VOL. 04 — BACTERIAL DISEASES · THE PEDIATRIC NGN EDIT · 2026 NCLEX TEST PLAN

PEDIATRIC NURSING · MODULE 04

Bacterial *Diseases*

Vaccine-preventable killers — from petechial rash at 2 AM to the thick gray membrane, the rigid neck, and the silent whoop of airway collapse. Recognize, isolate, treat, protect.

5 Pathogens | NGN Ready | Quick Review

§ 01 Quick-Reference Matrix

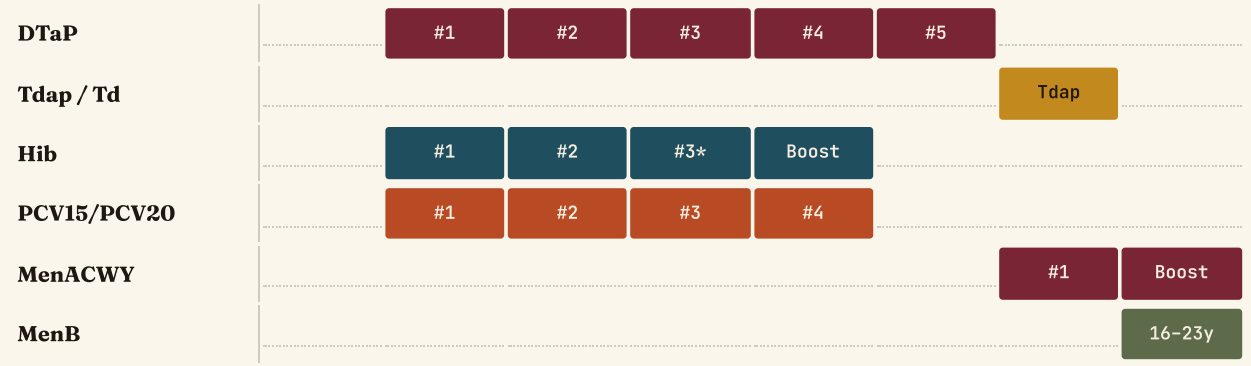
SIDE-BY-SIDE · 5 BUGS

DISEASE	TRANSMISSION	HALLMARK SIGN	FIRST-LINE TX	ISOLATION	VACCINE
Meningococcal *Neisseria meningitidis*	Respiratory droplets	**Non-blanching petechial / purpuric rash** + fever + nuchal rigidity	IV Ceftriaxone or Pen G *+ dexamethasone*	DROPLET ×24H	MenACWY, MenB
Diphtheria *Corynebacterium diphtheriae*	Respiratory droplets / contact	**Thick gray pseudomembrane** on tonsils/pharynx + "bull neck"	Diphtheria antitoxin (DAT) + erythromycin or Pen G	DROPLET	DTaP / Tdap
Tetanus *Clostridium tetani*	Spores → puncture wound	**Trismus (lockjaw) · risus sardonicus · opisthotonos**	TIG + metronidazole + wound debridement	STANDARD	DTaP / Tdap / Td
Pneumococcal *Streptococcus pneumoniae*	Respiratory droplets	**Rust-colored sputum** · lobar pneumonia · otitis media · meningitis	IV Ceftriaxone + vancomycin (meningitis)	DROPLET IF MENINGITIS ×24H	PCV15/PCV20, PPSV23
Hib *Haemophilus influenzae B*	Respiratory droplets	**Epiglottitis** — drooling · tripod · stridor · "cherry-red" epiglottis	IV Ceftriaxone *NO throat exam until airway secure*	DROPLET ×24H	Hib (PRP-T, PRP-OMP)

§ 02

Immunization Timeline

CDC/ACIP 2026 · PEDIATRIC SCHEDULE



***Hib #3 at 6mo:** depends on brand (PRP-OMP skips this dose) **MenB:** shared clinical decision, 16–23 yr

DTaP: pediatric; **Tdap/Td:** adolescent/adult

VOL. 04 — BACTERIAL DISEASES | DISEASE DEEP DIVES · PART I | § 03 · 04 · 05

§ 03 Disease Deep Dives — The Big Five

PATHO · S/S · DX · TX · NGN

DISEASE 01 · INVASIVE BACTERIAL

Meningococcal Disease

Neisseria meningitidis · gram-neg diplococci

Isolation
Droplet ×24h
post-abx

CLINICAL MANIFESTATIONS

- **Sudden high fever**, severe HA, vomiting
- **Nuchal rigidity**, photophobia, irritability
- **+ Kernig's & Brudzinski's** signs
- **Non-blanching petechial/purpuric rash** (glass test ⊖)
- Infants: **bulging fontanel**, high-pitched cry, poor feeding
- Waterhouse-Friderichsen: shock + adrenal hemorrhage

DIAGNOSTICS

- **Lumbar puncture** — cloudy CSF, ↑WBC/neutrophils, ↑protein, **↓glucose**
- Gram stain: **gram-neg diplococci**
- Blood cultures × 2 BEFORE abx
- CBC, CRP, procalcitonin, coags (DIC risk)
- CT head before LP if ↑ICP signs

MANAGEMENT

- **IV Ceftriaxone or Pen G** — STAT, don't delay for LP
- **Dexamethasone** before/with 1st abx dose (↓hearing loss)
- Fluid resuscitation — watch for **SIADH** & shock
- Droplet precautions × 24h post-abx
- **Prophylaxis for close contacts**: rifampin, cipro, or ceftriaxone
- Seizure precautions, neuro checks q1h

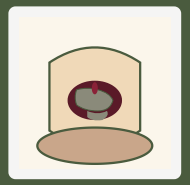
NGN CLINICAL JUDGMENT · RECOGNIZE CUES

A 4-yr-old presents with fever 40°C, lethargy, and a rapidly spreading rash on the legs. **Priority action?** *Press a glass to the rash — if* **non-blanching**, *escalate immediately. Place on* **droplet precautions**, *obtain blood cultures, and anticipate* **STAT IV ceftriaxone**. *Delay of abx > LP concerns.*

MNEMONIC

MENINGO

Meningeal signs · **E**mesis · **N**uchal rigidity · **I**rritability · **N**on-blanching rash · **G**lass test ⊖ · **O**paque (cloudy) CSF



DISEASE 02 · TOXIN-MEDIATED

Diphtheria

Corynebacterium diphtheriae · gram-pos rod

Isolation
Droplet
until 2 ⊖ cx

CLINICAL MANIFESTATIONS

DIAGNOSTICS

MANAGEMENT

- Low-grade fever, malaise, sore throat
- **Thick gray-white pseudomembrane** on tonsils/pharynx/larynx — **BLEEDS if scraped**
- **"Bull neck"** — massive cervical lymphadenopathy
- Hoarseness, barking cough, stridor → airway obstruction
- Sweet / foul breath odor
- Toxin complications: **myocarditis**, neuritis, paralysis

- **Throat culture on Loeffler/tellurite media**
- Gram stain: club-shaped rods ("Chinese letters")
- Elek test — detects toxin production
- **ECG** for myocarditis; troponin
- Do NOT delay tx awaiting cultures

- **Diphtheria antitoxin (DAT)** — neutralizes **unbound** toxin only → give ASAP
- IV **Erythromycin** or **Pen G** × 14 days
- **Airway priority**: intubation/trach at bedside
- Strict bed rest (prevent myocarditis sequelae)
- Droplet precautions until 2 ⊖ cultures ≥ 24h apart
- Close contacts: abx prophylaxis + Tdap booster

NGN CLINICAL JUDGMENT · TAKE ACTION

Toddler unvaccinated per parental preference, now with stridor, drooling, and a gray membrane on tonsils that bleeds when swabbed. **Priority?** *Secure the* **airway first** *— call anesthesia/ENT, have* **trach tray at bedside**, *begin* **DAT** + **IV erythromycin**, *and initiate* **droplet precautions**. *Do NOT attempt to remove the membrane.*

MNEMONIC

GRAY

Gray pseudomembrane · **R**espiratory obstruction · **A**ntitoxin (DAT) ASAP · **Y**oke-shaped neck ("bull neck")

DISEASE 03 · NEUROTOXIN

Tetanus

Clostridium tetani · spore-forming anaerobe

Isolation
Standard
not person-to-person

CLINICAL MANIFESTATIONS

- **Trismus ("lockjaw")** — earliest sign
- **Risus sardonicus** — facial muscle spasm, fixed "grin"
- **Opisthotonos** — arched back rigidity
- Generalized muscle spasms triggered by light, sound, touch
- Autonomic dysfunction: BP swings, dysrhythmias, sweating
- Neonatal tetanus: poor feeding, rigidity days 3–14 of life

DIAGNOSTICS

- **CLINICAL diagnosis** — do not wait for labs
- Wound history: puncture, burn, umbilical (neonates)
- Spatula test: tongue depressor → reflex bite (vs gag)
- Culture rarely helpful (<30% ⊕)
- Assess immunization status

MANAGEMENT

- **TIG (tetanus immune globulin)** — neutralizes unbound toxin
- **Metronidazole** (1st line) or Pen G
- **Wound debridement** — source control
- Benzodiazepines for spasms (diazepam/midazolam)
- **Quiet, dark, minimal-stimulation environment**
- Intubation if respiratory muscle spasm
- Give Tdap to complete immunity (disease ≠ immunity)

NGN CLINICAL JUDGMENT · PRIORITIZE HYPOTHESES

A 7-yr-old with a puncture wound from a rusty fence 9 days ago presents with jaw stiffness and difficulty swallowing. Last DTaP unknown. **Priority actions?** *Cluster care in a* **quiet, dim room**, *administer* **TIG + metronidazole**, **debride the wound**, *and keep airway equipment at bedside. Avoid unnecessary stimulation — it triggers spasms.*

MNEMONIC

LOCK

Lockjaw (trismus) · **O**pisthotonos · **C**ontractions (spasms) · **K**eep environment calm/quiet

DISEASE 04 · ENCAPSULATED

Pneumococcal Disease

Streptococcus pneumoniae · lancet-shaped diplococci

Isolation
Droplet
if meningitis ×24h

CLINICAL MANIFESTATIONS

- **Pneumonia**: sudden fever, chills, **rust-colored sputum**, pleuritic pain, ↑WOB, crackles
- **Otitis media**: ear pain, bulging TM — #1 cause in peds
- **Meningitis**: fever, HA, nuchal rigidity, altered LOC
- Bacteremia, sinusitis
- ↑↑ Risk: <2 yr, **sickle cell**, asplenia, immunodef, cochlear implant

DIAGNOSTICS

- Blood cultures × 2 BEFORE abx
- Sputum gram stain: **gram-pos lancet diplococci**
- **CXR**: lobar consolidation
- LP if meningitis suspected
- Urine pneumococcal antigen
- CBC: ↑WBC with left shift

MANAGEMENT

- **Amoxicillin** — uncomplicated OM/CAP
- **IV Ceftriaxone + Vancomycin** for meningitis (resistance concern)
- Supportive: O_2, fluids, antipyretics, position (HOB ↑)
- Pain/fever mgmt (no ASA in peds)
- **Prevention**: PCV15/20 series + PPSV23 high-risk
- Sickle cell → daily penicillin prophylaxis until age 5

NGN CLINICAL JUDGMENT · GENERATE SOLUTIONS

5-yr-old with sickle cell, fever 39.5°C, cough with **rust-colored sputum**, *RR 42, SpO_2 89%.* **Which actions belong in the plan of care?** *Obtain* **blood cultures before antibiotics**, *start* **IV ceftriaxone**, *give* **O_2**, *elevate HOB, ensure* **penicillin prophylaxis** *continues, and verify* **PCV + PPSV23** *history — sickle cell = functional asplenia.*

MNEMONIC

RUST

Rust-colored sputum · **U**nilateral lobar consolidation · **S**ickle cell high-risk · **T**reat w/ ceftriaxone + vanc (meningitis)

DISEASE 05 · ENCAPSULATED

Haemophilus influenzae B

Hib · gram-neg coccobacillus

Isolation
Droplet ×24h
post-abx

CLINICAL MANIFESTATIONS

- Epiglottitis (classic Hib emergency): **4 D's — Drooling, Dysphagia, Dysphonia, Distress**

DIAGNOSTICS

- **DO NOT visualize throat, take cultures, or obtain labs at**

MANAGEMENT

- **AIRWAY FIRST** — call anesthesia/ENT; intubate in OR

- **Tripod position**, chin thrust forward, **no cough**
- Inspiratory **stridor**, muffled "hot potato" voice
- High fever, toxic appearance, anxious
- Also causes: meningitis, pneumonia, cellulitis, septic arthritis
- Age most affected: **2–5 yr** (unvaccinated)

bedside — may precipitate complete obstruction

- Definitive visualization **ONLY in OR** with airway team ready
- Lateral neck x-ray: **"thumb sign"** (only if stable)
- Blood cx AFTER airway secured

- Keep child **calm, upright on parent's lap**, avoid separation
- No tongue blade, no IV attempts until airway secure
- IV **Ceftriaxone** or cefotaxime × 7–10 days
- Droplet precautions × 24h after abx
- Rifampin prophylaxis for close contacts (unvaccinated <4 yr)

NGN CLINICAL JUDGMENT · TAKE ACTION

3-yr-old, unvaccinated, sudden-onset high fever, drooling, leaning forward on mom's lap, muffled voice. **What action is contraindicated?** **Do NOT inspect the throat** *with a tongue blade or attempt blood draws — either can trigger laryngospasm. Keep the child* **undisturbed with parent**, *transport to OR for intubation, then start* **IV ceftriaxone**.

MNEMONIC

4 D's

Drooling · **D**ysphagia · **D**ysphonia · **D**istress (+ **Thumb sign** on lateral neck)

VOL. 04 — BACTERIAL DISEASES | INTEGRATION · SAFETY · JUDGMENT | § 04 · 05 · 06 · 07

§ 04 Isolation Precautions at a Glance

CDC · TRANSMISSION-BASED

DROPLET · < 6 FT

Droplet Precautions

- Private room OR > 3 ft spacing + curtain
- **Surgical mask** within 3–6 ft
- Mask patient during transport
- Duration: 24h after effective abx
- **Applies to:** Meningococcal · Diphtheria · Pneumococcal (meningitis) · Hib · Pertussis

CONTACT · DIRECT/INDIRECT

Contact Precautions

- Gown + gloves upon entry
- Dedicated equipment in room
- Private room preferred
- Hand hygiene with soap & water for spores (C. diff)
- **Applies to:** C. diff · MRSA · VRE · draining skin wounds

UNIVERSAL · ALL PATIENTS

Standard Precautions

- Hand hygiene before/after every pt contact
- PPE based on anticipated exposure
- Safe injection + sharps disposal
- Respiratory hygiene / cough etiquette
- **Applies to:** Tetanus (no person-to-person spread) and baseline care for all patients

§ 05 NGN Clinical Judgment • Applied

6-STEP FRAMEWORK

The Pediatric Septic Child • A Worked Example

2-YR-OLD · FEVER 40°C · LETHARGY · NON-BLANCHING RASH · NUCHAL RIGIDITY

Step 01	Step 02	Step 03	Step 04	Step 05	Step 06
Recognize Cues	**Analyze Cues**	**Prioritize Hypotheses**	**Generate Solutions**	**Take Action**	**Evaluate Outcomes**
High fever, petechial rash, stiff neck, bulging fontanel, ↓LOC, tachycardia, cap refill > 3 sec	Non-blanching rash + meningeal signs → invasive meningococcal disease; DIC & shock risk	#1 bacterial meningitis (menin) · septic shock · ↑ICP · coagulopathy	Droplet precautions · blood cx · STAT IV ceftriaxone + dex · fluid bolus 20 mL/kg · seizure precautions	Do NOT delay abx for LP · notify provider · prep for PICU · prophylaxis for close contacts	↓fever · cap refill < 2 sec · improving LOC · stable coags · no new petechiae · effective isolation

§ 06 Red Flags • Escalate Immediately

HIGH-ACUITY CUES

When to Call the Rapid Response

THESE CUES NEVER WAIT · THE NCLEX WANTS ACTION, NOT DOCUMENTATION

Rash that doesn't blanch
— any febrile child; treat as meningococcemia until proven otherwise

Trismus in an unvaccinated child
— active tetanus; minimize stimulation

Pseudomembrane bleeding when touched
— diphtheria; airway team now

Kernig / Brudzinski positive
— meningeal inflammation

Drooling + tripod + stridor
— epiglottitis; do not examine throat

Bulging fontanel in infant + fever
— possible meningitis; prepare for LP

Rust sputum + sickle cell + hypoxia
— pneumococcal sepsis risk

Spreading petechiae or purpura fulminans
— DIC; coags, platelets, PICU

§ 07 Mnemonic Master List

LAST-LOOK REVIEW

Six Keys to Pediatric Bacterial Diseases

MEMORIZE THESE · THEY UNLOCK EVERY QUESTION

MENINGO
MENINGOCOCCAL
Meningeal signs · **E**mesis · **N**uchal rigid · **I**rritable · **N**on-blanching · **G**lass ⊖ · **O**paque CSF

GRAY
DIPHTHERIA
Gray pseudomembrane · **R**espiratory obstruction · **A**ntitoxin ASAP · **Y**oke-shaped "bull neck"

LOCK
TETANUS
Lockjaw · **O**pisthotonos · **C**ontractions (spasms) · **K**eep environment quiet

RUST
PNEUMOCOCCAL
Rust sputum · **U**nilateral lobar · **S**ickle cell high-risk · **T**reat ceftriaxone + vanc

4 D's
HIB EPIGLOTTITIS
Drooling · **D**ysphagia · **D**ysphonia · **D**istress · thumb sign on lateral neck

VAX
PREVENTION PRIORITY
Vaccines save lives: DTaP, Hib, PCV15/20, MenACWY, MenB · **A**dvocate · **X**-amine records at every visit