

NGN NCLEX 2026 · PEDIATRIC RESPIRATORY

Croup *vs* Epiglottitis *vs* Pertussis

Three pediatric upper-airway infections that look alike on the surface — and demand radically different priorities. Master the differential, recognize the emergency, and act fast.

● SYSTEM: PEDIATRIC / RESPIRATORY ● TEST PLAN: PHYSIOLOGICAL ADAPTATION ● NCJMM 6-STEP ALIGNED



SOURCE TRANSPARENCY NOTICE

This topic was not present in the uploaded personal notes. Content compiled from standard NCLEX references: *Saunders Comprehensive Review for the NCLEX-RN 2026*, *ATI RN Nursing Care of Children*, *Lippincott Maternity & Pediatric Nursing*, and current *CDC Pertussis (Whooping Cough) Clinical Guidelines* and *AAP Red Book* recommendations.

01

DEFINITION & OVERVIEW

What Are We Dealing With?

VIRAL



Croup

LARYNGOTRACHEOBRONCHITIS

- ▶ **Viral** swelling of the larynx, trachea & bronchi — **subglottic** (below the vocal cords)
- ▶ Cause: **Parainfluenza virus** (most common); also RSV, influenza, adenovirus
- ▶ Ages: **6 months – 6 years** (peak 1–3 yrs); often follows a cold
- ▶ Self-limiting in most cases — manage at home with mist & calm

SUBGLOTTIC

VIRAL

GRADUAL ONSET



EMERGENCY



Epiglottitis

SUPRAGLOTTITIS

- ▶ **Bacterial** inflammation of the **epiglottis** — supraglottic obstruction
- ▶ Cause: **H. influenzae type B (Hib)**; also Strep, Staph (Hib vaccine ↓ incidence dramatically)
- ▶ Ages: **2 – 8 years** classically; can occur at any age
- ▶ **LIFE-THREATENING airway emergency** — complete obstruction can occur in hours

SUPRAGLOTTIC

BACTERIAL

SUDDEN ONSET

CONTAGIOUS



Pertussis

WHOOPIING COUGH

- ▶ **Bacterial** infection of the upper respiratory tract — toxin damages cilia, causing the hallmark cough
- ▶ Cause: **Bordetella pertussis** (gram-negative)
- ▶ Ages: Most severe in **infants < 6 months** (often unvaccinated); resurging in adolescents/adults
- ▶ **Highly contagious via droplets** — runs in 3 distinct stages over weeks to months

DROPLET

BACTERIAL

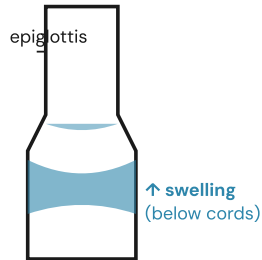
3 STAGES

PATHOPHYSIOLOGY

02 How the Airway Fails

CROUP

Subglottic swelling



EPIGLOTTITIS

Supraglottic swelling



PERTUSSIS

Ciliary damage + mucus



ANATOMIC LEVEL OF OBSTRUCTION — THE KEY DIFFERENTIATOR

Croup

Viral invasion of upper airway mucosa



Inflammation & edema of **larynx, trachea, bronchi** — narrows the **subglottic** region



Air forced through narrowed cords → **inspiratory stridor** + barky cough



Hypoxia possible if severe; usually resolves in 3–7 days

Epiglottitis

Bacteria invade the **epiglottis** (the flap covering the trachea)



Rapid, severe inflammation → epiglottis swells into a **cherry-red mass**



Swollen epiglottis falls over the airway → **partial/complete obstruction**



Child sits in **tripod** position to maximize airflow; can occlude completely if agitated

Pertussis

B. pertussis attaches to ciliated respiratory epithelium



Toxin paralyzes & destroys cilia → mucus cannot clear



Thick mucus accumulates → violent coughing fits to expel it



Forceful inspiration through narrowed glottis = the classic "**whoop**"

03

SIGNS & SYMPTOMS

What You'll See at the Bedside

	CROUP	EPIGLOTTITIS 🚑	PERTUSSIS
ONSET	Gradual (1–2 days, often follows a cold)	Sudden & rapid (hours)	Gradual, progresses through 3 stages over weeks
FEVER	Low-grade	High (102–104°F / 39–40°C)	Low-grade or absent
COUGH	Barky / seal-like 🦊, worse at night	Usually absent (won't or can't cough)	Paroxysmal fits ending in inspiratory " whoop "; often vomit after
VOICE	Hoarse	Muffled / "hot potato" voice (dysphonia)	Normal between fits
DROOLING	No	YES — can't swallow secretions (dysphagia) 🚑	No
POSITION	Variable; often comforted upright	Tripod / sniffing position — sitting, leaning forward, jaw thrust, mouth open 🚑	Variable; may sit up during coughing fit
STRIDOR	Inspiratory stridor (classic)	Inspiratory stridor — soft, late, ominous	None typically (lower airway involvement)
APPEARANCE	Mildly ill, fussy	Toxic-looking , anxious, restless — "looks sick"	Well between paroxysms; cyanosis during fits
SORE THROAT	Mild	Severe	Mild (catarrhal stage)
RED FLAG 🚑	Stridor at rest, retractions, cyanosis	The 4 D's: Drooling, Dysphagia, Dysphonia, Distress — plus tripod position	Apnea or cyanosis in infants; infants may not "whoop" — they just stop breathing

🚑 **Memory hook: The 4 D's of Epiglottitis**

Drooling **D**ysphagia **D**ysphonia **D**istressed inspiratory effort

If all 4 are present + high fever + sudden onset → **assume epiglottitis until proven otherwise**. Do not touch the throat.

04

PRIORITY NURSING INTERVENTIONS · ABCS FIRST

What to Do — Right Now

Croup

AIRWAY / BREATHING

- ▶ Assess for stridor at rest, retractions, color, & SpO₂
- ▶ **Cool mist humidifier** or take child into **cool night air** / steamy bathroom
- ▶ Administer **nebulized racemic epinephrine** (severe) — observe ≥ 2–3 hr post-dose for rebound
- ▶ Give **oral or IM dexamethasone** as ordered (single dose)

COMFORT / HYDRATION

- ▶ **Keep child calm** — crying ↑ airway swelling & obstruction
- ▶ Allow parent to hold child; minimize procedures
- ▶ Encourage clear fluids in small frequent sips

MONITOR

- ▶ Continuous SpO₂; respiratory rate & effort q1–2h
- ▶ **Worsening stridor at rest = escalate**

Epiglottitis

AIRWAY — TOP PRIORITY

- ▶ **DO NOT examine the throat** — no tongue depressor, no throat culture (can trigger laryngospasm & complete obstruction)
- ▶ **DO NOT place supine** — keep child **upright** in position of comfort (parent's lap)
- ▶ **Keep intubation / tracheostomy tray AT bedside**
- ▶ Anesthesia & ENT prepared in OR for controlled intubation
- ▶ Administer **humidified O₂** by blow-by (don't force a mask)

CALM + DON'T LEAVE

- ▶ **Stay with child at all times** — agitation can cause complete obstruction
- ▶ Keep parent present; defer all painful procedures (no IV starts) until airway secured
- ▶ NPO

TREATMENT

- ▶ IV antibiotics **after intubation**: 3rd-gen cephalosporin (ceftriaxone) ± vancomycin
- ▶ IV fluids; corticosteroids may be ordered

Pertussis

ISOLATION / SAFETY

- ▶ **Droplet precautions until 5 days of effective antibiotics complete**
- ▶ Private room; mask within 3 ft
- ▶ Report to public health (reportable disease)

AIRWAY / BREATHING

- ▶ Monitor for **apnea & cyanosis** in infants (continuous pulse ox & cardiorespiratory monitor)
- ▶ Suction PRN to clear thick mucus — gentle, oral/nasopharyngeal
- ▶ Humidified O₂ for hypoxia; have suction & bag-mask ready
- ▶ Elevate HOB; allow upright position during fits

HYDRATION / NUTRITION

- ▶ **Small, frequent feedings** (coughing fits → vomiting → ↓ intake)
- ▶ IV fluids if severe dehydration / inability to feed
- ▶ Strict I&O; daily weights for infants

⚠ Epiglottitis: The "Never Do" List

- X **Never** use a tongue blade or visualize the throat
- X **Never** place the child supine
- X **Never** attempt IV access or labs before airway is secured
- X **Never** leave the child unattended
- X **Never** separate the child from the parent

PHARMACOLOGY

05

Drugs Across the 3 Conditions

DRUG / CLASS	USED FOR	MECHANISM	SIDE EFFECTS	NURSING CONSIDERATIONS
Racemic Epinephrine SYMPATHOMIMETIC	Croup (moderate–severe)	α-adrenergic vasoconstriction ↓ mucosal edema	Tachycardia, tremors, ↑ BP	Observe ≥ 2–3 hr post-dose for rebound swelling; monitor HR & BP
Dexamethasone CORTICOSTEROID	Croup (single dose, oral or IM)	↓ Airway inflammation & edema	Hyperglycemia, mood change (rare in single dose)	Give with food if oral; effect lasts 24–72 hr
Ceftriaxone 3RD-GEN CEPHALOSPORIN	Epiglottitis (after airway secured)	Inhibits bacterial cell wall synthesis	Diarrhea, rash, hypersensitivity; cross-allergy w/ PCN (~5%)	Assess for PCN allergy; monitor for superinfection (thrush, C. diff)
Azithromycin / Erythromycin MACROLIDE	Pertussis (DOC) & close contacts (prophylaxis)	Inhibits bacterial protein synthesis (50S ribosome)	N/V, diarrhea, QT prolongation; infantile pyloric stenosis risk w/ erythromycin < 1 mo	Give with food if GI upset; monitor for arrhythmia; complete full course; isolate until 5 days of therapy done
DTaP / Tdap vaccine ACTIVE IMMUNIZATION	Prevention of pertussis (also diphtheria, tetanus)	Stimulates immune response to pertussis toxin	Local redness/swelling, low fever, fussiness	DTaP at 2, 4, 6, 15–18 mo, 4–6 yr; Tdap to all pregnant women each pregnancy (27–36 wk) to protect newborn
Hib vaccine ACTIVE IMMUNIZATION	Prevention of epiglottitis (and Hib meningitis)	Conjugate vaccine → antibodies vs. Hib capsule	Local injection-site reaction	Given at 2, 4, 6, 12–15 mo; reason epiglottitis is now rare

06

NCLEX TEST TRAPS

Where Students Lose Points

✗ WRONG CHOICE

"Assess the throat with a tongue depressor to visualize the epiglottis."

This is the #1 distractor on epiglottitis questions. It can trigger laryngospasm and **complete airway obstruction**.

✓ RIGHT CHOICE

"Keep the child upright with the parent and notify anesthesia / prepare for intubation."

Airway > everything. No throat exam, no procedures until airway is secured.

✗ WRONG CHOICE

"Place the child supine for assessment."

Supine position lets the swollen epiglottis fall back & occlude the airway. Always allow the child's **position of comfort** (tripod).

✓ RIGHT CHOICE

"Maintain the child in an upright position of comfort."

Tripod position is protective — never force them to lie down.

✗ WRONG CHOICE

"A barking cough with high fever, drooling, and tripod position is consistent with croup."

Drooling + tripod + high fever + toxic appearance = **epiglottitis**, not croup. Croup is **low-grade fever, barky cough, no drooling**.

✓ RIGHT CHOICE

Differentiate by onset & the 4 D's. Sudden onset + high fever + drooling = epiglottitis. Gradual + low fever + barky cough = croup.

✗ WRONG CHOICE

"An infant with pertussis will present with the classic inspiratory whoop."

Infants < 6 months often **do NOT whoop** — they present with **apnea, cyanosis, or bradycardia**. This is why pertussis kills infants.

✓ RIGHT CHOICE

Monitor infants on cardiorespiratory monitor for apnea.

The absence of a whoop in an infant is not reassuring — it's a red flag.

✗ WRONG CHOICE

"Stop droplet precautions when the cough improves."

Continue droplet precautions until **5 full days of effective antibiotics** are complete — not until the cough resolves (the cough lasts weeks even after the patient is no longer contagious).

✓ RIGHT CHOICE

Droplet precautions × 5 days of antibiotic therapy. Then routine precautions.

✗ WRONG CHOICE

"Give racemic epinephrine then discharge home."

Always observe **≥ 2–3 hours post-dose** because of the risk of **rebound airway swelling**.

✓ RIGHT CHOICE

Observe 2–3 hours after racemic epi. Discharge only if stridor at rest does not return.

What Caregivers Need to Know

Croup Teaching

- ▶ **Keep child calm** — crying makes it worse. Hold, rock, read a book.
- ▶ **Cool mist** from a humidifier at night; or step outside into cool air; or sit in a steamy bathroom for 10 min.
- ▶ Offer **cool fluids** in small sips (popsicles, water).
- ▶ Sleep with the head of bed elevated.
- ▶ **Return to ED if:** stridor at rest, retractions, drooling, blue lips, lethargy, or unable to drink.
- ▶ Symptoms typically last 3–7 days; often worse at night for 2–3 nights.

Epiglottitis Teaching

- ▶ **Hib vaccine prevents this disease** — emphasize on-time immunization at 2, 4, 6, & 12–15 months.
- ▶ Recognize warning signs: sudden high fever, drooling, refusing to swallow, sitting forward.
- ▶ **Call 911 — do not drive to ED yourself** if airway distress is severe. Keep child upright.
- ▶ **Do not** try to look in the throat or give anything by mouth at home.
- ▶ After discharge: complete the full antibiotic course; monitor for return of symptoms.
- ▶ Close household contacts may need rifampin prophylaxis (per public health guidance).

Pertussis Teaching

- ▶ **Complete the antibiotic course** — usually 5 days of azithromycin or 7–14 days erythromycin.
- ▶ Contagious until **5 days of antibiotics** are done — stay home from school/daycare.
- ▶ Avoid cough triggers: dust, smoke, cold air, exercise extremes.
- ▶ **Small frequent feedings** — vomiting after coughing is common.
- ▶ **DTaP / Tdap immunization** is the best prevention. Tdap for all pregnant women in 3rd trimester (27–36 wk).
- ▶ **Return immediately if infant has:** apnea, blue spells, poor feeding, lethargy, dehydration, seizure.
- ▶ Cough may last 6–10 weeks ("100-day cough"); this is normal even after antibiotics.

08

MEMORY BOOSTERS

Mnemonics & Pattern Recognition



Croup = "Seal Pup"

Stridor (inspiratory)
Evening (worse at night)
Anti-inflammatory (steroids)
Low-grade fever

The barking cough **sounds like a seal**. Think cool mist, calm, dexamethasone.



Epiglottitis = "4 D's + Tripod"

Drooling
Dysphagia
Dysphonia (muffled voice)
Distressed inspiratory effort
+ Tripod position

Add high fever & sudden onset = airway emergency. **Hands off the throat.**



Pertussis = "100-Day Cough"

Catarrhal (cold-like) → 1–2 wk
Paroxysmal (whoop & vomit) → 2–6 wk
Convalescent (slow recovery) → wks to mos

Infants don't whoop — they go **apneic**. Macrolides treat. Tdap in pregnancy prevents.



The 30-Second Differential

Hear a bark?	→ Croup
See drooling + tripod?	→ Epiglottitis (call code-airway)
Hear a whoop (or apnea in infant)?	→ Pertussis
Gradual + low fever?	→ Croup or Pertussis (catarrhal)

NCJMM 6-STEP CLINICAL JUDGMENT

09

Putting It Together: A Bedside Scenario

CASE

A 4-year-old is brought to the ED by parents. He woke 2 hours ago with a high fever (103.4°F), refusing to drink, drooling, and sitting upright on his father's lap leaning forward with his mouth open. His voice is muffled. He has not received any childhood immunizations. SpO₂ 92% on room air, HR 142, RR 32 with mild retractions.

STEP 1 · RECOGNIZE CUES

What stands out?

Sudden high fever, drooling, muffled voice, tripod position, refusing fluids, unvaccinated, hypoxia, tachycardia, retractions. **All 4 D's are present.**

STEP 2 · ANALYZE CUES

What do they mean?

Cluster = supraglottic obstruction. Hib status unknown/unvaccinated raises pretest probability. This is **epiglottitis until proven otherwise** — not croup (no barking cough, high fever, drooling).

STEP 3 · PRIORITIZE HYPOTHESES

What's most urgent?

#1 Impending airway obstruction > infection > hypoxia > dehydration. Airway can occlude completely within minutes if the child cries or is examined improperly.

STEP 4 · GENERATE SOLUTIONS

What are the options?

Keep upright on parent's lap · NPO · blow-by O₂ · **call anesthesia & ENT** · prepare intubation tray · defer IV/labs · plan controlled intubation in OR · ceftriaxone after airway secured.

STEP 5 · TAKE ACTION

What do you do first?

Stay with the child. Keep him upright with the parent. Call the rapid response / airway team. Do not attempt visual exam, IV, or throat culture. Apply blow-by O₂. Have the intubation tray ready.

STEP 6 · EVALUATE OUTCOMES

Is it working?

Expect: SpO₂ ≥ 95% after airway secured, no further desaturation, stable VS, antibiotics initiated, parents informed. **Worsening:** rising RR, falling SpO₂, lethargy → immediate intubation needed.