

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

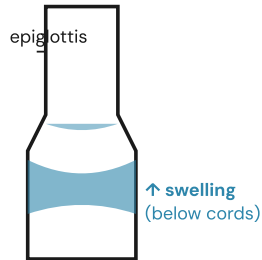
3 STAGES

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**"

SIGNS & SYMPTOMS

03

## What You'll See at the Bedside

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

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

**D**rooling **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, & SpO<sub>2</sub>
- ▶ **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 SpO<sub>2</sub>; 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 O<sub>2</sub>** 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 O<sub>2</sub> 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                                                                                            |
|----------------------------------------------------------|----------------------------------------------------|-----------------------------------------------------|--------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| <b>Racemic Epinephrine</b><br><b>SYMPATHOMIMETIC</b>     | Croup (moderate–severe)                            | α-adrenergic vasoconstriction ↓ mucosal edema       | Tachycardia, tremors, ↑ BP                                                                       | <b>Observe ≥ 2–3 hr post-dose for rebound swelling;</b> monitor HR & BP                                           |
| <b>Dexamethasone</b><br><b>CORTICOSTEROID</b>            | 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                                                                     |
| <b>Ceftriaxone</b><br><b>3RD-GEN CEPHALOSPORIN</b>       | 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)                                              |
| <b>Azithromycin / Erythromycin</b><br><b>MACROLIDE</b>   | Pertussis (DOC) & close contacts (prophylaxis)     | Inhibits bacterial protein synthesis (50S ribosome) | N/V, diarrhea, QT prolongation; <b>infantile pyloric stenosis risk w/ erythromycin &lt; 1 mo</b> | Give with food if GI upset; monitor for arrhythmia; complete full course; isolate until 5 days of therapy done    |
| <b>DTaP / Tdap vaccine</b><br><b>ACTIVE IMMUNIZATION</b> | 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; <b>Tdap to all pregnant women each pregnancy (27–36 wk)</b> to protect newborn |
| <b>Hib vaccine</b><br><b>ACTIVE IMMUNIZATION</b>         | 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. SpO<sub>2</sub> 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 O<sub>2</sub> · **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 O<sub>2</sub>. Have the intubation tray ready.

#### STEP 6 · EVALUATE OUTCOMES

##### Is it working?

Expect: SpO<sub>2</sub> ≥ 95% after airway secured, no further desaturation, stable VS, antibiotics initiated, parents informed. **Worsening:** rising RR, falling SpO<sub>2</sub>, lethargy → immediate intubation needed.