ENT

Ear · Nose · Throat

A Comprehensive Study Guide

MBBS Year IV | NUMS 2025 – 26

Structured in the AMEE Educational Guide Format

Sections Covered

Section I – The Ear
Section II – The Nose & Paranasal Sinuses
Section III – Throat, Larynx & Neck
Section IV – Clinical Skills & Procedures
Section V – Self-Assessment (MCQs, SAQs & OSCEs)

National University of Medical Sciences (NUMS)

How to Use This Guide

This guide is organised according to AMEE (Association for Medical Education in Europe) educational guide principles. Each chapter follows a systematic approach: Applied Anatomy → Pathophysiology → Clinical Features → Investigations → Management → Complications → Key Points.

Guide Features

- Learning Outcomes: mapped directly to the NUMS Year-IV ENT curriculum
- Colour-coded callout boxes: Key Points (navy), Clinical Pearls (teal), Mnemonics (amber)
- Comparison tables for differential diagnosis
- Clinical Skills checklists aligned to the NUMS rotation logbook
- Self-assessment questions at two cognitive levels (Recall & Application) matching the Table of Specifications

Bloom's Taxonomy Alignment

Cognitive Level	Examples in this Guide
Remember / Recall (20%)	Definitions, anatomy, classifications, normal values
Understand / Apply (80%)	Interpret investigations, formulate differentials, plan management

NUMS Examination Blueprint (ENT)

Component	Format	Time	Notes
Theory Paper 1	60 MCQs × 1 mark	60 min	Recall 20 + Application 40
Theory Paper 2	8 SAQs × 5 marks each	120 min	Application focus
OSCE Practical	13 stations × 5–8 marks	65 min	Observed + Non-observed
Internal Assessment	20 marks	Ongoing	EOB + Pre-annual

SECTION I — THE EAR

Chapter 1: Applied Anatomy & Physiology of the Ear

A sound working knowledge of ear anatomy is the foundation for understanding all ENT pathology. The ear is divided into three parts: external, middle, and inner ear.

1.1 External Ear

- Pinna (auricle): fibroelastic cartilage; functions as a sound funnel
- External auditory canal (EAC): 2.5 cm long; outer 1/3 cartilaginous (contains ceruminous glands); inner 2/3 bony
- Tympanic membrane (TM): thin, translucent; cone of light (anteroinferior); pars tensa & pars flaccida; landmarks: handle of malleus, lateral process, light reflex

1.2 Middle Ear (Tympanic Cavity)

- Ossicles: Malleus – Incus – Stapes (mnemonic: MIS)
- Eustachian tube: 3.5 cm; opens during swallowing/yawning; equalises pressure; dysfunction → otitis media with effusion
- Aditus & mastoid antrum: posterior communication; mastoid air cells
- Facial nerve (CN VII) runs through the tympanic cavity — vulnerable in surgery

1.3 Inner Ear

- Cochlea: hearing organ; tonotopic organisation (base = high freq; apex = low freq)
- Vestibular apparatus: semicircular canals (angular acceleration), utricle & saccule (linear acceleration & gravity)
- Cochlear nerve (CN VIII): carries auditory signals to brainstem

1.4 Physiology of Hearing

Concept	Detail
Sound transmission	Sound → TM → ossicles → oval window → perilymph → hair cells → CN VIII → auditory cortex
Impedance matching	Middle ear amplifies sound 22× to overcome air-fluid impedance mismatch at oval window
Frequency range	20 – 20,000 Hz (speech: 500 – 3000 Hz; tested by audiogram)

★ Key Points — Anatomy

- ✓ Pars flaccida is the most common site for cholesteatoma formation
- ✓ Stapedius muscle is supplied by facial nerve; its absence causes hyperacusis
- ✓ Eustachian tube is more horizontal in children — increased otitis media risk
- ✓ The chorda tympani (branch of CN VII) runs through the middle ear

Chapter 2: Ear Discharge & Otitis Media

Otorrhoea is one of the commonest ENT presentations. Always determine: acuity (acute vs chronic), character (mucoid, mucopurulent, serous, bloody), odour, and associated symptoms.

2.1 Differential Diagnosis of Discharging Ear

Condition	Key Features
ASOM (Acute Suppurative OM)	Purulent, profuse, sudden; after TM perforation → pain relief
CSOM — Tubotympanic (safe)	Mucopurulent, central perforation, no cholesteatoma, central perf
CSOM — Atticoantral (unsafe)	Scanty, offensive, marginal/attic perforation, cholesteatoma risk
Otitis Externa	Serous/purulent, painful, normal TM, fungal in immunocompromised
CSF Otorrhoea	Clear, watery, halo sign on filter paper; following skull base fracture
Bloody discharge	Trauma, temporal bone fracture, glomus tumour, carcinoma

2.2 Acute Suppurative Otitis Media (ASOM)

- Aetiology: Streptococcus pneumoniae, Haemophilus influenzae, Moraxella catarrhalis
- Risk factors: URTI, Eustachian tube dysfunction, adenoid hypertrophy, cleft palate, Down syndrome

Stages of ASOM

1. Hyperaemia: fullness, otalgia
2. Exudation: severe pain, TM bulging
3. Suppuration: TM red, bulging, loss of landmarks
4. Resolution: TM perforates → pus drains → pain relief → healing
5. Complication: mastoiditis, meningitis, brain abscess if untreated

- Management: analgesia, antibiotics (amoxicillin first line), myringotomy if TM bulging

2.3 Chronic Suppurative Otitis Media (CSOM)

Feature	Tubotympanic	Atticoantral	Note
Feature	Tubotympanic (Safe)	Atticoantral (Unsafe)	Clinical Importance
Perforation site	Central	Marginal / Attic	Marginal perfs more dangerous
Discharge	Profuse, mucoid	Scanty, offensive	Offensive = bone erosion
Cholesteatoma	Absent	Present	Cholesteatoma = bone-eroding risk
Management	Conservative + antibiotics	Surgery (mastoidectomy)	Safe ≠ no complications

2.4 Complications of CSOM

- Intracranial: meningitis, brain abscess, lateral sinus thrombosis, subdural abscess
- Extracranial: mastoiditis, facial nerve palsy, labyrinthitis, petrositis

Red Flags in Ear Discharge — Refer Urgently

- ✓ Facial nerve palsy
- ✓ Sudden sensorineural hearing loss
- ✓ Vertigo or nystagmus
- ✓ Offensive discharge (cholesteatoma until proven otherwise)
- ✓ Headache or neck stiffness (intracranial complication)

Chapter 3: Hearing Loss (Deafness)

Classify hearing loss by type (conductive, sensorineural, mixed), laterality, onset (congenital, acquired), and severity (mild 26–40 dB, moderate 41–70 dB, severe 71–90 dB, profound >90 dB).

3.1 Differential Diagnosis by Type

Type	Common Causes
CONDUCTIVE — External ear	Wax, foreign body, otitis externa, bony atresia
CONDUCTIVE — Middle ear	ASOM, OME/Glue ear, CSOM, otosclerosis, TM perforation, ossicular disruption
SENSORINEURAL — Cochlear	Presbyacusis, noise-induced (NIHL), drug-induced (ototoxicity), Menière's disease
SENSORINEURAL — Retrocochlear	Acoustic neuroma (vestibular schwannoma), MS, CPA tumours
MIXED	Chronic otitis media + inner ear involvement
Non-organic	Psychogenic / functional hearing loss

3.2 Tuning Fork Tests (512 Hz standard)

Test	Conductive	Sensorineural	Normal
Test	Conductive Loss	Sensorineural Loss	Normal
Rinne	AC < BC (Rinne negative)	AC > BC (Rinne positive)	AC > BC
Weber	Lateralises to WORSE ear	Lateralises to BETTER ear	No lateralisation
Absolute Bone Conduction (ABC)	Normal	Reduced	Normal

3.3 Audiogram Interpretation

- Pure tone audiogram (PTA): plots hearing threshold vs frequency (250–8000 Hz)
- Air conduction (AC): symbol ○ (right), × (left)
- Bone conduction (BC): symbol < (right), > (left)
- Air-bone gap (ABG) >15 dB = conductive component
- Tympanometry: Type A normal; Type B flat (fluid/perforation); Type C negative pressure (ET dysfunction)

3.4 Ototoxic Drugs — Mnemonic: FLAG

Mnemonic: FLAG (Ototoxic Agents)

- ✓ F — Furosemide (loop diuretics)
- ✓ L — cispiLatin and other platinum-based chemotherapy
- ✓ A — Aminoglycosides (gentamicin, streptomycin, amikacin)
- ✓ G — Glycopeptides (vancomycin, teicoplanin)

3.5 Rehabilitation of the Deaf

- Hearing aids: behind-the-ear (BTE), in-the-ear (ITE), bone-anchored (BAHA)
- Cochlear implants: indicated for profound bilateral SNHL, failed hearing aid trial
- Auditory-verbal therapy, sign language, lip-reading
- Medico-legal: occupational noise-induced hearing loss is a notifiable industrial disease

Chapter 4: Otalgia (Ear Pain)

Otalgia may be primary (ear pathology) or referred. The rich nerve supply of the ear (CN V, VII, IX, X, C2-C3) explains the wide range of referred sources.

4.1 Causes — Mnemonic: PRIMARY & REFERRED

Primary Otalgia	Key Features
Boil (Furunculosis)	Localised, exquisitely tender, tragus pain on movement; Staph aureus
Otitis Externa	Diffuse, canal oedema, pulling pinna worsens pain
ASOM	Severe throbbing, deep; preceded by URTI
Herpes Zoster Oticus (Ramsay Hunt)	Otalgia + vesicles in EAC + facial palsy (CN VII) ± SNHL
Perichondritis	Post-trauma/surgery; pinna swollen, tender
Barotrauma	During descent; haemotympanum; diving/flying

Referred Otalgia Source	Nerve Pathway
Temporomandibular Joint (TMJ) dysfunction	Pain on jaw movement, clicking; CN V3
Dental pathology	Carious teeth, periapical abscess; CN V3
Tonsillitis / Quinsy	Glossopharyngeal nerve (CN IX)
Tongue base tumour	CN IX; referred to ear; examine tongue base
Cervical spine disease	C2/C3 dermatomes
Oesophageal foreign body	CN X (Arnold's nerve)

★ Clinical Pearl

✓ Any adult with otalgia and no obvious ear pathology — MUST examine the pharynx, larynx, and tongue base to exclude malignancy.

✓ Referred otalgia is more common than primary otalgia in adults over 50.

Chapter 5: Vertigo & Tinnitus

5.1 Vertigo — Overview

Vertigo is an illusion of movement (self or environment). Distinguish from: dizziness (lightheadedness), presyncope, disequilibrium (balance problem without sensation of rotation).

5.2 Peripheral vs Central Vertigo

Feature	Peripheral	Central	Clue
Feature	Peripheral	Central	Clue
Onset	Sudden	Gradual	Sudden = peripheral
Severity	Severe	Mild–moderate	Severe = peripheral
Nystagmus	Horizontal/rotatory; fatigable	Direction-changing; non-fatigable	Fatigable = peripheral
Hearing loss	May be present	Absent (usually)	Hearing loss → ear cause
Tinnitus	Common	Rare	Tinnitus → ear cause
Neurological Sx	Absent	May be present	CNS signs → central

5.3 Common Causes of Peripheral Vertigo

Condition	Key Features
BPPV	Commonest; brief (< 1 min); triggered by head position change; Dix-Hallpike test positive; treated with Epley manoeuvre
Vestibular Neuronitis	Sudden severe vertigo, no hearing loss; post-viral; resolves in weeks; Rx vestibular suppressants
Menière's Disease	Triad: episodic vertigo + low-frequency SNHL + tinnitus; treated medically (betahistine, diuretics); surgery for refractory
Labyrinthitis	Vertigo + hearing loss; viral or bacterial; bacterial labyrinthitis from CSOM is an emergency
Acoustic Neuroma	Progressive unilateral SNHL + tinnitus + vertigo; diagnosed by MRI; CPA angle tumour

Mnemonic — Menière's Triad: HAVE

✓ H — Hearing loss (low-frequency SNHL)

✓ A — Aural fullness

✓ V — Vertigo (episodic, 20 min – 12 hours)

✓ E — Ear noise (tinnitus, low-pitched roaring)

5.4 Tinnitus

- Definition: sound perceived without external acoustic stimulus
- Objective tinnitus: audible to examiner (vascular: pulsatile, palatal myoclonus); rare
- Subjective tinnitus: heard only by patient; much more common

Aspect	Detail
Causes	Noise exposure, otosclerosis, CSOM, Menière's, ototoxic drugs, acoustic neuroma, hypertension, anaemia
Investigations	Audiogram, tympanogram, MRI (if unilateral SNHL), FBC, TFT, lipid profile
Management	Treat underlying cause; sound therapy (white noise maskers); CBT; TRT (tinnitus retraining therapy)

Chapter 6: Facial Nerve Palsy

6.1 Anatomy of the Facial Nerve (CN VII)

- Course: motor nucleus → internal auditory canal → geniculate ganglion → tympanic segment (across middle ear) → mastoid segment → stylomastoid foramen → parotid gland
- Branches: temporal, zygomatic, buccal, marginal mandibular, cervical (mnemonic: Two Zombies Bit My Cat)

6.2 Upper vs Lower Motor Neuron Lesion

Type	Features
Upper Motor Neuron (UMN)	Forehead spared (bilateral cortical supply); contralateral lower face weak; CVA, tumour
Lower Motor Neuron (LMN)	Entire ipsilateral face involved including forehead; Bell's palsy, CSOM, parotid tumour

6.3 Causes of LMN Facial Palsy — Mnemonic: BATS

Mnemonic: BATS

- ✓ B — Bell's palsy (idiopathic; most common)
- ✓ A — Attic disease (unsafe CSOM / cholesteatoma)
- ✓ T — Trauma (temporal bone fracture, ear surgery)
- ✓ S — Skull base tumour (parotid, acoustic neuroma); Sarcoidosis; Stroke (UMN)

6.4 Bell's Palsy

- Cause: reactivation of herpes simplex virus in geniculate ganglion
- Features: sudden unilateral LMN palsy; may have post-auricular pain, altered taste (chorda tympani), hyperacusis
- Management: prednisolone 50 mg/day × 10 days (within 72 hrs); antiviral (acyclovir) if severe; eye care (tape/lubricants)
- Prognosis: 70% recover completely; poor prognostic signs: complete palsy at onset, older age, Ramsay Hunt

6.5 Electrophysiological Tests for Facial Nerve

- Electroneuronography (ENoG): compares evoked compound muscle action potentials bilateral; >90% degeneration = poor prognosis
- Electromyography (EMG): assesses reinnervation potential

6.7 Ear Tumours — Overview

Tumour	Key Points
Basal cell carcinoma (BCC) pinna	Commonest; sun-exposed; pearly nodule; Rx excision/radiotherapy
Squamous cell carcinoma (SCC) pinna/EAC	Aggressive; may invade temporal bone; radical surgery
Glomus tumour	Vascular; pulsatile tinnitus, conductive deafness, 'rising sun' behind TM; Rx surgery/radiotherapy
Acoustic neuroma	Vestibular schwannoma; unilateral SNHL + tinnitus; CPA angle; Rx surgery, gamma knife

SECTION II — NOSE & PARANASAL SINUSES

Chapter 7: Applied Anatomy & Physiology of the Nose

The nose is divided by the nasal septum into two cavities. The three turbinates (inferior, middle, superior) increase surface area for warming, humidifying, and filtering inspired air.

7.1 Key Anatomical Landmarks

- Little's area (Kiesselbach's plexus): anteroinferior septum; anastomosis of 5 vessels; commonest site of epistaxis
- Ostiomeatal complex (OMC): key drainage pathway for frontal, maxillary, anterior ethmoid sinuses; blockage → sinusitis
- Paranasal sinuses: maxillary (largest; most commonly infected), frontal, ethmoid (anterior/posterior), sphenoid
- Cribriform plate: olfactory nerves pass through; fracture → anosmia + CSF rhinorrhoea

7.2 Physiological Functions of the Nose

Function	Details
Airway	Primary airway; humidification (up to 95%), warming (to 37°C), filtration (mucus-ciliary clearance)
Olfaction	CN I (olfactory); anosmia = significant quality-of-life impact
Resonance	Voice quality; hypo-nasality in nasal obstruction
Sinus drainage	Mucociliary transport from sinuses to nasal cavity

Chapter 8: Nasal Obstruction

Nasal obstruction may be unilateral or bilateral, adult or paediatric. The age and laterality narrow the differential considerably.

8.1 Differential Diagnosis by Age & Laterality

Condition	Laterality	Age	Key Feature
Condition	Laterality	Age Group	Key Feature
DNS (Deviated Nasal Septum)	Unilateral (variable)	Adult	Septal spur; Rx septoplasty
Nasal Polypi	Bilateral (usually)	Adult > child	Pale/grey glistening masses; anosmia
Adenoid Hypertrophy	Bilateral	Child	Snoring, OME, adenoid facies
Foreign Body	Unilateral	Child	Unilateral offensive discharge; X-ray
Angiofibroma	Unilateral	Adolescent male	Profuse epistaxis; highly vascular
Choanal Atresia	Unilateral or bilateral	Neonate	Bilateral = respiratory emergency at birth

Condition	Laterality	Age	Key Feature
Obstructive Sleep Apnoea	Bilateral	Middle-aged, obese	Apnoea episodes, daytime somnolence
Ca Maxilla / Nasopharynx	Unilateral	Adult	Unilateral discharge, epistaxis, cranial nerve palsies

8.2 Nasal Polypi

- Aetiology: chronic inflammatory mucosal oedema; associated with asthma, aspirin intolerance (Samter's triad), CF, allergy
- Appearance: pale, grey, glistening, insensate (unlike turbinates which bleed on touch)
- Management: topical steroids (first line); systemic steroids; functional endoscopic sinus surgery (FESS)

8.3 Obstructive Sleep Apnoea (OSA)

- Definition: ≥5 apnoea episodes/hour; apnoea = cessation of airflow >10 seconds
- Diagnosis: overnight polysomnography (gold standard)
- Management stepwise: weight loss, positional therapy, CPAP (continuous positive airway pressure), uvulopalatopharyngoplasty (UPPP), DISE-guided surgery

⋆ Key Points — Nasal Obstruction

✓ Juvenile angiofibroma: adolescent male + unilateral nasal obstruction + profuse epistaxis = biopsy contraindicated (risk of haemorrhage); CT/MRI first

✓ SAMTER'S TRIAD: Asthma + Nasal polyps + Aspirin intolerance

✓ Bilateral choanal atresia presents at birth with cyanosis relieved by crying — a neonatal emergency requiring oral airway

✓ Adenoid facies: open mouth, elongated face, crowded teeth, high arched palate, hyponasal speech

Chapter 9: Rhinitis & Epistaxis

9.1 Classification of Rhinitis

Type	Features	Cause/Trigger	Management
Type	Characteristics	Triggers / Cause	Management
Allergic (seasonal)	Sneezing, watery rhinorrhoea, itching, nasal congestion; seasonal	Pollens (hay fever)	Antihistamines, topical steroids, allergen avoidance
Allergic (perennial)	Year-round symptoms; may have anosmia	Dust mites, pet dander, mould	As above + immunotherapy
Vasomotor (non-allergic)	No IgE mediation; triggered by temperature, smoke, stress	Autonomic imbalance	Topical ipratropium, surgery
Infective	Viral (common cold) or bacterial secondary infection	Rhinovirus, RSV	Supportive; antibiotics if bacterial

Type	Features	Cause/Trigger	Management
Rhinitis Medicamentosa	Rebound congestion after stopping topical decongestants	Oxymetazoline overuse (>5–7 days)	Topical steroid taper
Atrophic Rhinitis	Foul smell (ozaena), crusting, paradoxical congestion	Klebsiella ozaenae, post-surgical	Saline irrigation, antibiotics

9.2 Allergic Rhinitis — Investigation

- Skin prick test (SPT): most useful; tests IgE-mediated response to specific allergens
- RAST (radioallergosorbent test): serum specific IgE; used if SPT not feasible
- Nasal cytology: eosinophils = allergic; neutrophils = infective
- Nasal endoscopy: pallor, boggy turbinates, polypi

9.3 Epistaxis (Nosebleed)

Epistaxis is classified as anterior (90%; from Little's area) or posterior (10%; from sphenopalatine artery; more severe).

Common Causes — Mnemonic: HITS

Mnemonic: HITS (Epistaxis Causes)

- ✓ H — Hypertension & Haematological disorders (thrombocytopenia, haemophilia)
- ✓ I — Idiopathic / Infections (rhinitis, sinusitis)
- ✓ T — Trauma (picking, FB, fracture); Telangiectasia (HHT)
- ✓ S — Surgery / Septal perforation; Systemic drugs (aspirin, warfarin)

Management Algorithm

6. First aid: pinch soft part of nose (Kiesselbach's); lean forward; ice pack over nose; 20 minutes
7. Anterior bleeding: visualise with nasal speculum; cauterise (silver nitrate stick) or anterior nasal packing (ANP with BIPP ribbon/Merocel)
8. Posterior bleeding: posterior nasal packing (Brighton balloon / Foley catheter) ± ANP; admit, monitor vitals
9. Refractory: arterial ligation (SPA endoscopically) or embolisation

Chapter 10: Sinusitis & Facial Pain

Sinusitis (rhinosinusitis) is inflammation of the paranasal sinuses, almost always combined with rhinitis (hence rhinosinusitis). Classification: acute (<4 weeks), subacute (4–12 weeks), chronic (>12 weeks).

10.1 Pathophysiology

- OMC blockage → impaired mucociliary drainage → mucosal oedema → bacterial superinfection
- Bacteria: S. pneumoniae, H. influenzae (acute); Staph aureus, anaerobes (chronic)
- Fungi: Aspergillus species in immunocompromised patients (invasive fungal sinusitis = emergency)

10.2 Diagnosis

Investigation	Findings
Symptoms	Facial pain/pressure, nasal obstruction, nasal discharge (anterior/posterior), hyposmia/anosmia
Endoscopy findings	Purulent discharge from OMC, polypi, mucosal oedema
CT sinuses (gold standard)	OMC disease, polypi, ostiomeatal anatomy; read for: mucosal thickening, air-fluid levels, bone erosion
X-ray (limited use)	Air-fluid level in maxillary sinus; poor sensitivity for other sinuses

10.3 Management

- Acute: intranasal steroids, nasal saline irrigation, analgesics; antibiotics (amoxicillin-clavulanate) if bacterial features persist >10 days
- Chronic: prolonged topical steroids (3 months), saline irrigation; FESS if refractory
- Functional Endoscopic Sinus Surgery (FESS): aims to restore normal drainage; directed at the OMC

10.4 Complications of Sinusitis

Site	Complications
Orbital	Periorbital oedema (pre-septal), orbital cellulitis, subperiosteal abscess, orbital abscess, cavernous sinus thrombosis (Chandler's classification I–V)
Intracranial	Meningitis, brain abscess, subdural empyema, superior sagittal sinus thrombosis
Bony	Osteomyelitis of frontal bone (Pott's puffy tumour = frontal osteomyelitis + subperiosteal abscess)

10.5 Differential Diagnosis of Facial Pain

Condition	Distinguishing Feature
Acute sinusitis	Positional, pressure sensation, nasal discharge, nasal obstruction
Trigeminal neuralgia	Electric shock-like, trigger zones, no nasal symptoms
Cluster headaches	Periorbital, autonomic features (lacrimation, Horner's)
Dental pain	Localised to tooth; worst with biting
TMJ dysfunction	Pre-auricular, worsens with jaw movement, clicking
Migraine	Unilateral, throbbing, photophobia, nausea

SECTION III — THROAT, LARYNX & NECK

Chapter 11: Sore Throat & Tonsillitis

Sore throat accounts for 10% of GP visits. Distinguish between viral (self-limiting, 90%) and bacterial (Group A Streptococcus, 10%) causes using clinical scoring systems.

11.1 Modified Centor (McIsaac) Score for Strep Throat

Criterion	Score
Tonsillar exudate or swelling	+1
Tender anterior cervical lymphadenopathy	+1
Temperature >38°C	+1
Absent cough	+1
Age 3–14 years	+1; Age 15–44 = 0; Age ≥45 = −1

Score ≥3: throat swab + empirical antibiotics; Score <3: antibiotics not indicated; viral cause likely.

11.2 Acute Tonsillitis

Aspect	Detail
Causative agents	Group A β-haemolytic Streptococcus (GAS), EBV (Infectious mononucleosis), adenovirus, Fusobacterium necrophorum
Features	Severe sore throat, dysphagia, odynophagia, fever, tonsillar enlargement, exudate, cervical lymphadenopathy
Management	Analgesia (paracetamol, ibuprofen), hydration; antibiotics: phenoxymethylpenicillin (penicillin V) 10 days; avoid ampicillin/amoxicillin in suspected EBV (rash risk)
Complications	Quinsy (peritonsillar abscess), parapharyngeal abscess, rheumatic fever (rare), post-streptococcal GN

11.3 Infectious Mononucleosis (Glandular Fever)

- Cause: Epstein-Barr Virus (EBV); spreads via saliva
- Features: exudative tonsillitis, generalised lymphadenopathy, splenomegaly, fatigue, hepatitis
- Investigations: atypical lymphocytes on blood film; Monospot (Paul-Bunnell) test; EBV serology; LFTs
- Management: supportive; avoid contact sports (spleen rupture risk); steroids for airway compromise

11.4 Chronic Tonsillitis & Tonsillectomy

- Criteria (SIGN/Paradise criteria): ≥7 episodes in past year, ≥5/year for 2 years, or ≥3/year for 3 years, each meeting quality criteria
- Other indications: peritonsillar abscess, OSA with tonsillar hypertrophy, suspected malignancy, diphtheria carrier
- Contraindications: acute infection, bleeding disorders, cleft palate

- Complications: primary haemorrhage (first 24h), secondary haemorrhage (5–10 days, often infective)

11.5 Peritonsillar Abscess (Quinsy)

- Pus collects between tonsillar capsule and superior constrictor muscle
- Features: severe unilateral throat pain, trismus (jaw spasm), uvular deviation, hot potato voice, drooling
- Management: incision and drainage (under local anaesthesia) + antibiotics; interval tonsillectomy after 6 weeks

★ Key Points — Sore Throat

✓ A peritonsillar abscess causes the uvula to deviate away from the affected side

✓ Infectious mononucleosis: NEVER prescribe ampicillin/amoxicillin — causes widespread maculopapular rash

✓ Retropharyngeal abscess in children: presents with neck stiffness + dysphagia; lateral neck X-ray shows widened retropharyngeal space

Chapter 12: Dysphagia & Odynophagia

Dysphagia (difficulty swallowing) requires systematic evaluation to distinguish oropharyngeal, oesophageal, and neuromuscular causes. It is a red flag symptom requiring urgent investigation.

12.1 Classification of Dysphagia

Type	Key Features
Oropharyngeal	Difficulty initiating swallow; coughing/choking at onset; nasal regurgitation; causes: CN IX/X palsy, MND, myasthenia gravis, Zenker's diverticulum
Oesophageal	Food 'sticking'; sensation in chest or retrosternal area; causes: stricture (benign/malignant), achalasia, external compression
Odynophagia	Painful swallowing; causes: oesophagitis, pharyngitis, retropharyngeal abscess, Ca oropharynx

12.2 Investigation Pathway

10. History: solid vs liquid (solids only = mechanical obstruction; both = neuromuscular), progression, weight loss, alcohol/tobacco use
11. Examination: cranial nerve exam, oral cavity, oropharynx, lymph nodes, neck
12. Investigations: FBC (anaemia), CXR, barium swallow (initial), endoscopy (gold standard + biopsy), CT neck/chest (staging)

12.3 Specific Conditions

Condition	Points
Carcinoma of Tongue	Commonest intraoral cancer; often SCC lateral border; painless ulcer; regional LN metastasis; Rx surgery ± radiotherapy
Carcinoma of Oropharynx	HPV-related (base of tongue, tonsil) or tobacco/alcohol-related; unilateral otalgia is a presenting symptom

Condition	Points
Zenker's Diverticulum	Pharyngeal pouch at Killian's dehiscence; regurgitation of undigested food; gurgling on neck palpation; Rx surgical
Retropharyngeal Abscess	Usually in children <5 yrs; danger space infection; neck stiffness + odynophagia; lateral neck X-ray + CT

Chapter 13: Hoarseness & Stridor

13.1 Applied Anatomy of the Larynx

- Supraglottis: epiglottis, aryepiglottic folds, false vocal cords; rich lymphatic drainage → N2 nodal spread
- Glottis: true vocal cords; poor lymphatic supply → late nodal spread
- Subglottis: below true cords to cricoid; narrow in children (4 mm) — susceptible to croup
- Innervation: recurrent laryngeal nerve (RLN) — all intrinsic muscles except cricothyroid (external branch superior laryngeal nerve)

13.2 Causes of Hoarseness — Mnemonic: LARYNX

Mnemonic: LARYNX

- ✓ L — Laryngitis (acute/chronic); Laryngeal cancer
- ✓ A — Abductor paralysis (RLN palsy); Arytenoid pathology
- ✓ R — Reflux (laryngopharyngeal reflux — LPR)
- ✓ Y — Yelling / voice abuse (vocal cord nodules, polyps)
- ✓ N — Neoplasm (benign: papilloma, Reinke's oedema; malignant: SCC)
- ✓ X — eXtraglottic compression (thyroid mass, mediastinal tumour, surgical RLN injury)

13.3 Specific Conditions

Condition	Key Points
Vocal Cord Nodules	Teachers, singers; bilateral; hoarse breathy voice; Rx voice therapy (first line); microsurgery if persistent
Laryngeal Papillomatosis	HPV-6/11; children (juvenile) or adults; recurrent papillomas on cords; Rx serial surgical removal (CO2 laser)
Laryngeal Carcinoma	Glottic (commonest subsite, T1 = hoarseness, good prognosis); supraglottic; subglottic; Rx: early = radiotherapy; advanced = total laryngectomy
RLN Palsy	Causes: thyroid surgery, lung cancer, aortic aneurysm, mediastinal nodes; unilateral = weak hoarse voice; bilateral = stridor; Rx: injection laryngoplasty, thyroplasty

13.4 Stridor

Stridor is a high-pitched respiratory sound from turbulent airflow through a narrowed airway. It is a medical emergency until proven otherwise.

Type	Site
Inspiratory stridor	Supraglottic/glottic obstruction (epiglottitis, croup, laryngomalacia)
Expiratory stridor	Intrathoracic obstruction (bronchial foreign body, tracheomalacia)
Biphasic stridor	Subglottic/tracheal pathology (subglottic stenosis, croup)

Croup vs Epiglottitis

Feature	Croup	Epiglottitis	Note
Feature	Croup (Viral Laryngotracheobronchitis)	Epiglottitis (Bacterial)	Action
Age	6 months – 3 years	Any; Hib vaccine reduced incidence	Check vaccine history
Onset	Gradual; barking cough	Rapid over hours	Rapid onset = emergency
Posture	Supine tolerated	Tripod position, drooling	Tripod = do NOT examine
Appearance	Unwell but interactive	Toxic, muffled voice	Toxic = ICU involvement
X-ray	Steeple sign (subglottic narrowing)	Thumb sign (epiglottis)	X-ray only if stable
Management	Nebulised adrenaline, dexamethasone	Secure airway (OT), IV antibiotics	ABCs first

Chapter 14: Neck Masses

Neck masses are classified by anatomical location (midline vs lateral), age, time course, and associated symptoms. They may be congenital, inflammatory, or neoplastic.

14.1 Triangle of Neck — Applied Anatomy

- Anterior triangle (bound by SCM, mandible, midline): most neck masses are here
- Posterior triangle (SCM, trapezius, clavicle): lymph nodes Level V; spinal accessory nerve (CN XI) vulnerable
- Lymph node levels: Level I (submental/submandibular), II–IV (along IJV), V (posterior triangle), VI (central compartment)

14.2 Differential Diagnosis by Site

Location/Condition	Key Features
MIDLINE — Thyroglossal cyst	Moves on swallowing AND tongue protrusion; Sistrunk operation
MIDLINE — Dermoid cyst	Does not move on swallowing or tongue protrusion
MIDLINE — Thyroid mass	Moves on swallowing only; not on tongue protrusion
LATERAL — Branchial cyst	Anterior to SCM; smooth, fluctuant; filled with cholesterol crystals; 2nd arch remnant

Location/Condition	Key Features
LATERAL — Lymphadenopathy	Reactive (infection), granulomatous (TB), lymphoma, metastatic (SCC head & neck; thyroid; lung; stomach)
LATERAL — Carotid body tumour (Paraganglioma)	Pulsatile, lateral neck; positive Fontaine test (moves laterally but not vertically); angiography
LATERAL — Cervical rib	Lower brachial plexus/vascular symptoms; X-ray confirms
LATERAL — Cystic hygroma (Lymphangioma)	Trans-illuminates; infant; posterior triangle

14.3 Approach to Neck Mass — Investigation Ladder

13. History: duration, pain, systemic symptoms (fever, weight loss, night sweats), primary site symptoms (voice change, dysphagia, otalgia, epistaxis)
14. Examination: consistency (soft/firm/hard/cystic/pulsatile), transillumination, mobility, skin changes, site, size
15. Flexible nasendoscopy (FNE): examine all mucosal surfaces for primary
16. USS neck + FNAC (fine needle aspiration cytology): first-line tissue diagnosis
17. CT/MRI neck with contrast: staging, vascular relationship
18. PET-CT: unknown primary; distant metastasis
19. Open biopsy LAST (risk of implantation/field contamination)

★ Key Points — Neck Mass Red Flags

✓ Hard, fixed node in adult >40 = SCC metastasis until proven otherwise

✓ Painless neck mass + night sweats + weight loss = lymphoma until proven otherwise

✓ Any neck mass in a child with TB contact = tuberculous lymphadenopathy (cervical TB commonest extrapulmonary TB in Pakistan)

✓ Thyroglossal cyst can become a squamous cell carcinoma (rare but important)

14.4 Advances in ENT Surgery

Advance	Application
CO2 Laser	Vocal cord surgery, recurrent respiratory papillomatosis, subglottic stenosis; advantages: precision, haemostasis, minimal scarring
Cryosurgery	Nasal turbinate hypertrophy, tonsillar hypertrophy; liquid nitrogen; destroys tissue via freeze-thaw
Robotic Surgery (TORS)	Transoral robotic surgery for oropharyngeal tumours; avoids lip-split incision; da Vinci system
Radiotherapy & Chemo	Early-stage laryngeal/oropharyngeal SCC: organ-preservation protocols; concurrent cisplatin + radiotherapy
HIV & AIDS in ENT	Common manifestations: oral candidiasis, hairy leukoplakia, Kaposi sarcoma, parotid cysts, SNHL

SECTION IV — CLINICAL SKILLS & PROCEDURES

Chapter 15: Clinical Examination Checklists

15.1 Examination of the Ear

20. Introduce, consent, position (seat at eye level)
21. Inspect pinna: scars, deformities, lesions, erythema
22. Inspect post-auricular area: scars, swelling, mastoid tenderness
23. Tragal and pinna tenderness: positive in otitis externa
24. Otoscopy: pull pinna up/back/laterally (adult) or down (child); examine EAC (wax, discharge, skin), then TM (light reflex, perforation, bulging, colour, mobility)
25. Siegle's speculum: pneumatic otoscopy for TM mobility
26. Tuning fork tests: Rinne (512 Hz fork on mastoid then in air), Weber (vertex or forehead)
27. Whisper test: standing 60 cm behind; cover non-tested ear; whisper bisyllabic words

15.2 Examination of the Nose

28. External inspection: shape, deviation, skin changes, scars
29. Anterior rhinoscopy: Thudichum speculum; inspect mucosa colour, septum position, inferior/middle turbinates, any polypi or masses
30. Posterior rhinoscopy: mirror examination of nasopharynx (or flexible nasendoscopy if available)
31. Assess nasal patency: mirror test (fogging pattern), cotton-thread, or peak nasal inspiratory flow
32. Test olfaction: clove oil, asafoetida — each nostril separately

15.3 Examination of the Throat & Larynx

33. Oral cavity inspection: lips, teeth, gums, tongue (dorsum, ventral, lateral borders, base), floor of mouth, hard/soft palate
34. Oropharynx: uvula (deviation?), tonsillar size/pillars/surface, posterior pharyngeal wall
35. Indirect laryngoscopy: warm mirror, tongue gently held; identify epiglottis, aryepiglottic folds, arytenoids, false/true vocal cords, subglottis; assess cord movement
36. Flexible nasendoscopy (FNE): nasal, nasopharyngeal, laryngeal examination

15.4 Common ENT Instruments

Instrument	Department	Use	OSCE Tip
Instrument	Department	Use	OSCE Tip
Otoscope / Auriscope	Ear	Visualise EAC and TM	Name the parts: head, handle, speculum
Siegle's speculum	Ear	Pneumatic otoscopy	Demonstrates TM mobility
512 Hz tuning fork	Ear	Rinne & Weber tests	Must specify Hz
Thudichum speculum	Nose	Anterior rhinoscopy	Hold with thumb and index finger
Post-nasal mirror	Nose	Posterior rhinoscopy	Warmed to avoid fogging

Instrument	Department	Use	OSCE Tip
Head mirror + lamp	All	Indirect illumination	FRCS traditional examination tool
Jobson-Horne probe	Ear	Wax removal, granulation	Cerumen loops
Myringotome	Ear	Myringotomy incision	Radial incision anteroinferior quadrant
Tracheostomy tube (Shiley)	Larynx/trachea	Airway maintenance	Know inner tube, flange, cuff
NG tube	Throat	Enteral feeding, intubation guide	Sizes: F8 fine bore; F16 ryle's

15.5 Common ENT Operations — OSCE Knowledge

Operation	Key Points
Myringotomy + Grommets	Indication: OME/glue ear, recurrent ASOM. Technique: radial incision anteroinferior TM; aspirate fluid; insert ventilation tube
Myringoplasty / Tympanoplasty	Indication: central TM perforation. Graft: temporalis fascia (underlay technique). Type I–V classifications
Mastoidectomy	Cortical (safe disease) vs Modified Radical / Radical (unsafe disease / cholesteatoma)
Septoplasty	Correction of DNS causing obstruction; submucous resection (SMR) is older term
FESS	Functional endoscopic sinus surgery; opens OMC; management of chronic rhinosinusitis, polypi
Tonsillectomy	Dissection & ligation or coblation technique; haemostasis paramount
Adenoidectomy	Curettage or coblation; done for OSA, chronic secretory otitis media, adenoid facies
Tracheostomy	Surgical (elective) between 2nd–3rd or 3rd–4th tracheal rings; Indication: prolonged ventilation, airway obstruction, secretion management

SECTION V — SELF-ASSESSMENT

Chapter 16: MCQs (Single Best Answer)

Select the single best answer. Answers with explanations follow at the end of this chapter.

Q1. A 7-year-old boy presents with sudden unilateral nasal obstruction and offensive unilateral nasal discharge. The most likely diagnosis is:

A. Allergic rhinitis B. Nasal polyp C. Adenoid hypertrophy D. Foreign body nose

Q2. A 55-year-old man has unilateral conductive hearing loss. Rinne is negative (BC>AC) in that ear; Weber lateralises to the same ear. The most likely pathology is:

A. Acoustic neuroma B. Presbyacusis C. Wax occlusion D. Noise-induced hearing loss

Q3. A 40-year-old woman with episodic vertigo (30 minutes duration), low-frequency tinnitus, and a sensation of aural fullness is most likely to have:

A. BPPV B. Vestibular neuronitis C. Menière's disease D. Acoustic neuroma

Q4. An infant presents at birth with cyanosis relieved by crying. Passing a catheter per nasally is impossible bilaterally. The diagnosis is:

A. Laryngomalacia B. Bilateral choanal atresia C. Subglottic stenosis D. Vascular ring

Q5. In a patient with CSOM, which of the following features suggests unsafe disease (atticoantral type)?

A. Large central perforation B. Profuse mucopurulent discharge C. Offensive scanty discharge with marginal perforation D. Conductive hearing loss

Q6. The Dix-Hallpike test is used in the diagnosis of:

A. Menière's disease B. BPPV C. Acute labyrinthitis D. Acoustic neuroma

Q7. A patient develops hoarseness 2 days after total thyroidectomy. The most likely cause is:

A. Laryngitis B. Haematoma compressing larynx C. RLN injury D. Tracheal stenosis

Q8. A 25-year-old male presents with profuse epistaxis and a nasal mass. Biopsy is contraindicated. The most likely diagnosis is:

A. Nasal polyp B. Transitional cell papilloma C. Angiofibroma D. SCC nasal cavity

Q9. The Epley manoeuvre is the treatment for:

A. Menière's disease B. Vestibular neuronitis C. BPPV D. Labyrinthitis

Q10. A child with exudative tonsillitis is prescribed ampicillin and develops a maculopapular rash. The most likely cause of the rash is:

A. Penicillin allergy B. Infectious mononucleosis C. Scarlet fever D. Drug reaction to ampicillin alone

MCQ Answer Key

Question	Answer & Explanation
Q1	D — Foreign body (unilateral offensive discharge in child)

Question	Answer & Explanation
Q2	C — Wax occlusion (Rinne negative + Weber to affected ear = conductive loss)
Q3	C — Menière's disease (triad: vertigo + SNHL + tinnitus + aural fullness = HAVE)
Q4	B — Bilateral choanal atresia (neonate breathes via nose; crying = oral breathing relieves)
Q5	C — Offensive scanty discharge + marginal/attic perforation = unsafe CSOM
Q6	B — BPPV (Dix-Hallpike provokes nystagmus; positive = posterior canal BPPV)
Q7	C — RLN injury (commonest iatrogenic cause of hoarseness post-thyroidectomy)
Q8	C — Angiofibroma (adolescent male + profuse epistaxis + biopsy contraindicated due to vascularity)
Q9	C — BPPV (Epley repositions displaced otoconia from posterior semicircular canal)
Q10	B — Infectious mononucleosis (EBV + ampicillin/amoxicillin = widespread maculopapular rash in 95%)

Chapter 17: Short Answer Questions (SAQs)

Each SAQ is worth 5 marks. Answer in 10–12 lines. Marks are allocated as shown.

SAQ 1 — Otitis Media (5 marks)

A 4-year-old presents with 3 days of right ear pain and fever. The mother reports the pain suddenly improved today. On examination there is purulent discharge from the right ear canal and a perforated tympanic membrane. (a) What is the diagnosis? (1 mark) (b) What are the stages of this condition? (2 marks) (c) How would you manage this patient? (2 marks)

Model Answer: Answers: (a) ASOM with spontaneous perforation. (b) Hyperaemia → exudation → suppuration → resolution/perforation → complication. (c) Oral amoxicillin 10 days; analgesia (paracetamol/ibuprofen); aural toilet (dry mopping); follow up audiogram after resolution; consider grommets if recurrent.

SAQ 2 — Epistaxis (5 marks)

A 65-year-old hypertensive patient presents with profuse bleeding from the right nostril not controlled by first aid. (a) Where is the most common site of anterior epistaxis? (1 mark) (b) Describe initial management steps. (2 marks) (c) What would you do if anterior packing fails? (2 marks)

Model Answer: Answers: (a) Kiesselbach's (Little's) area — anteroinferior septum. (b) Pinch soft nose; lean forward; ice pack; cauterise with silver nitrate; anterior nasal pack (BIPP/Merocel). (c) Posterior nasal packing (Brighton balloon/Foley catheter) with ANP; admit for monitoring; if refractory: endoscopic sphenopalatine artery ligation or embolisation.

SAQ 3 — Neck Mass (5 marks)

A 45-year-old male smoker presents with a 2-month history of a painless firm right neck mass, 3 cm, anterior to SCM. He also complains of right-sided otalgia. (a) What is your primary differential diagnosis?

(1 mark) (b) What is the significance of the otalgia? (1 mark) (c) Describe your investigation plan. (3 marks)

Model Answer: Answers: (a) Metastatic SCC lymph node (Level II/III) — primary in oropharynx, hypopharynx, or larynx. (b) Referred otalgia via CN IX — strongly suggests primary oropharyngeal malignancy (base of tongue / tonsil). (c) FBC + LFTs; FNE to identify primary; USS neck + FNAC; CT neck/chest/abdomen with contrast (staging); PET-CT if primary unknown.

SAQ 4 — Vertigo (5 marks)

A 30-year-old woman develops sudden severe vertigo lasting several days after a viral URTI. There is no hearing loss or tinnitus. She cannot walk without support. (a) What is the most likely diagnosis? (1 mark) (b) How does this differ from Menière's disease? (2 marks) (c) Outline your management. (2 marks)

Model Answer: Answers: (a) Vestibular neuronitis. (b) Vestibular neuronitis: no hearing loss, no tinnitus, continuous vertigo days-weeks, post-viral; Menière's: episodic vertigo (20 min–12 hrs), low-freq SNHL, tinnitus, aural fullness, hydrops pathophysiology. (c) Vestibular suppressants (prochlorperazine) for acute phase; steroids (if within 3 days); vestibular rehabilitation exercises (Cawthorne-Cooksey); reassurance (full recovery in most).

Chapter 18: OSCE Station Guide

The NUMS ENT OSCE has 13 stations (5 observed + 8 non-observed), 5 minutes each. The marking grid below reflects the published table of specifications.

Station	Type	Marks	Focus
Station	Type	Marks	Key Skills Assessed
1. History taking	Observed	08	Systematic ENT history; ICE model; communication
2. Ear examination	Observed	08	Otoscopy technique; tuning forks; interpretation
3. Nose examination	Observed	08	Anterior rhinoscopy; patency test
4. Throat examination	Observed	08	Oral cavity, oropharynx, indirect laryngoscopy
5. Counselling	Observed	08	Explain diagnosis/procedure; assess understanding
6. Picture ID + DD + Mx	Non-observed	05	Clinical photograph; name, differentials, management
7. Picture ID + DD + Mx	Non-observed	05	Clinical photograph; name, differentials, management
8. X-ray interpretation	Non-observed	05	Read CXR/sinus X-ray; identify findings + DD
9. Instrument ID	Non-observed	05	Name instrument, indication, complication
10. Implant/Drug	Non-observed	05	Cochlear implant/grommet/hearing aid; drug class
11. Investigations	Non-observed	05	PTA audiogram; tympanogram interpretation
12. Scenario: Dx + DD + Mx	Non-observed	05	Clinical scenario; structured answer

Station	Type	Marks	Focus
13. Materials (NG/trach tube)	Non-observed	05	Identify, indications, sizes, complications

⋆ Top OSCE Tips

✓ For history taking: always use SOCRATES for pain; ask about risk factors (smoking, alcohol) for malignancy

✓ Ear examination: demonstrate before performing; describe what you see as you see it

✓ Audiogram: identify AC and BC symbols first, then calculate ABG, then state type of hearing loss

✓ Picture identification: describe the image systematically before naming — this scores method marks

✓ Counselling: check the patient's existing knowledge before explaining; use plain language; check understanding

References & Recommended Reading

Core Textbooks

37. Scott-Brown's Otorhinolaryngology, Head and Neck Surgery (8th ed). CRC Press, 2018.
38. Dhingra PL, Dhingra S. Diseases of Ear, Nose and Throat (8th ed). Elsevier, 2022.
39. Cummings CW et al. Otolaryngology Head and Neck Surgery (7th ed). Mosby, 2021.
40. Gleeson M et al. Paediatric ENT. Cambridge University Press, 2019.
41. Hazarika P. Textbook of ENT Head and Neck Surgery. 3rd ed.

Guidelines & Online Resources

42. SIGN Guidelines — Management of Sore Throat and Indications for Tonsillectomy (2010, reviewed 2022)
43. NICE Guidelines — Epistaxis, Otitis Media, Hearing Loss, Tinnitus
44. AAO-HNS Clinical Practice Guidelines — Tonsillectomy (2019), Bell's Palsy, Hearing Loss
45. NUMS MBBS Year-IV Curriculum 2025–26 — ENT Section III (Source document for this guide)
46. AMEE Educational Guides — www.amee.org (for understanding the pedagogical framework)

Revision Resources

- Oxford Handbook of ENT and Head and Neck Surgery — rapid revision reference
- One Stop Doc: Head, Neck and Special Senses — high-yield MCQ practice
- ENT UK (www.entuk.org) — patient information leaflets (useful for counselling OSCE stations)
- Audiology Online — free audiogram interpretation tutorials

This guide was prepared in accordance with the NUMS MBBS Year-IV (2025–26) ENT curriculum. All learning outcomes, weightages, and examination formats are derived from the official NUMS curriculum document. The AMEE guide format was applied to provide a structured, evidence-based educational framework.