 marks)

A 65-year-old man with type 2 diabetes mellitus and chronic kidney disease presents with a 2-day history of right-sided facial swelling and pain around his ear and jaw. He has noticed that the pain worsens when eating. On examination, there is marked tender swelling over the right parotid region, with overlying erythema. Stensen's duct (in the buccal mucosa opposite the upper second molar) is erythematous, with expression of purulent material on massage of the gland.

a) List 3 clinical features distinguishing acute bacterial sialadenitis from viral parotitis. (3 marks)

- **Unilateral involvement** in bacterial (typically) versus bilateral in viral (mumps) **[core]**
- **Purulent discharge from the duct** with massage in bacterial (Staphylococcus aureus most common); clear or absent in viral **[core]**
- **Risk factors for bacterial:** dehydration, immunosuppression, oral neglect, salivary stasis (sialolithiasis); viral mumps in children, parotitis with systemic features **[core]**
- Salivary stones (sialolithiasis) precipitate bacterial infection
- Mumps has prodrome and parotid involvement is bilateral and tender

b) List 3 immediate management priorities. (3 marks)

- **Empirical intravenous antibiotics — flucloxacillin 1 g intravenous every 6 hours** (covers Staphylococcus aureus); add metronidazole if anaerobic involvement (deep neck infection); cefazolin if penicillin allergy **[core]**
- **Hydration and sialogogue stimulation** — intravenous fluids; chewing sour sweets or citrus; warm compresses; gland massage **[core]**
- **Analgesia and oral hygiene** — regular paracetamol + ibuprofen + opioid if needed; chlorhexidine mouthwash **[core]**
- Investigate underlying cause — diabetes optimisation, ductal stone, chronic dehydration
- Imaging (ultrasound or computed tomography of neck) to identify abscess or duct stone if not resolving
- Send pus for culture and sensitivity

c) List 3 indications for surgical / interventional drainage. (3 marks)

- Abscess formation on imaging (computed tomography or ultrasound) — incision and drainage **[core]**
- Failure of medical therapy after 48-72 hours of intravenous antibiotics **[core]**
- Sialolithiasis with obstruction — sialendoscopy or surgical removal **[core]**
- Necrotising or fistulating sialadenitis
- Chronic recurrent sialadenitis

References: eTG Therapeutic Guidelines — Antibiotic • eTG (Therapeutic Guidelines, current) • Tintinalli's Emergency Medicine 9e Ch 244

Question 20 | Cervical Lymphadenopathy in an Adolescent (10 marks)

A 16-year-old boy is brought to your emergency department by his parents with a 6-day history of fever, fatigue, weight loss, and a non-painful firm lump on the left lateral neck. He denies cough, dyspnoea, or gastrointestinal or urinary symptoms. On examination, his vital signs are: heart rate 110 beats per minute, blood pressure 108/62 millimetres of mercury, respiratory rate 18 breaths per minute, peripheral oxygen saturation 98 percent on room air, temperature 39.2 degrees Celsius. There is a 4 by 5 centimetre rubbery, non-tender, non-mobile mass in the left supraclavicular region. Tonsils are normal. Spleen is palpable 2 centimetres below the costal margin.

a) List 3 important differential diagnoses. (3 marks)

- **Lymphoma** (Hodgkin's or non-Hodgkin's) — B-symptoms (fever, night sweats, weight loss); supraclavicular nodes, splenomegaly **[core]**
- **Infectious mononucleosis (Epstein-Barr virus)** — fever, sore throat, lymphadenopathy, splenomegaly; common in this age group **[core]**
- **Mycobacterial lymphadenitis** — tuberculous or atypical (non-tuberculous mycobacterium); chronic / firm rubbery node, associated systemic features **[core]**
- Toxoplasmosis, cytomegalovirus, HIV (seroconversion)
- Cat scratch disease (*Bartonella henselae*)
- Bacterial lymphadenitis (*Staphylococcus aureus*, *Streptococcus pyogenes*)
- Metastatic carcinoma (rare in this age group; consider thyroid, nasopharyngeal)

b) List 4 important historical features to elicit. (4 marks)

- **B-symptoms** — fever, drenching night sweats, weight loss >10 percent in 6 months (classic for lymphoma) **[core]**
- **Travel and exposure history** — tuberculosis-endemic region; cats (cat scratch disease); raw / undercooked meat (toxoplasmosis); sexual exposure (HIV) **[core]**
- **Sore throat, sick contacts** (infectious mononucleosis); upper respiratory tract infection **[core]**
- **Vaccination history, family history of malignancy or autoimmune disease** **[core]**
- Drug history (phenytoin can cause pseudolymphoma; antibiotics may have been tried)
- Recent dental work or skin breakdown (regional lymphadenitis)

c) List 3 investigations with rationale. (3 marks)

- **Full blood count + film + lactate dehydrogenase + monospot / EBV serology** — atypical lymphocytes (mononucleosis), anaemia, thrombocytopaenia (lymphoma) **[core]**
- **Ultrasound of neck** — characterises node; guides biopsy **[core]**
- **Excisional lymph node biopsy** — definitive for lymphoma diagnosis (histological subtyping); preferred to fine-needle aspiration in this setting **[core]**
- Chest radiograph and computed tomography of chest, abdomen, pelvis — staging if lymphoma
- Tuberculin skin test or IGRA, HIV testing, toxoplasmosis serology

References: eTG (Therapeutic Guidelines, current) • ACEM clinical policies and statements • Tintinalli's Emergency Medicine 9e Ch 244 • Australian Lymphoma Network guidelines