

NGN NCLEX • 2026

SENSORY • HEENT

AOM

OE

PEDS & ADULT

Acute Otitis Media vs. Otitis Externa

Two infections of the ear with overlapping pain and drainage cues — but completely different anatomy, organisms, antibiotic routes, and patient-education priorities. The NCLEX loves to test the discrimination.

TOPIC CLUSTER: SENSORY / INFECTIOUS DISEASE

NCJMM LAYERS: RECOGNIZE → ANALYZE → PRIORITIZE

TESTED AS: BOW-TIE • MATRIX • HIGHLIGHT • SATA

Source Transparency: Otitis media & otitis externa were not present in your uploaded flashcard set. Content here is reconciled to standard NCLEX references — *Saunders Comprehensive Review for the NCLEX-RN (2026)*, *ATI RN Adult Medical-Surgical Nursing*, *Lippincott Illustrated Reviews: Pharmacology*, *AAP Clinical Practice Guideline: Diagnosis & Management of AOM*, and the *IDSA Clinical Practice Guideline for Acute Otitis Externa*.

01

Definition & Overview

WHAT IT IS • WHO GETS IT

AOM

Acute Otitis Media

"middle ear infection"

LOCATION	Middle ear — behind the tympanic membrane (TM)
CAUSE	Bacterial: <i>S. pneumoniae</i> , <i>H. influenzae</i> , <i>M. catarrhalis</i> ; often follows viral URI
POPULATION	Peak in children 6–24 months; eustachian tubes shorter, straighter, more horizontal
TRIGGER	URI • allergies • supine bottle-feeding • pacifier • daycare • 2nd-hand smoke
WHY IT MATTERS	#1 reason for antibiotics & sick visits in U.S. children

OE

Otitis Externa

"swimmer's ear"

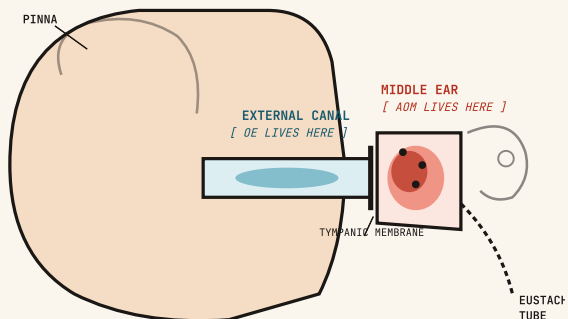
LOCATION	External auditory canal — outside the TM
CAUSE	Bacterial: <i>Pseudomonas aeruginosa</i> (#1), <i>S. aureus</i> ; sometimes fungal (otomycosis)
POPULATION	Swimmers, hot/humid climates, hearing-aid & earbud users, divers
TRIGGER	Water retention • cotton-swab trauma • cerumen removal • eczema • narrow canal
WHY IT MATTERS	In diabetics & immunocompromised → malignant OE (life-threatening)

02

Pathophysiology · Step-by-Step

WHY THE SYMPTOMS APPEAR

EAR ANATOMY · INFECTION SITES



SAME EAR, TWO DIFFERENT INFECTION COMPARTMENTS

AOM PATHOPHYSIOLOGY

Viral URI → eustachian tube edema →
tube blocked → negative middle-ear pressure →
 transudate accumulates → bacteria seed the effusion
 → **purulent middle-ear fluid** → bulging, red,
 immobile TM → pain, fever, conductive hearing loss

OE PATHOPHYSIOLOGY

Water in canal + macerated skin → cerumen washed
 away → alkaline pH + warmth →
bacterial overgrowth (Pseudomonas) → canal
 inflammation & edema → purulent drainage →
pain with tragus pull → canal may swell shut →
 conductive hearing loss

03

Signs & Symptoms • The Discrimination

CUES THAT SEPARATE THEM

AOM MIDDLE EAR

- ▶ **Otalgia at rest** (deep, throbbing) — not provoked by touch
- ▶ **Fever** (often > 38.5°C / 101.3°F) — common
- ▶ **Bulging, erythematous TM** with loss of light reflex
- ▶ **Decreased TM mobility** on pneumatic otoscopy (key finding)
- ▶ Middle-ear effusion / air-fluid level behind TM
- ▶ **Conductive hearing loss**; sensation of fullness/pressure
- ▶ In **infants/toddlers**: tugging at ear, irritability, poor feeding, sleep disruption
- ▶ Drainage **only if TM ruptures** (purulent, often relieves pain)

CLASSIC AOM CUE

Recent URI → ear pain at rest + fever + *bulging* TM

OE EXTERNAL CANAL

- ▶ **Pain with tragus or pinna manipulation** — pathognomonic
- ▶ **Itching** in the canal (often the earliest symptom)
- ▶ Edematous, erythematous canal — may be **swollen shut**
- ▶ Purulent or serous discharge in the canal
- ▶ **Hearing loss only if canal occluded** (conductive)
- ▶ Tender preauricular/postauricular lymph nodes
- ▶ TM is **normal** (if it can be visualized)
- ▶ Usually **afebrile** — fever suggests cellulitis or malignant OE

CLASSIC OE CUE

Recent swimming → pull on tragus = *severe pain* + canal debris

RED FLAGS • ESCALATE IMMEDIATELY



AOM: stiff neck, photophobia, altered LOC, severe headache (→ meningitis); postauricular swelling/erythema with protruding pinna (→ **mastoiditis**); facial nerve droop. **OE in a diabetic / immunocompromised adult:** severe deep pain, granulation tissue in canal floor, facial nerve palsy (→ **malignant / necrotizing OE** — *Pseudomonas* osteomyelitis of skull base, mortality up to 50%).

04

Priority Nursing Interventions • ABC Framework

ASSESS → ACT → REASSESS

A

AIRWAY

- Both disorders *generally* spare the airway
- Watch for swelling extending to neck/face (cellulitis)
- Stridor or trismus → ENT emergency

B

BREATHING

- Typically unaffected
- Infant AOM: assess for tachypnea (fever, dehydration)
- Suspect bacteremia/sepsis if RR ↑ + ill-appearing

C

CIRCULATION

- Vital signs & hydration status (peds AOM ↓ PO intake)
- Capillary refill, mucous membranes, urine output
- Watch BP/HR for septic decompensation

D/S

DISABILITY • SAFETY

- Pain — rate & treat (acetaminophen / ibuprofen)
- Neuro check: LOC, headache, neck stiffness
- Hearing/balance safety; fall risk in elders

AOM Interventions

- 1 Assess pain** (FLACC for nonverbal peds, 0–10 scale older); position with affected ear *up* for comfort/drainage
- 2 Antipyretic / analgesic** — acetaminophen or ibuprofen (NSAIDs in > 6 mo); avoid ASA in children (Reye's)
- 3 Administer oral antibiotic** if prescribed (amoxicillin high-dose first line); complete entire course
- 4 Warm compress** to outer ear for comfort; encourage fluids; humidified air
- 5 Monitor for TM rupture**: sudden pain relief + purulent drainage = rupture → keep ear dry, notify HCP
- 6 Avoid**: blowing nose forcefully; flying / underwater swimming until cleared
- 7 Reassess in 48–72 hr** — if no improvement, suspect resistance → switch to amoxicillin-clavulanate
- 8 Recurrent AOM** (≥3 in 6 mo or ≥4 in 1 yr) → ENT referral for *typanostomy tubes* (myringotomy)

OE Interventions

- 1 Clean canal** of debris (cerumen, drainage) so drops reach inflamed tissue — gentle irrigation only if TM *intact*
- 2 Administer topical otic drops** (antibiotic ± steroid) — drops must reach tissue, not pool in vestibule
- 3 Drop technique**: warm to body temp; adult *up & back*, child < 3 *down & back*; lateral position 5 min after instillation
- 4 Wick placement** (Pope ear wick) if canal too edematous for drops to penetrate — keep wick moist with drops
- 5 Pain control**: NSAIDs/acetaminophen; severe cases may need opioid briefly; warm compress externally
- 6 Keep ear DRY** — no swimming, showering with cap or cotton ball + petroleum jelly; finish full drop course (7–10 days)
- 7 Reassess in 48–72 hr**; persistence/worsening → reculture, screen for diabetes, consider malignant OE
- 8 Avoid**: cotton swabs, ear candling, headphones/earbuds until resolved

05

Pharmacology • Drug-by-Drug

CLASS • ACTION • KEY TEACHING

DRUG	MECHANISM	KEY SIDE EFFECTS	NURSING CONSIDERATIONS
Amoxicillin AMINOPENICILLIN • 1ST-LINE AOM • HIGH DOSE 80-90 MG/KG/DAY PO	Bactericidal — inhibits bacterial cell-wall synthesis (binds PBPs)	Diarrhea, rash, C. diff , candidiasis, hypersensitivity (urticaria → anaphylaxis)	Confirm penicillin allergy first. Give full course. Take with or without food. Shake suspension. Refrigerate if labeled.
Amoxicillin-Clavulanate AUGMENTIN • 2ND-LINE / TREATMENT FAILURE / CONCURRENT CONJUNCTIVITIS	Amoxicillin + beta-lactamase inhibitor → covers resistant H. influenzae & M. catarrhalis	More GI upset / diarrhea than amox alone; rash; hepatotoxicity (rare)	Give with food to reduce GI upset. Monitor stools. Same allergy precautions as amoxicillin.
Ceftriaxone 3RD-GEN CEPHALOSPORIN • IM × 1-3 DAYS FOR VOMITING/SEVERE AOM	Beta-lactam — bactericidal cell-wall inhibitor; broad gram-negative coverage	Injection site pain, diarrhea, rash; do NOT mix with calcium-containing IV in neonates (precipitates)	Cross-allergy with PCN possible — ask. Reconstitute with lidocaine for IM to reduce pain (verify orders).
Azithromycin MACROLIDE • FOR PCN-ALLERGIC PATIENTS	Inhibits bacterial protein synthesis (50S ribosome) — bacteriostatic	GI upset, QT prolongation , hepatotoxicity, ototoxicity (rare)	Baseline ECG if cardiac risk; avoid with other QT-prolonging drugs (e.g., ondansetron).
Ciprofloxacin/Dexamethasone otic CIPRODEX • FLUOROQUINOLONE + CORTICOSTEROID • 1ST-LINE OE	Cipro: inhibits bacterial DNA gyrase (Pseudomonas coverage). Dex: ↓ canal inflammation/edema	Local: stinging, itching, taste change; systemic absorption minimal	Safe with TM rupture (non-ototoxic FQ). Warm bottle in hand. Keep ear up 5 min. Full 7-day course.
Ofloxacin otic FLOXIN OTIC • FLUOROQUINOLONE • ALTERNATIVE FOR OE	Inhibits bacterial DNA gyrase & topoisomerase IV — covers Pseudomonas & S. aureus	Local irritation, pruritus, dizziness	Safe across TM; can be used in children ≥ 6 mo. Same instillation technique.
Neomycin/Polymyxin B/Hydrocortisone CORTISPORIN OTIC • OE ONLY IF TM INTACT	Aminoglycoside + polymyxin (gram-neg/Pseudomonas) + steroid	Ototoxicity if TM perforated; contact dermatitis from neomycin	Confirm TM intact before use. Hold if itching/rash worsens — neomycin allergy is common.
Acetic acid 2% (± hydrocortisone) VOSOL • ACIDIFIES CANAL • MILD OE / PREVENTION	Restores acidic canal pH → inhibits bacterial & fungal growth	Burning, stinging on instillation	Useful for swimmer prophylaxis (homemade: 50/50 white vinegar + isopropyl alcohol — only if TM intact).
Acetaminophen / Ibuprofen ANALGESIC / ANTIPYRETIC • BOTH AOM & OE	Acetaminophen: central COX inhibition. Ibuprofen: NSAID — peripheral COX, ↓ prostaglandins → ↓ inflammation	APAP: hepatotoxicity in overdose. Ibuprofen: GI upset, renal, bleeding risk	No ASA in children — Reye syndrome. Verify weight-based peds dosing. Ibuprofen only if > 6 mo & hydrated.

DRUG	MECHANISM	KEY SIDE EFFECTS	NURSING CONSIDERATIONS
Benzocaine otic (Auralgan) TOPICAL ANESTHETIC • ADJUNCT PAIN FOR AOM	Blocks Na ⁺ channels in nerve endings — local anesthesia of TM	FDA warning: methemoglobinemia in infants < 2 yr — avoid	Only if TM is intact . Do not use in young infants. Has fallen out of guideline favor.

06

NCLEX Test Traps ⚠

WRONG VS. RIGHT • WHAT STUDENTS CONFUSE



Trap #1 — Which Otitis?

WRONG ~~"Drainage from the ear" automatically means AOM with rupture.~~

RIGHT Drainage is more typical of OE; in AOM, drainage means the TM *has already ruptured* and pain just dropped.



Trap #2 — Tragus Tenderness

WRONG ~~Pain on tragus pull = ear infection (use any antibiotic).~~

RIGHT Tragus pain is **specific to OE**; treat with *topical* otic drops, not oral antibiotics.



Trap #3 — Pulling the Pinna

WRONG ~~Always pull the pinna up & back for ear drops.~~

RIGHT **Adult/>3 yr:** up & back. **Child < 3 yr:** down & back (eustachian tube is straighter/lower in young kids).



Trap #4 — Cortisporin Choice

WRONG ~~Cortisporin (neomycin) is fine for any OE.~~

RIGHT Confirm TM is **intact** first — neomycin is ototoxic. If TM status unknown → use a fluoroquinolone (ciprodex / ofloxacin).



Trap #5 — "Antibiotics for everyone"

WRONG ~~Every child with AOM gets an immediate antibiotic.~~

RIGHT AAP allows **observation 48–72 hr** in children ≥ 2 yr with unilateral, non-severe AOM & reliable follow-up. Treat pain regardless.



Trap #6 — Drop Position

WRONG ~~Sit upright after ear drops so the medication absorbs.~~

RIGHT Remain in **lateral / side-lying** position for **5 min** — drops need to *stay in the canal*, not run out.



Trap #7 — Aspirin in Peds

WRONG ~~Give baby aspirin for fever in pediatric AOM.~~

RIGHT **Never aspirin** in children with viral illness — **Reye syndrome**. Use acetaminophen or ibuprofen (> 6 mo).



Trap #8 — "It's just an ear infection"

WRONG ~~Older diabetic with deep ear pain + drainage — treat as routine OE.~~

RIGHT Screen for **malignant otitis externa** (*Pseudomonas* skull-base osteomyelitis) — needs IV antibiotics & ENT urgently.

07

Patient & Family Education

DO THIS • DON'T DO THAT

AOM Teaching (Parents & Caregivers)

- ✓ **Complete the full antibiotic course** — even if the child feels better in 2 days
- ✓ **Reassess pain & fever at 48–72 hr**; call HCP if no improvement
- ✓ Position child with **head elevated** during sleep; affected ear up for comfort
- ✓ Hold the bottle — **no supine bottle-feeding**; wean pacifier after 6 mo
- ✓ Breastfeeding (≥ 6 months) reduces AOM risk
- ✓ Keep up to date on **pneumococcal (PCV) & influenza** vaccines
- ✓ Eliminate **second-hand smoke** exposure
- ✗ Do **not** give aspirin for fever in any child (Reye syndrome)
- ✗ Do **not** insert anything into the ear (cotton swabs, fingers)
- ✓ Return immediately for stiff neck, severe headache, behind-ear swelling, facial droop, or persistent drainage

OE Teaching (Patient)

- ✓ **Keep the ear dry** for the entire treatment course
- ✓ Use **ear plugs or cotton ball with petroleum jelly** when showering
- ✓ Tilt head & pull pinna to drain water after swimming; dry outer ear gently with a towel
- ✓ Consider acetic-acid drops after swimming for high-risk people
- ✓ Use drops **side-lying for 5 min**; warm bottle in hand first
- ✓ Complete the **full 7–10 day** course of drops, even if pain resolves
- ✗ **No cotton swabs, bobby pins, or ear candling** — ever
- ✗ **No swimming or submerging head** until cleared
- ✗ Do not share earbuds or hearing-aid molds while infected
- ✓ Diabetics: report deep/severe pain or fever immediately (malignant OE risk)

★ Otic Drop Administration — Tested every NCLEX cycle

1

PREPARE

Warm bottle in hands 5 min (cold drops → dizziness, nausea, vertigo). Wash hands. Position patient side-lying, affected ear up.

2

STRAIGHTEN CANAL

Adult / > 3 yr: pull pinna *up & back*.
Child < 3 yr: pull pinna *down & back*.

3

INSTILL & HOLD

Hold dropper **½ inch above canal** (do not touch). Instill ordered drops. Press tragus gently. Stay side-lying **5 minutes**.

08

Memory Boosters • Mnemonics & Pattern Recognition

LOCK IT IN

M•E•D•I•A

ACUTE OTITIS MEDIA — MIDDLE EAR

- M** — Middle-ear infection (behind TM)
- E** — Eustachian tube blocked → effusion
- D** — Deep, dull pain at rest + fever
- I** — Inflamed, bulging, Immobile TM
- A** — Amoxicillin first-line; Aspirin avoid in kids

S•W•I•M

OTITIS EXTERNA — SWIMMER'S EAR

- S** — Swimming / Sweat / moisture exposure
- W** — Wiggle the tragus → pain (pathognomonic)
- I** — Itching & canal Inflammation
- M** — Medication is topical (drops); keep ear dry

PATTERN RECOGNITION • QUICK-SORT CUES

"Recent URI, deep ear pain, fever, bulging red TM"

→

AOM

"Just got back from swim camp; pain when I pull on my ear"

→

OE

"Toddler tugging at ear, irritable, won't drink the bottle"

→

AOM

"Itchy canal, scant drainage, hearing muffled, no fever"

→

OE

"Sudden pain relief + purulent drainage in known AOM"

→

AOM + TM RUPTURE

"Diabetic adult, granulation tissue in canal, facial droop"

→

MALIGNANT OE — EMERGENCY

"Postauricular swelling, protruding pinna, fever, AOM history"

→

MASTOIDITIS — EMERGENCY

CASE STEM

A 6-year-old is brought to the urgent care clinic by their parent. The child has been at summer swim camp for the past week and reports that "my ear hurts so bad I can't sleep." The parent reports the child cries with hair-washing and refuses to let anyone touch the right ear. Vital signs: T 37.4°C, HR 102, RR 22, BP 102/64, SpO₂ 99%. On exam: the right canal is edematous with scant yellow-white discharge; the tympanic membrane is not clearly visualized due to canal swelling. The patient grimaces severely when the tragus is depressed.

STEP 1 • RECOGNIZE CUES

What stands out?

Swim-camp exposure, severe pain with *tragus manipulation*, edematous canal with drainage, afebrile, normal vitals. The cue cluster points to the external ear, not the middle ear.

STEP 2 • ANALYZE CUES

What do they mean?

Tragus pain + canal edema + water exposure = **otitis externa**. Absence of fever & URI argues against AOM. TM not visualized may be due to canal swelling — not rupture.

STEP 3 • PRIORITIZE HYPOTHESES

Top concern?

#1 Acute otitis externa (most likely). Rule out AOM with TM rupture. Watch for cellulitis spreading to auricle. No red flags for malignant OE in a previously healthy child.

STEP 4 • GENERATE SOLUTIONS

Plan of care

Pain control (ibuprofen weight-based). Topical fluoroquinolone otic drops (e.g., ciprodex) — safe even if TM status unclear. Demonstrate side-lying instillation. Strict *dry-ear* precautions. Reassess in 48–72 hr.

STEP 5 • TAKE ACTION

What does the nurse do?

Administer first dose of drops with proper technique (pinna *up & back* at age 6). Teach parent the 5-minute side-lying rule. Provide written instructions. Schedule follow-up. Withhold cotton swabs & swimming.

STEP 6 • EVALUATE OUTCOMES

Did it work?

Expected by 48–72 hr: ↓ pain, ↓ canal edema, drops penetrate. If no improvement → recheck for foreign body, fungal etiology, or wick placement. If worsening with fever/auricle swelling → escalate.