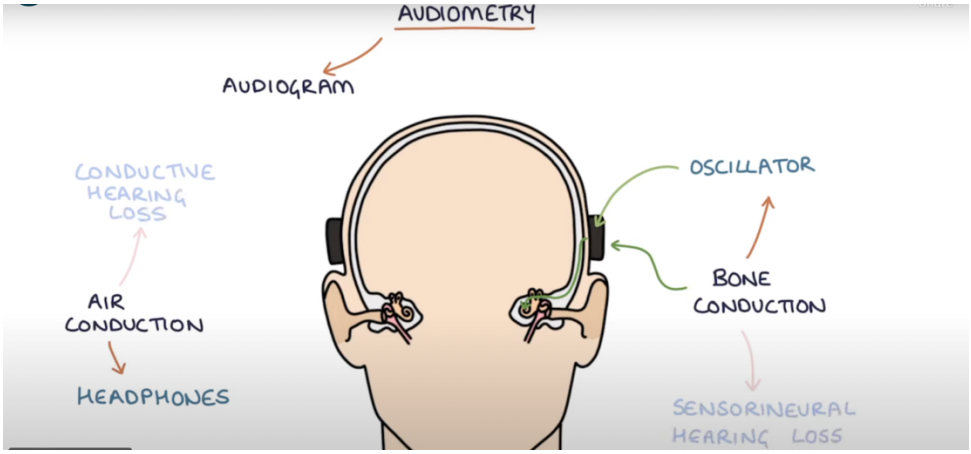
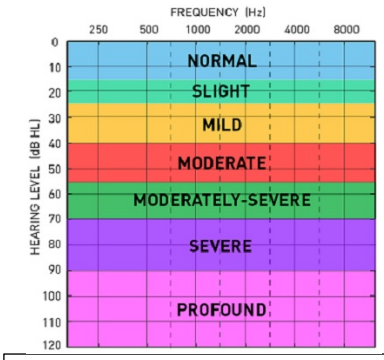
EAR, NOSE AND THROAT

Audiometry

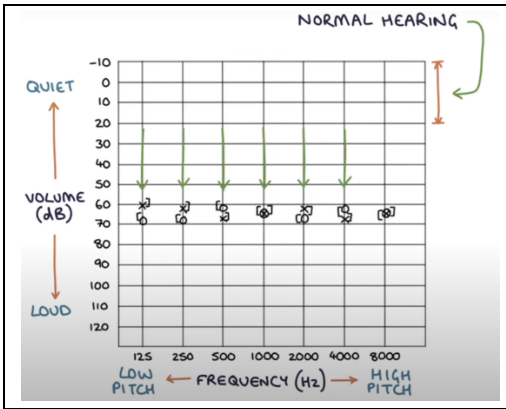
Establishing the diagnosis and extent of hearing loss.

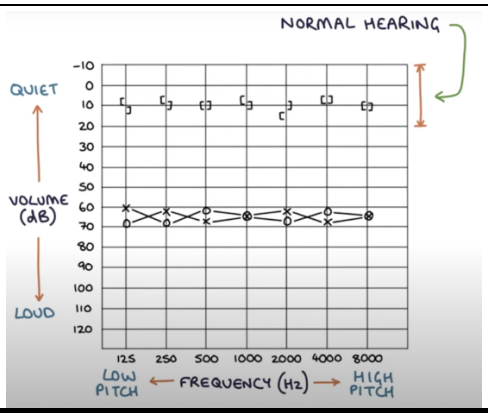


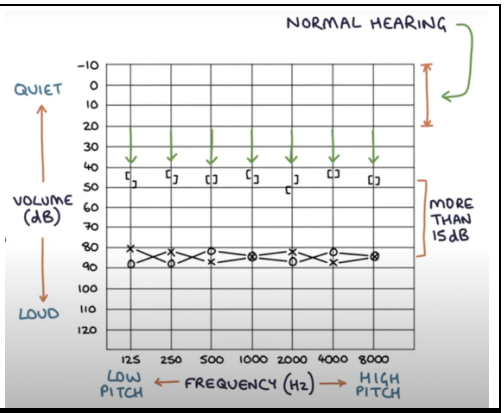


Legend/key

- **X** – Left-sided air conduction
- **]** – Left-sided bone conduction
- **O** – Right-sided air conduction
- **[** – Right-sided bone conduction

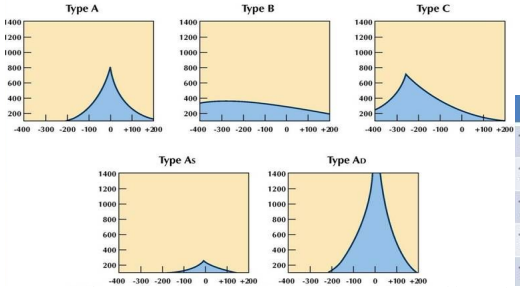




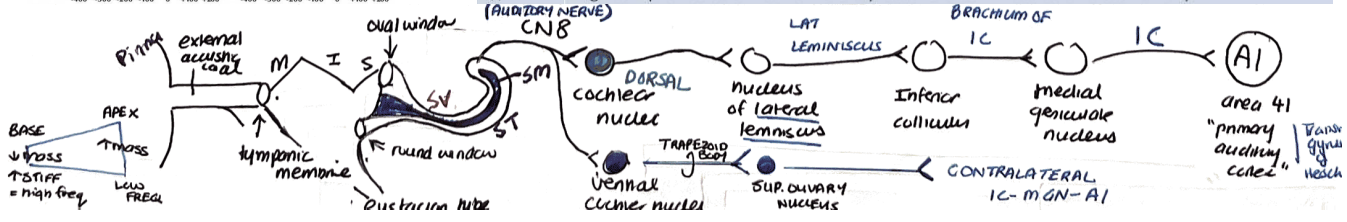


Conductive hearing loss	Sensorineural hearing loss	Mixed hearing loss
Audiometry: • ***Air conduction*** readings will be greater than 20 dB	• ***Audiometry*** both air and bone conduction readings will be more than 20 dB • **Do not know if both sides, or just one-sided**	• ***Audiometry*** Both ***air*** and ***bone*** conduction readings > 20 dB in patients • PLUS difference of **>** 15 dB between the two (***bone conduction > air conduction***).
Examination • sound will be **louder** in the **affected ear**. (weber's test) • ***bone conduction > air conduction (Rinne's negative)***	**Examination** • **louder** in the **normal ear (weber's test)** • ***air conduction > bone conduction (Rinne's positive)***	**Examination** • Mixed
Causes • ***Ear wax*** (or something else blocking the canal) • ***Infection*** (e.g., otitis media or otitis externa) • ***Fluid in the middle ear*** (effusion) • ***Eustachian tube dysfunction*** • ***Perforated tympanic membrane*** • ***Otosclerosis*** • ***Cholesteatoma*** • ***Exostoses*** • ***Tumours***	**Causes**: • ***Sudden sensorineural hearing loss*** (<72 hours) • ***Presbycusis*** (age-related) • ***Noise exposure*** • ***Ménière's disease*** • ***Labyrinthitis*** • ***Acoustic neuroma*** • ***Neurological conditions*** (e.g., stroke, MS or brain tumours) • ***Infections*** (e.g., meningitis) • ***Medications (e.g. loop diuretics, aminoglycoside ABx, chemo drugs)***	Mixture of both **Exam (age-specific)** • **Otoscopy** → conductive hearing • **Tympanometry** → middle ear • **Speech discrimination score** → tests CN8 nerve • **< 6mths** = **Auditory Brainstem Response Testing** • **6mths – 3 years** → **Visual Reinforcement Orientation Audiometry (VROA/ puppet show test)** • **Children (3-7 years)** → **Pure Tone Play Audiometry** • **Children (> 7 years)** → ***Full standard adult test battery***

TYMPANOMETRY



Type	Implications
Type A	Normal tympanogram/ sensorineural hearing loss where conductive mechanism is normal.
Type B	Flat curve, no change in compliance with pressure changes. Seen in fluid in the middle ear.
Type C	Maximum compliance in negative pressure. Seen in eustachian tube obstruction.
Type As	Compliance is lower at or near ambient air pressure. Seen in otosclerosis or malleus fixation.
Type Ad	High compliance at or near ambient pressure. Seen in ossicular discontinuity.



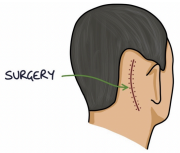
	EAR WAX [*cerumen impaction*]	PRESBYACUSIS [*age-related hearing loss*]	SUDDEN SENSORINEURAL HEARING LOSS	EUSTACIAN TUBE DYSFUNCTION	OTOSCLEROSIS	OTITIS MEDIA	OTITIS EXTERNA "swimmer's ear"
PP / comp.	• Impacted wax accumulation and stuck to eardrum • ear wax = normally protective to prevent infection in external ear	Gradual and symmetrical loss of high pitched sounds 1st	➢ Hearing loss over < 72 hours ➢ Almost always unilateral ➢ Otological emergency	➢ Unable to equalise air pressure in middle ear and drain fluid from middle ear	➢ Remodelling of ossicle bones in middle ear –→ affects **base of stapes → conductive hearing loss** ➢ Autosomal dominant	➢ Infection of middle ear	➢ Infection of outer ear ➢ Swimmer's ear"

RF / causes	• Cotton bud usage	• Advanced age
		• Male
		• FHx
		• Loud noise exposure
		• DM
		• HTN
		• Smoking
		• Ototoxic meds
			• Most idiopathic (90%)
			Other causes:
			➢ **Infection** (AOM, AOE, OME, meningitis, Mumps)
			➢ **Perforated TM**
			➢ **Eustacian tube dysfn**
			➢ **MS, Stroke, Migraine**
			➢ **Acoustic neuroma**
			➢ **Meniere's**
			➢ **Cogan's syndrome** (autoimmune inflam. of eyes and inner ear)
				Causes
				• Idiopathic
				• Post-URTi
				• AOM
				DDx: cholesteatoma
				➢ **Non-cancerous** abnormal growth of squamous epithelium in middle ear **eroding ossicles**
				➢ Assoc. w/ recurrent infections and foul d/c
				➢ Uni **conductive hearing loss**
				➢ **Nystagmus, vertigo** if invades semicir. canals
					• **FHx – aut. dominant**
					• **Women**
					DDx: exostoses
					➢ Deep diving or swimming cause due to pressure changes
						URTI - Tonsillitis, rhino-sinusitis
						• Viral URTI (mainly)
						• Bacterial URTI
						  ○ HiB
						  ○ Moraxella catarrhalis
						  ○ S. aureus
						• Passive smoking
						• Previous ear infections
							• Swimming
							• Humid environments
							• Ear polyps
							• FB in ear
							• Bacterial infection (**pseudomonas aeruginosa, S. aureus)**
							• Fungal infection (e.g. aspergillus, candida) → after ABx usage
							• eczema
							• seborrheic dermatitis
							• contact dermatitis

Clinical Sx	• Conductive hearing loss • Aural fullness • Pain • Tinnitus	• Asymptomatic (since gradual hearing loss) • Tinnitus	• Unilateral hearing loss < 72 hrs	• Reduced hearing • Popping noises • Aural fulness • Pain • Tinnitus	• **Conductive hearing loss** (lower pitched sound affected more) **Rinne negative** • Tinnitus	• Otalgia • Unwell + fever • URTi – cough, coryza and sore throat • +/- vertigo and d/c	• Otalgia • Aural discharge • Itchiness • Conductive hearing loss (blocked ears)
Comp.	**AOM**	➢ **Irreversible hearing loss** ➢ **Risk of dementia**	• **Permanent hearing loss**	➢ **AOM → OME** **If cholesteatoma**: ➢ Infection ➢ Pain ➢ Vertigo ➢ Facial nerve palsy		• OME • Perforated TM • Labyrinthitis • Mastoiditis/abscess → meningitis	**Malignant otitis externa → osteomyelitis in temporal bone** (*diabetes, immunsupp. HIV*) ➢ *Facial nerve damage* ➢ *CNIX, CNX, CNXI damage* ➢ *Meningitis* ➢ *Intracranial thrombosis*
Ix	**Otoscope - CERUMEN IMPACTION**	**Audiometry -** sensorineural hearing loss (worse at higher frequencies)	• Audiometry – diagnosis if loss>30db in 3 consecutive frequencies • MRI / CT brain - ?acoustic neuroma	Otoscope – normal ➢ **Tympanometry** (check TM function) → **peak admittance** with **negative ear canal pressures** ➢ **Audiometry** ➢ **Nasopharyngoscopy** ➢ **CT scan** (structural causes)	Otoscope – normal ➢ Audiometry = conductive hearing loss ➢ **Tympanometry** (reduced admittance – stiff, non-compliant TM) ➢ HRCT – bony changes detected (not useful)	➢ *Otoscope – inflamed bulging red tympanic membrane*	• ***Otoscope** – inflamed red swollen outer ear with narrowed external canal* • ***Ear swab** - M/C/S and PCR (identify causative organism)*

Mx	1) Avoid cotton bud usage
	2) Ear drops (olive oil or 5% Bicarb)
	3) Saline irrigation (CI = if perforated eardrum or infection)
	4) Microsuction
		1) Hearing protection
		2) Optimise home environments (e.g reduce ambient noise during conversations)
		3) Hearing aids
		4) Cochlear implants
			• Immediate referral to On-call ENT within 24 hrs
			• Rx underlying cause
			• Idiopathic SSNHL – oral or intra-typmanic steroids
				1) NO Rx – allow for self-resolution
				2) Valsalva manoeuvre (*to re-inflate eustacian tube)*
				3) Anti-histamines or steroid nasal spray *for allergic rhinitis*
				4) Otovent – OTC device where single nostrila blown to inflate eusatican tube
				5) Surgery
				  ○ *Grommets*
				  ○ *Adenoidectomy*
				  ○ *Balloon dilatation eustacian tuboplasty*
				For cholesteatoma:
				➢ *CT head*
				➢ *Surgicla removal of cholesteatoma y*
					Conservative
					➢ Hearing aids
					Surgical
					➢ **Stapedectomy** *- remove entire stapes bone and replace with prosthesis attached to oval window*
					➢ **Stapedotomy** *- remove part of stapes and leave base of stapes attached to oval window →new prosthesis attached to connect **incus with** stapes base*
						Conservative
						• *Reassure - ear toilet and dry ear + avoid swimming*
						• *Simple analgesia (2x Panadol PO tds for 7 days)*
						Medical – ABx
						• *30mg/kg Amoxicillin PO bd for 5 days*
						• *Clarithromycin (penicillin allergy) or erythron (if pregnant)*
						• *Erythromycin (penicllin allergy in pregnant)*
						Indications for ABx
						➢ *6/12 old*
						➢ *ATSI*
						➢ *Immunocompromised*
						➢ *Hearing aids (cochlear)*
						➢ *Only hearing ear*
							Mild Otitis externa
							• *Ear toilet and dry ear (avoid headphone and swimming for 10 days)*
							• *OTC acetic acid 2% (antifungal and antibacterial effect) →used therapeutically or prophylactically*
							Moderate Otitis externa [use ear wick]
							No perf – **Sofradex** (dex, framycetin + gramicidin) ear drops (3x drops daily for 7 days)
							Perf – **Ciloxan** (cipro 0.3% ear drops) → 5x drops bd for 7 days
							Comp. – **Ciproxin HC (**cipro + hydrocortisone) → 3x drops bd 2 days
							Fungal – **Triamcinolone (***neomcycin + nystatin, gramicidin***) 3x drops tds for 7days**
							**If severe –Admit to hospital and give IV ABx*
							Medical – malignant otitis externa
							➢ *Admit under ENT*
							➢ *IV ABx*
							➢ *CT or MRI (identify extent of infection)*

When to refer or follow-up?
- **F/U** = 8 weeks esp. if recurrent OME, AOM or hearing difficulties
- **ENT referral** = uncontrolled pain, failure to rsolve w/ AB or ≥6 x episodes in past 12 months

	BPPV	MENEIRE'S DISEASE	VESTIBULAR NEURONITIS	LABYRINTHITIS	ACOUSTIC NEUROMA "VESTIBULAR"	TINNITUS	VERTIGO
PP / comp.	• COMMON **peripheral** causes of recurrent vertigo • $CaCO_3$ crystals called otoconia become displaced into semicircular canals (usu. posterior) → disrupt normal flow of endolymph	• Long-term inner ear disorder • XS buildup of labyrinth of inner ear (higher pressure in endolymph than normal → endolymphatic hydrops)	• Inflammation of vestibular nerve	• Inflammation of bony labyrinth of inner ear	➢ **UNILATERAL** Benign Schwann cell tumour surrounding the auditory nerve (CNVIII) ➢ Occur at cerebellopontine angle ➢ **If bilateral** (almost always NF2 cause)	Persistent additional sound that is heard but NOT present in environment ➢ "ringing in the ears"	Sensation where there is movement b/w patient and environment ➢ "feel the world/room spinning around them" -horizontal spinning sensation ➢ *Vestibular nerve carries signals from vestibular nucleus to CN3,4,6 nuclei and cerebellum for eye movement control*
RF	Crystals displaced due to: • Older adults • Turning over in bed • Head trauma • Viral infection	• 40-50 yo	➢ Viral URTi DDx: ➢ Posterior circulation infarction (stroke)	• Viral URTi • Secondary to otitis media or meningitis	• **NF2** • **40-60yo**	***Primary*** ➢ Idiopathic ***Secondary tinnitus*** ➢ Cerumen impaction ➢ Ear infection ➢ Meniere's disease ➢ Noise exposure ➢ Ototoxic drugs (e.g. loop diuretics, aminoglycosides, chemo) ➢ Acoustic neuroma ➢ MS ➢ Trauma ➢ Depression ***Systemic causes*** ➢ Anaemia ➢ Diabetes ➢ HC ➢ Thyroid disease	**Central cause**: Gradual onset; Persistent and bad coordination • Stroke (PCA) • MS • Intracerebral Tumour • Vestibular migraine (*stress, bright lights, strong smells, menses, dehydration*) **Peripheral**: Sudden onset; Severe nausea • BPPV • Meneire's • Vestibular neuronitis • Labyrinthitis • Vestibular nerve trauma • Otosclerosis • VZV (Ramsay Hunt syndrome) • Acoustic neuroma • Hyper-viscosity syndromes (PRV, ET)
Clinical Sx	• Intermittent vertigo triggered by head movement • Sx settle after 20-60s • Asymptomatic between attacks (could take 3/12 b/w attacks)	**Unilateral episodes of** • Constant vertigo /imbalance (20 mins – hours) • Sensorineural hearing loss (affectes low freq. first) • Aural fullness • Tinnitus • Unexplained "drop attacks" without LOC • Unidirectional spontaneous nystagmus	• Intermittent vertigo • Balance problems • Nausea and vomiting (severe)	• Acute onset & Constant vertigo • Sensorineural hearing loss • Tinnitus • Coryza symptoms	Gradual onset of • Unilateral sensorineural hearing loss • Unilateral tinnitus • Dizziness • Aural fullness • Headache •		
Comp.	**None**	➢	**BPPV**	➢ **Permanent hearing loss (secondary to meningitis)**	➢ Facial nerve palsy (Bell's – forehead not spared) ➢ Vestibulocochlear nerve injury	***Specific tests:*** ➢ *FBC* ➢ *Fasting BSL, HbA1C* ➢ *Fasting Lipids* ➢ *TFT – TSH* ➢ *Audiometry* ➢ *CT/MRI imaging (AVM, acoustic neuromas)*	***Specific tests:*** ➢ *Ear exam – otology* ➢ *Neuro exam (?stroke, MS)* ➢ *CV exam (?arrythmias, va.lvular disease)* ➢ *Cerebellar exam (DANISH)* ➢ *Romberg's test* ➢ **HINTS** o *Head impulse test (peripheral cause)* o Nystagmus o Test of Skew (central cause)
Ix	• Dix-Hallpike manoeuvre to confirm dx	• Confirmed for ENT specialists • Audiology assessment	Clinical diagnosis ➢ Head impulse test	Clinical diagnosis ➢ Head impulse test ➢ Audiology assessment	Audiometry – sensorineural hearing loss Brain MRI or CT (confirm Dx)		
Mx	• **Epley manoevre to treat** • **Regular Brandt-Daroff** exercises (patient-performed) → improve symptoms of BPPV (sitting at end of bed and lying sideways from side to side while rotating head to ceiling)	***Acute Mx (for peripheral cause)*** *For 3 days* ➢ Prochlorperazine ➢ Antihistamines (e.g. cyclizine and promethazine) ***Prophylactic Mx*** ➢ **Betahistine**	***Acute Mx*** *For 3 days* ➢ Prochlorperazine ➢ Antihistamines (e.g. cyclizine and promethazine "Resolves within 2-6 wks *If persistent* ➢ Vestibular rehab therapy (VRT)	***Acute Mx (for peripheral cause)*** *For 3 days* ➢ Prochlorperazine ➢ Antihistamines (e.g. cyclizine and promethazine ➢ ABx to treat bacterial labyrinthitis (for underlying AOM or meningitis)	**Conservative** ➢ Watch and wait if asymptomatic **Surgery** ➢ Partial or total removal ➢ Adjuvant RT (reduce growth) 	*Usually self-resolving* ➢ Rx underlying cause ➢ Hearing aids ➢ Sound therapy ➢ CBT (if idiopathic) **Red flags for referral** ➢ Sudden onset hearing loss, vertigo, headaches ➢ FND – e.g. stroke, facial nerve palsy ➢ Unilateral or pulsatile tinnitus ➢ Hyperacusis ➢ Suicidal ideation	Rx underlying cause ➢ BPPV – Epley ➢ Meniere's – betahistine ➢ Vestibular migraine – avoid trigger + triptans for prophylaxis ➢ Peripheral vertigo → prochloperazine

	FACIAL NERVE PALSY	EPISTAXIS	NASAL POLYPS	SINUSITIS	OSA	TONSILITIS	QUINSY
PP / comp.	Isolated dysfunction of the facial nerve ➢ **Motor**: *muscles of facial expression, stapedius, posterior digastric, stylohyoid* ➢ **Sensory** = taste anterior 2/3rd tongue ➢ **PSNS** -SL and SM glands and lacrimal glands	• Bleeding from Kiesselbach's plexus in Little's area (area in nasal mucosa filled with lots of BV)	➢ Growths in nasal mucosa	Inflammation of paranasal sinuses (frontal, maxillary, ethmoid, sphenoid) ➢ Accompanies by inflamed nasal cavity ➢ Acute (< 12 weeks) ➢ Chronic (>12 weeks)	➢ Collapsed pharyngeal airway during sleep ➢ Periodic apnoea episodes that last for few minutes ➢ Patient **unaware**	➢ Inflammation of tonsils	➢ Quinsy = peritonsillar abscess ➢ When trapped pus forms abscess ➢ 6/12 -4yo
RF	**UMN lesion** **Forehead spared** Unilateral facial weakness • MS • Stroke • Tumours • MND • Pseudo-bulbar palsy **LMN lesion** Forehead NOT spared **Unilateral facial weakness** *INFECTIVE* • HZV (Bell's) • VZV (Ramsay) • AOM • HIV, Lyme *SYSTEMIC* • DM, • sarcoid, • GBS, • MS • Leukemia *Tumour* • Acoustic • Parotid • Cholesteatoma *Trauma* • Direct nerve • Post-op • Base of skull #	***Common:*** • Finger picking • vigorous nose blowing • physical trauma • snorting cocaine ***Medical*** • colds • sinusitis ***Rare*** ➢ coag disorder (VWF, thrombocytopenia) ➢ Tumours (SCC) ***Types of bleeding*** ➢ Unilateral – most common ➢ Bilateral → posterior bleed → higher risk of aspiration	***Unilateral*** ➢ Tumours (SCC, melanoma) ***Bilateral*** ➢ Common assoc. with chronic rhinitis ➢ Asthma ➢ Cystic fibrosis ➢ Churg strauss ➢ Samter's triad (polyps + asthma and aspirin inotelance /allergy)	• Infection (post-viral URTI) • Allergies (allergic rhinitis) • Obstruction of drainage (e.g. polyps, tumours, foreign body) • Smoking	• **Middle aged** • **Male** • **Obesity** • **Alcohol** • **Smoking**	• **Mainly children** • **Viral URTi** (MOST COMMON) • **Bacterial URTi** (GAS – 1st) (strep. Pneumoniae -2nd) (HiB, Moraxella catarrhalis, S. aureus)	• Any age • **Bacterial caused ONLY (GAS → s. aureus, HiB)**
Cause Clinical Sx			**Common Sx:** ➢ Chronic rhinosunisitis ➢ Difficulty breathing through nose ➢ Snoring ➢ Nasal discharge ➢ Anosmia	• Nasal congestion • Nasal discharge • Facial pain / headache • Facial pressure • Anosmia • Tender over paranasal sinus pressure points • Fever, tachycardia	**STOP-BANG criteria** • Snoring • Tired – **daytime somnolence** • Observed apnoea • BP raised • BMI high • Advanced age • Neck circumference • Gender – male	*CENTOR criteria (for ABx)* • Fever (< 24 hrs) • No cough or coryza • Tender Ant. cervical LN • Tonsillar exudates • Young ≥3 score = 40-60% of bacterial cause Other • Odynophagia • Sore throat / halitosis • Waldeyer's tonsillar ring (adenoids, tubal, lingual and palatine tonsils)	• **Sore throat** • Halitosis • **Odynophagia** • Torticollis • Fever + looks unwell • Referred neck and ear pain • Swollen tender LN • FTT *Specific Sx* • Trismus (jaw lock) • Hot potato voice "
Comp.	➢	➢ **Aspiration of blood (esp. if posterior bleed)**	➢	**Systemic infection and sepsis**	DDx: **dental abscess** –throbbing pain rad. Jaw, ear or neck	• ***Otitis media*** • ***Peritonsillar abscess*** – *meningitis* • ***Scarlet*** → *rheumatic fever* → *IE, PSGN, post-strep reactive arthritis*	• *Meningitis* • *Sepsis* ***(if spread into parapharyngeal space)***
Ix	• CT/MRI brain	• FBC, • Coags • CT/MRI	• Nasal speculum • Nasal endoscopy	• Nasal endoscopy • CT scan – confirm diagnosis	• BMI + vitals (BP) • Epworth sleepiness scale • Polysomnography	• *Oropharyngeal swab on tonsils* • *EBV monospot test* • *ASOT, UA, ECHO*	
Mx	***Bell's palsy (if within 72 hrs)*** ➢ 50mg prednisolone for 7 days then 60mg for 5 days then 5-day reducing regime ➢ Lubricating eye drops to prevent exposure keratopathy ***Ramsay Hunt syndrome*** ➢ Prednisolone and acyclovir within 72 hours ➢ Lubricating eye drops	***Conservative***: ➢ Pinch nasal soft tissue and tilt head forwards (10-15 minutes) ***Additional Mx*** ➢ Nasal packing (tampons) ➢ Nasal cautery ($AgNO_3$ sticks) ***Post-Rx:*** ➢ Naseptin (chlrohex + neomycin) nasal cream qid for 10 days to reduce inflammation and infection	If unilateral ➢ Urgent referral to ENT to exclude malignancy ***Medical Mx*** ➢ Intranasal topical steroid drops or spray ***Surgical Mx*** ➢ Intranasal polypectomy (if close to nostrils) ➢ Endoscopic polpectomy (if deeper polyps)	**Usually self-limiting** ➢ Saline nasal irrigation (FESS spray- to clear out) ➢ Hydration ➢ Analgesia **If symptoms no improvement after 10 days** ➢ High-dose steroid nasal spray for 14 days (e.g. mometasone 200mcg bd) ➢ Delayed ABx prescription (phenoxymethylpenicillin) **If unresolve → ENT referral** ➢ **Functional endoscopic sinus surgery** ➢ **Septoplasty** (correct deviated septum) ➢ **Balloon inflation to open up sinuses**	**Correct modifiable risk factors** ➢ Lose wt (better diet and PA) ➢ Stop smoking ➢ Reduce alcohol intake **If symptomatic** ➢ CPAP machine **Referral to:** ➢ **ENT specialist** – tonsillectomy or uvulo-palato-pharyngoplasty (UPPP) ➢ **Specialist sleep clinic** - confirm Dx **Medical clearance** ➢ **Pilots** ➢ **Truck drivers** ➢ **Crane or heavy goods operators**	*Admit if:* ➢ **Immunocomp**. (young, steroid usage, HIV) ➢ **Systemically unwll** ➢ **Dehydrated** ➢ **RDS** – stridor ➢ **Signs of peritonsillar abscess** or cellulitis *Medical Mx* Delayed prescription if symptoms worsen over 2-3 days ➢ 10-day course of PO phenoxymethylpenicllin (narrow spectrum against strep. Pyogenes) ➢ Clarithromycin (pencillin allergy)	**Urgent ENT referral** ➢ Surgical incision and drainage of pus ➢ **IV broad spectrum ABx** (co-amoxiclav) – refer to local guidelines ➢ **Dexamethasone** – to enable to swallow (by reducing the pain and inflammation

NASAL SPRAY TECHNIQUE
"do you taste the spray at the back of your throat after using it?" **Tasting the spray means it has gone past the nasal mucosa and will not be as effective.**

TONSILLECTOMY

INDICATION	Contraindications	Procedure	Post-tonsillectomy bleed
Recurrent acute sore throats ➢ ≥7 in 1 year ➢ ≥ 5 in 2 years ➢ ≥3 in 3 years **Recurrent tonsillar abscesses (**2x episodes) Enlarged tonsils → causing dysphagia, apnoea, stridor	➢ Sore throat (lasts 2 weeks) ➢ Teeth damage ➢ Infection ➢ Post-tonsillectomy bleed (5%) (can occur 2 weeks after operation)	1) ***General anaesthetics*** 2) ENT surgical excision of tonsils 3) 2 weeks recovery at least 4) Clear bland meals	Call ENT registrar + inform anaesthetists ➢ Reassurance + adequate analgesia ➢ Sit upright to spit out blood ➢ IV access → FBC, Coags, group and save ➢ IVF (resus+ maintenance) ➢ Keep NBM *If manageable bleed consider:* ➢ Adrenaline-soaked swab applied topically ➢ Hydrogen peroxide gargle

NECK LUMPS

Ix

- ***FBC + blood film (?leukeamia or infection)***
- HIV
- Monospot test + EBV antibodies
- TFT
- ANA
- LDH (non-specific for Hodgkin's)

Imaging
- ➢ USS
- ➢ CT/MRI
- ➢ Nuclear medicine scan +/- PET (thyroid nodules + metastatic disease)

Biopsy
- ➢ FNA vs core vs incisional

DDx in adults:
- ➢ Skin abscess
- ➢ Bony prominence (normal)
- ➢ Haematoma (after trauma)

DDx in children:
- ➢ Cystic hygromas
- ➢ Dermoid cysts
- ➢ Haemangiomas
- ➢ AVM

Diagnosis + Mx

	Triangle	Sx	Mx
Infectious mononucleosis		• **TRIAD = NON-tender LN + fever + exudative tonsils** • Maculopapular rash (post-amoxil or cephalosporins) +/- HSM	Ix = monospot test + antibody testing **Rx: supportive** ➢ Avoid contact sports (splenic rupture) ➢ Avoid alcohol (risk of liver impairment)
Lymphoma (20% = hodgkin's)	Anterior/ Posterior	• Bimodal age = 20s and 75s • LN – neck, axilla, inguinal • Non-tender rubbery LN • Fever, UWL, NS	Ix - reed-sternberg cells ➢ **Rx: Chemotherapy**
Leukaemia (AML, CML, CLL, ALL)	Anterior/ Posterior	• Fever, UWL, NS • Fatigue (anaemia), bruising (thrombocytopenia), • LN + HSM	• **Chemotherapy (ACVP, Beaucopp)** • **Stem cell transplant**
Thyroid goitre	Anterior / midline	• Hyper – sweat, tachy, fatigue, UWL, heat intolerance, diarrhoea, proximal weak • Hypo – cold, dry brittle hair, cold intolerance, weight gain, amenorrhoea	USS, CT → Nuclear med →FNA (benign vs malignant) ➢ Benign = thyroglossal cysts, hyperplastic nodules, ectopic thyroid tissue ➢ Malignant – adenomas, cancer, parathyroid tumour
Thyroglossal cyst	midline	• Persisting thyroglossal duct filled with fluid • Mobile, non-tender, soft and fluctuant	Surgical removed to confirm dx and prevent infections
Salivary gland	Angle of jaw (submental)	• Parotid galnds, submandibular, or sublingual • DDx: stones, infection, tumour	**Rx cause** ➢ Stones → drink something citric ➢ Infection → ABx ➢ Tumour → excision (?neurovasc damage)
Carotid body tumours	Anterior (near angle of mandible)	• Mobile, painless, **pulsatile mass w/ bruit** • Compression of→ CNIX, CNX, CNXI (e.g. Horner's syndrome)	**Imaging** – splaying of ICA and ECA (lyre sign) ➢ **Surgical removal**
Lipomas	Anterior/ Posterior	• Benign tumours of at tissue • Mobile, non-tender, soft and NO skin changes	• **Reassurance +/- surgical removal**
Branchial cyst	Anterior to SCM	• 2nd branchial cleft failure to form – empty space filled with fluid • Mainly teenagers	• **Conservative (watch and wait)** • **Surgical excision (if recurrent infecitons)**

**Nb: dehydration due to bulimia nervosa (callus finger – Russell's sign)*

HEAD AND NECK CANCER (95% usu. SCC)

Location	Risk factors	Sx	Mx
• Nasal cavity • Paranasal sinuses • Mouth • Salivary glands • Pharynx • Larynx (epiglottis, vocal cords, glottis, subglottis)	• Smoking • Chewing tobacco or betel quid • Alcohol • EBV • HPV 16 • XS sun exposure	• ***Lump in mouth/lip*** • Unexplained ulceration • Erythoplakia or leucoplakia • Persistent **growing** neck lup • Unexplained hoarseness / voice change, SOB • Unexplained thyroid lump	*MDT management* ➢ CT / MRI scans ➢ Biopsy mass – TNM staging and mets? *Treatment (curative vs palliative)* ➢ Chemo ➢ RT ➢ Surgical excision ➢ Targeted therapy e.g. cetuximab – anti-EGFR to stop SCC growth)

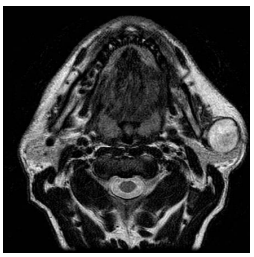
Salivary Gland Tumours

Epidemiology	SCC = 95% of head and neck cancers
Clinical Px	• ***Parotid → submandibular → sublingual (less common BUT increasing rates of malignancy, the smaller the gland is)***

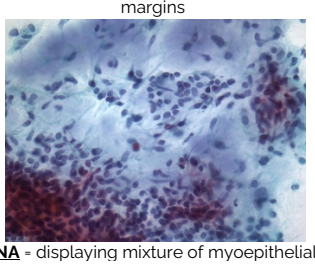
Benign:
- **50% pleomorphic adenoma (RT)**
- **Warthin tumour or cystadenolymphoma** (smoking)
- Salivary duct calculus
- Haeamatoma
- Neoplastic (epithelial vs non-epithelial)

Malignant:
- SCC
- AC
- Mucoepidermoid carcinoma
- Melanoma
- lymphoma

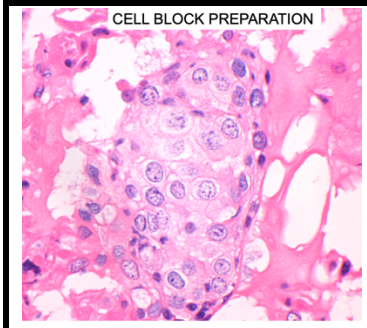
Ix	• FBC, EUC, ESR/CRP • USS, CT, MRI • FNA, Excision biopsy *What passes the parotid gland?* ➢ CN7 ➢ External carotid artery (maxillary and superficial temporal artery) ➢ Auricotemporal nerve ➢ Retromandibular nerve
Mx	• Surgery for benign pleomorphic adenomic for 2 reasons: 1. Cosmetic 2. Prevent future mets (i.e. Carcinoma ex pleomorphic adenoma) • Beware of **FACIAL NERVE PALSY (CN7)** • *__ANY benign tumour__ can re-occur → hence always need FU imaging • E.g. pleomorphic adenoma = enucleiation risk is 25%



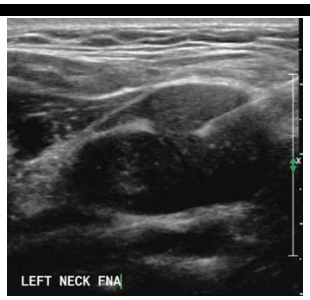
T2 MRI displaying hyperintense well-defined left sided parotid gland mass with sharp margins



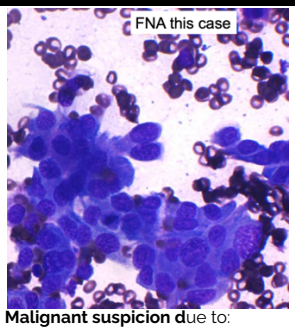
__FNA__ = displaying mixture of myoepithelial, ducts, lobules (Stromal), serous and mucous cells = mixed pleomorphic adenoma



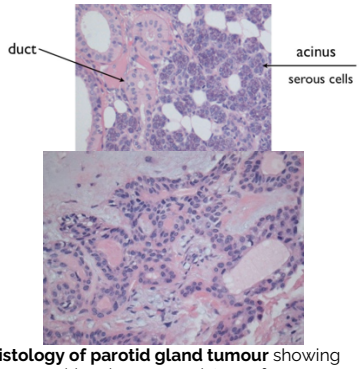
Cell-block preparation showing squamous cells connected via tight junctions (seen as spines)



Left neck FNA – see needle on the left obtaining sample for cytology



Malignant suspicion due to:
- increased nuc/cyto ratio
- high cellularity,
- hyperchromatic nuclei,
- large/prominent nucleoli



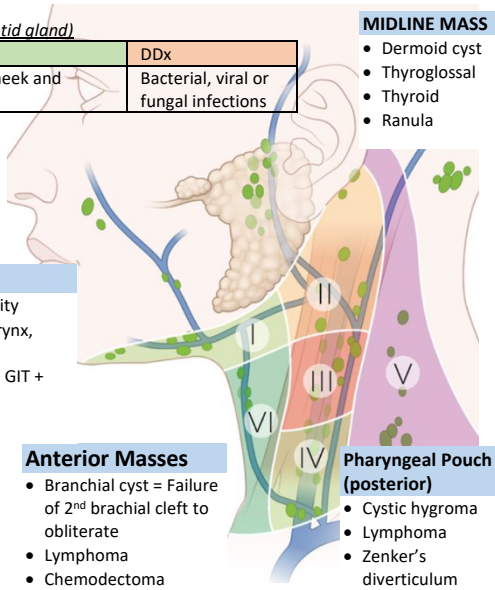
Histology of parotid gland tumour showing pleomorphic adenoma - mixture of myoepithelial, ducts, lobules (Stromal) cells

LYMPHATIC DRAINAGE ZONES (HEAD & NECK)

Parotid LN (*paotid gland*)

Drainage	DDx
Skin of ear, cheek and forehead	Bacterial, viral or fungal infections

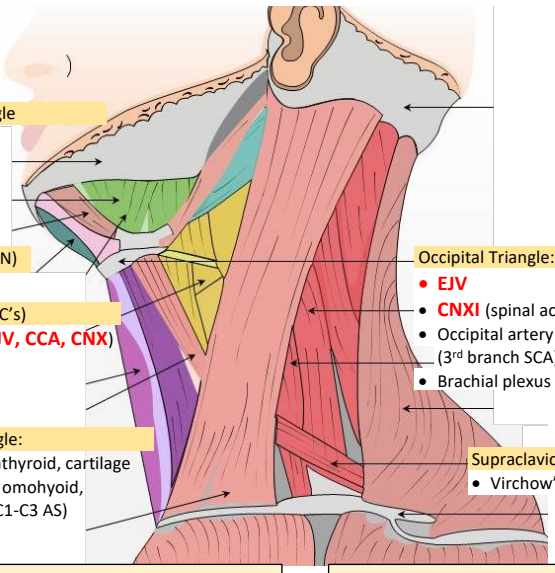
MIDLINE MASS
- Dermoid cyst
- Thyroglossal
- Thyroid
- Ranula



Drainage Levels
- **Level 1-3** = oral cavity
- **Level 2**-4 = oropharynx, larynx
- **Level 4-6** = larynx + GIT + subglottal
- **Level 6** = thyroid

Anterior Masses
- Branchial cyst = Failure of 2nd brachial cleft to obliterate
- Lymphoma
- Chemodectoma

Pharyngeal Pouch (posterior)
- Cystic hygroma
- Lymphoma
- Zenker's diverticulum (cricopharyngeal outpouching)



Submandibular Triangle
- Submand. Gland
- CNXII (hypoglossal)
- Mylohyoid nerve

Submental Triangle (LN)

Carotid Triangle: (3 C's)
- Carotid sheath (**IJV, CCA, CNX**)
- Ansa cervicalis
- **CN7, 10-12**

Muscular Triangle:
- Thyroid, parathyroid, cartilage
- Sternohyoid, omohyoid, thyrohyoid (C1-C3 AS)

Occipital Triangle:
- **EJV**
- **CNXI** (spinal accessory)
- Occipital artery (3rd branch SCA)
- Brachial plexus

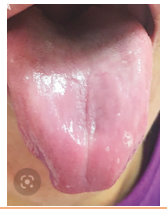
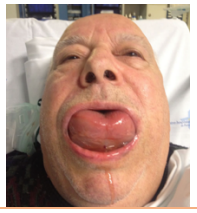
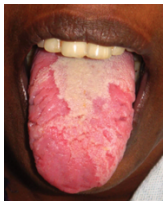
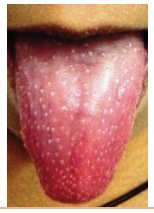
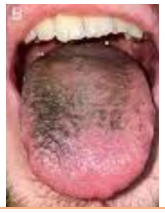
Supraclavicular Triangle:
- Virchow's node

__NOTE__:
- TONSILS + post 1/3rd of tongue → jugulodigastric LN
- TONGUE + ant 1/3rd of tongue → jugulo-omohyoid LN

__ANTERIOR TRIANGLE__
1) **Mandible** = superior border
2) **Midline of the neck** = the medial border
3) **SCM** = lateral border

__POSTERIOR TRIANGLE__
1) **Clavicle** = inferior border
2) **Trapezius** = posterior border
3) **SCM** = lateral border

TONGUE CONDITIONS

	Glossitis	Angioedema	Oral candida (oral thrush)	Geographic Tongue	Strawberry tongue	Black hairy tongue
Define	• Inflamed, red, sore tongue • Smooth looking tongue (atrophy of papilla)	Fluid accumulation in tissue (esp. limbs, face and lips)	**Un-scrapable** white spots or patches on tongue and palate	Inflamed tongue causing loss of epithelium and papillae	Swollen red tongue with prominent papillae	• Lack of exfoliation or shedding of keratin • Blackness due to accumulation of bacteria and food with elongated papilla
Cause	• Fe def. anaemia • B12 def. • Folate def. • Coeliac disease • Injury or irritant exposure	• Anaphylactic allergic reactions • ACEi • C1 esterase inhibitor def. (hereditary angioedema)	• RF: • Inhaled CS (not using space) • ABx • Diabetes, • Immunosupp (HIV) • Smoking	• Stress • Psoriasis • Atopy (asthma, hayfever, eczema) • Diabetes	• Scarlet fever • Kawasaki	• Dehydration • Poor oral hygiene • Smoking
Rx	Rx underlying cause	Rx underlying cause	• HCO_3 washes • Miconazole gel • Nystatin • Fluconazole (if recurrent or severe)	• Self-resolve • Topical steroids or antihistamines (to help)	• ABx for GAS • IVIg + aspirin for kawasaki	• Hydration • Gentle tongue brushing • Stop smoking
						

MOUTH AND GUM CONDITIONS

	Leukoplakia	Erythroplakia	Lichen planus	Gingivitis	Gingival Hyperplasia	Aphthous Ulcers
Define	• **Un-scrapable** White patches on tongue or buccal mucosa • **May need biopsy**	• **Un-scrapable red and white** patches • **Will need biopsy**	• Autoimmune chronic inflammation • Shiny purple flat topped raised areas "wicham's stria"	• Swollen red painful gums • Halitosis • Lead to periodontitis (spread to teeth) • Acute necrotisin ulcerative gingivitis (anaerobic bacteria)	Abnormal growth of gums	• Small painful well-defined punched out ulcers (white appearance) • Refer if unexplained ulceration > 3 weeks
Cause	• Precancerous for SCC	• Precancerous for SCC	•	• Smoking • DM • Malnutrition • stress	• gingivitis • Pregnancy • Vit c def. (scurvy) • AML • Meds (e.g. CCB, phenytoin, ciclosporin)	• Normal Assoc. • IBD • Coeliac • Behcet • Fe, B12, folate, vit D def. • HIV
Rx	• Stop smoking, EtOH • Laser removal or • surgical excision		• Good oral hygiene • Stop smoking • Topical steroids	• Good oral hygiene • Stop smoking • Dental hygienist • Chlorhexidine mouth wash • Metronidazole for acute necrotising ulcerative gingivitis	Rx cause	Self-resolve in 2 wks (with no intervention) • Topicals (e.g. lidocaine, chloine salicylate) • Topical steroids (if severe) – given as buccal tablets (hydrocortisone)