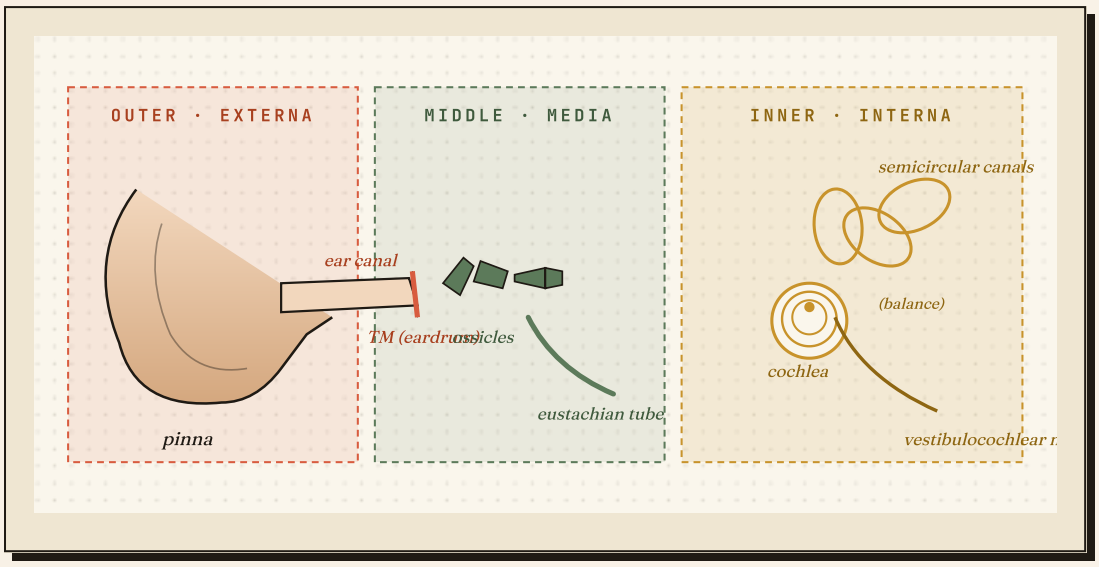
The Three Otitides — *outer, middle & inner ear*

*A side-by-side decision map for differentiating **otitis externa**, **otitis media**, and **otitis interna (labyrinthitis)** — pathophysiology, hallmark findings, management, parent teaching, and the click-traps that catch students on Bow-Tie and Matrix items.*



Map the Anatomy → Map the Symptoms

- **Outer ear (canal + TM)** — touch hurts. Tragus tenderness, swelling, drainage. Hearing usually intact unless canal occluded.
- **Middle ear (ossicles + ET)** — pressure hurts. Bulging red TM, fluid, fever, conductive hearing loss. Most common in < 2 y/o.
- **Inner ear (cochlea + canals)** — balance fails. Vertigo, nausea, nystagmus, sensorineural hearing loss. Pain is *not* the chief complaint.

TYPE 01 · OUTER

Otitis Externa

"Swimmer's Ear"

PATHOPHYSIOLOGY

- Inflammation/infection of the **external auditory canal**.
- Skin barrier breaks → moisture-trapped canal becomes warm + alkaline.
- Top pathogens: **Pseudomonas aeruginosa**, *Staph aureus*.
- Triggers: swimming, humid climates, cotton swabs, hearing aids, eczema.

CLINICAL PRESENTATION

- **Pain with tragus pressure or pinna pull** — classic finding.
- Itching → progresses to severe pain.
- Edematous, erythematous canal; **purulent drainage**.
- **TM is normal** (if visible) — no fluid behind it.
- Hearing usually intact unless canal swells shut.
- Usually **afebrile**.

HALLMARK

"Tragus tenderness." Pulling the auricle reproduces pain — the single highest-yield exam finding.

MANAGEMENT

- **Topical** antibiotic drops: ofloxacin, ciprofloxacin/dexamethasone, polymyxin B + neomycin + hydrocortisone.
- Lie affected ear **up × 3–5 min** after instillation.
- Severe swelling → **ear wick** placed by provider to deliver drops.
- Analgesia: acetaminophen / ibuprofen.
- **Keep ear dry × 7–10 days** — no swimming, no submerging.
- Oral abx only if cellulitis or systemic symptoms.

PARENT & PATIENT TEACHING

- **Nothing smaller than your elbow** in the ear — no Q-tips.
- Dry ears with towel + tilt head; blow-dryer on low/cool 12 in away.
- Custom ear plugs / swim caps for chronic swimmers.
- Acidifying drops (2 % acetic acid) post-swim for prevention.
- Finish full antibiotic drop course even if pain resolves.

COMPLICATIONS

- Cellulitis / auricular chondritis.
- **Malignant (necrotizing) otitis externa** — rare in healthy kids; risk ↑ in immunocompromised & uncontrolled diabetes; can spread to skull base.
- Canal stenosis with chronic infection.

TYPE 02 · MIDDLE

Otitis Media

AOM · OME · Recurrent

PATHOPHYSIOLOGY

- Eustachian-tube dysfunction → negative pressure → **fluid trapped behind TM** → bacterial/viral overgrowth.
- Pediatric ET is **shorter, wider, more horizontal** → reflux of nasopharyngeal flora.
- Top pathogens: **S. pneumoniae**, non-typeable H. influenzae, M. catarrhalis.
- Peak incidence: **6–24 months**.

CLINICAL PRESENTATION

- **Tugging / pulling at the affected ear** in nonverbal infants.
- Fever, irritability, **poor feeding**, night waking.
- Otoscopy: **bulging**, erythematous, opaque TM with ↓ **mobility** on pneumatic insufflation.
- Loss of normal landmarks / light reflex.
- If TM ruptures → sudden pain relief + purulent otorrhea.
- Conductive hearing loss while effusion present.

HALLMARK

Bulging TM + decreased mobility = AOM. Effusion *without* inflammation = OME (watch, don't treat with abx).

MANAGEMENT

- **Observation 48–72 h** if ≥ 2 y/o, unilateral, mild, no otorrhea.
- First-line: **high-dose amoxicillin 80–90 mg/kg/day** ÷ BID × 10 d (5–7 d if older / mild).
- Recent abx, conjunctivitis, or treatment failure → **amoxicillin-clavulanate**.
- PCN allergy → cefdinir, cefuroxime, ceftriaxone IM.
- Pain control: **acetaminophen / ibuprofen** (analgesia is priority; *not* abx).
- Recurrent (≥ 3 in 6 mo or 4 in 12 mo) or persistent OME → **tympanostomy tubes**.

PARENT & PATIENT TEACHING

- **Hold infant upright** for feeds; **never prop the bottle**.
- Eliminate secondhand smoke; limit pacifier after 6 mo.
- Stay current on **PCV13/15, Hib, annual influenza** vaccines.
- Encourage breastfeeding ≥ 6 months (protective).
- Post-tubes: keep tubes dry per provider, expect them to fall out 6–18 mo, return for drainage / fever.
- Watch for speech / language delay → audiology referral if effusion > 3 mo.

COMPLICATIONS

- TM perforation (usually self-heals).
- **Mastoiditis** — postauricular swelling + protruding pinna = ED now.
- Conductive hearing loss → **speech / language delay**.
- Cholesteatoma, meningitis, intracranial abscess (rare).

TYPE 03 · INNER

Otitis Interna

Labyrinthitis

PATHOPHYSIOLOGY

- Inflammation of the **labyrinth** (cochlea + semicircular canals) — disrupts hearing *and* balance.
- Most often **viral** (post-URI); bacterial form usually a complication of untreated AOM or meningitis.
- Less common in children — but high-yield because symptoms mimic neuro emergencies.

CLINICAL PRESENTATION

- **Vertigo** — true room-spinning sensation.
- Nausea / vomiting, ataxia, falls, refusal to walk.
- **Sensorineural hearing loss**, tinnitus.
- **Nystagmus** (often horizontal, away from affected side).
- Usually **no ear pain**; afebrile unless bacterial.
- Symptoms peak 24–48 h, resolve over days–weeks.

HALLMARK

Vertigo + hearing loss = labyrinthitis. Vertigo *alone* = vestibular neuritis. Add red flags (focal deficits, severe HA) → think stroke/CNS, escalate.

MANAGEMENT

- Mostly **supportive** — viral cases are self-limited.
- Antiemetics: **ondansetron**; meclizine for older kids.
- Vestibular suppressants short-term (meclizine, low-dose benzodiazepine) — limit to days.
- **Corticosteroids** may be used to preserve hearing.
- **IV antibiotics** if bacterial / suppurative; ENT consult.
- Hydration, bed rest in **quiet, dim** room; gradual ambulation.
- Vestibular rehab once acute phase passes.

PARENT & PATIENT TEACHING

- **Fall & safety precautions**: side rails up, supervised ambulation, clear walkways, non-slip footwear.
- Change positions **slowly**; sit at edge of bed before standing.
- Dim lights, avoid screens, sudden head turns, and busy visual scenes.
- Stay hydrated; small frequent meals; avoid caffeine, nicotine, alcohol (older teens).
- Hold off on driving, biking, sports, swimming until cleared.
- Return precautions: worsening hearing loss, severe HA, double vision, weakness, persistent vomiting.

COMPLICATIONS

- **Permanent sensorineural hearing loss**.
- Chronic balance problems, BPPV.
- Meningitis (bacterial spread), brain abscess (rare).
- Developmental impact in young children if hearing not restored.

DIFFERENTIATOR MATRIX · "WHICH OTITIS IS THIS?" — USE FOR BOW-TIE + MATRIX ITEMS

Finding	Externa	Media	Interna
Tragus tenderness	✓ **YES** — classic	No	No
Tympanic membrane	Normal (often hidden by edema)	**Bulging, red, ↓ mobility**	Normal
Fever	Usually no	Often yes	Only if bacterial
Hearing loss	Mild conductive (canal swelling)	Conductive (effusion)	**Sensorineural**
Vertigo / nystagmus	No	No	✓ **YES** — defining
Drainage	Purulent from canal	Only if TM perforated	Rare
First-line therapy	**Topical** abx drops + dry ear	Observe or **oral amoxicillin**	Supportive + antiemetics ± steroids
Top safety priority	Keep canal dry; monitor for spread	Pain control + watch for mastoiditis	**Fall precautions** + airway if vomiting

MNEMONIC · "EAR" — LOCATE THE PAIN, LOCATE THE PATHOLOGY ★ HIGH-YIELD

E | **Externa = Edge.** The pain is at the *edge* of the ear (tragus, pinna). Touch hurts. Think water in, drops in, no swimming.

A | **AOM = Aching pressure.** Pain is *deep + throbbing*, with fever and tugging. Bulging red TM. Amoxicillin is the answer.

R | **Interna = Room spinning.** No pain — but the *room* won't stop spinning. Vertigo, nystagmus, hearing loss. Falls are the threat.

Pediatric ET rule (why AOM ≠ adult AOM): kids have eustachian tubes that are **shorter, wider, more horizontal** until ~6 y/o. Refluxed nasopharyngeal flora pool in the middle ear → why bottle-propping & supine feeds are forbidden.

NGN CLICK-TRAPS · WRONG ANSWER PATTERNS ⚠ AVOID

1. TRAP 1 **"Give oral antibiotics for swimmer's ear."** Externa is treated *topically*. Oral abx only for cellulitis or systemic illness.
2. TRAP 2 **"Antibiotics first for every red ear."** AOM in a stable child ≥ 2 y/o can be observed 48–72 h. Pain control is the priority.
3. TRAP 3 **"Irrigate the canal."** Never irrigate when TM rupture, drainage, or PE tubes are possible.
4. TRAP 4 **"Lay infant flat after feeds."** Upright + burp. Bottle-propping & supine feeding = AOM risk factor.
5. TRAP 5 **"Vertigo? Reassure and discharge."** First rule out CNS red flags (focal deficits, headache, persistent vomiting). Labyrinthitis ≠ stroke, but you must screen.
6. TRAP 6 **"Pulling on ear = pain."** Tugging in an infant suggests *media*; pain on tragus pull suggests *externa*. Don't conflate them.
7. TRAP 7 **"Postauricular swelling is normal swelling."** Pinna pushed forward + tenderness behind ear = **mastoiditis** — escalate now.

NGN Bow-Tie Scenario • *"The 18-Month-Old in Triage"*

CLINICAL JUDGMENT · STEP 1-6

An **18-month-old** presents with 2 days of fever (39.1 °C), tugging at the right ear, decreased PO intake, and overnight crying. URI symptoms × 1 week. Otoscopy: **right TM is opaque, bulging, with absent light reflex and decreased mobility**. Left TM normal. No drainage. Walks steadily. No nystagmus.

The nurse correctly identifies the priority condition as _____ and anticipates _____ as the first-line intervention.

Recognize Cues → Analyze → Prioritize

- ✓ **Condition:** Acute Otitis Media (right) — bulging + ↓ mobility + fever + ear-tugging at peak age.
- ✓ **1st Action:** Pain & fever control (acetaminophen or ibuprofen).
- ✓ **1st-line abx (if treating):** high-dose **amoxicillin 80–90 mg/kg/day** ÷ BID × 10 days.
- ✓ **Monitor for:** mastoid tenderness, postauricular swelling, persistent fever > 48–72 h on therapy.
- ✓ **Teach caregiver:** upright feeds, no bottle-propping, smoke-free environment, complete the course.