NGN NCLEX · 2026 TEST PLAN | PEDIATRIC INFECTIOUS DISEASE REVIEW | VOLUME V · VACCINE-PREVENTABLE

HIGH-YIELD · INFECTIOUS DISEASE · IMMUNIZATION

Vaccine-*Preventable* Diseases

Five classic pediatric infections the NGN expects you to recognize, isolate, and intervene on before the rash finishes spreading. Pertussis • Mumps • Rubella • Smallpox • Polio — hallmark signs, precaution tier, and the immunization that stops them.

CONTENT CATEGORY
Health Promotion & Maintenance · Physiological Adaptation · Safety & Infection Control

NCSBN CLIENT NEED
Reduction of Risk Potential · Immunization Schedule

FORMAT
Quick-review infographic · Canva / PDF ready

P	M	R	S	Po
Pertussis	**Mumps**	**Rubella**	**Smallpox**	**Poliomyelitis**
BORDETELLA PERTUSSIS	PARAMYXOVIRUS	TOGAVIRUS	VARIOLA VIRUS	POLIOVIRUS · ENTEROVIRUS

Pertussis

WHOOPING COUGH · "THE 100-DAY COUGH"

DROPLET

PATHOGEN & TRANSMISSION

- **Bordetella pertussis** — gram-neg bacteria
- Respiratory droplets; highly contagious
- Incubation 7–10 days

THREE CLINICAL STAGES

- **Catarrhal** (1–2 wk): URI, most contagious
- **Paroxysmal** (2–6 wk): whoop + vomit
- **Convalescent** (2–6 wk): slow recovery

HALLMARK MANIFESTATIONS

- Explosive coughing fits → inspiratory **"whoop"**
- **Post-tussive vomiting**, cyanosis
- Infants <6 mo: *apnea* may replace whoop ⚠

DX & TREATMENT

- Dx: **nasopharyngeal swab + PCR**
- Abx: **Azithromycin** (macrolide)
- Supportive O_2, hydration, humidified air

🔑 NCLEX PEARL · IMMUNIZATION

DTaP (<7 yrs): 2, 4, 6, 15–18 mo, 4–6 yrs · **Tdap** booster 11–12 yrs · **Tdap in pregnancy at 27–36 weeks** every pregnancy — passes maternal antibodies to protect newborn from apnea/death. Household contacts need prophylactic macrolide.

Mumps

EPIDEMIC PAROTITIS · MMR-PREVENTABLE

DROPLET

PATHOGEN & TRANSMISSION

- **Mumps virus** (paramyxovirus, RNA)
- Respiratory droplets + saliva contact
- Incubation **16–18 days**

HALLMARK MANIFESTATIONS

- **Parotitis** — uni- or bilateral jaw/cheek swelling
- Low-grade fever, earache, jaw tenderness
- Pain ↑ with chewing sour/acidic foods

COMPLICATIONS ⚠

- **Orchitis** (post-puberty ♂) → sterility risk
- Aseptic meningitis / encephalitis
- **Sensorineural deafness**, pancreatitis, oophoritis

NURSING MANAGEMENT

- Supportive: analgesics, warm or cool compress
- **Soft bland diet** — avoid citrus/sour foods
- Scrotal support + ice if orchitis develops

🔑 NCLEX PEARL · IMMUNIZATION & ISOLATION

MMR live-attenuated: 12–15 mo, booster 4–6 yrs · Droplet precautions **5 days** after onset of parotid swelling · MMR contraindicated in pregnancy & severe immunocompromise (e.g., HIV w/ CD4 <200, chemo, high-dose steroids).

Rubella

GERMAN / "3-DAY" MEASLES

DROPLET

PATHOGEN & TRANSMISSION

- **Rubella virus** (togavirus, RNA)
- Respiratory droplets · *transplacental*
- Incubation 14–21 days

HALLMARK MANIFESTATIONS

- Pink maculopapular rash: **face → down**, lasts 3 d
- **Posterior auricular / occipital** lymphadenopathy
- **Forchheimer spots** — soft palate petechiae

⚠ CONGENITAL RUBELLA SYNDROME (CRS) — 1ST TRIMESTER EXPOSURE

- **"Blueberry muffin" rash**, cataracts, sensorineural deafness
- Cardiac defects — classically **PDA** & pulmonary artery stenosis
- IUGR, microcephaly, thrombocytopenia, hepatosplenomegaly

🔑 NCLEX PEARL · PREGNANCY ALERT

MMR is a live vaccine — contraindicated in pregnancy. Advise non-pregnant clients to avoid conception for **4 weeks** after MMR. **A pregnant nurse should NOT care for a patient with rubella.** Screen all pregnant clients for rubella IgG at first prenatal visit; vaccinate non-immune mothers postpartum before discharge.

Smallpox

VARIOLA · ERADICATED 1980 · BIOTERROR AGENT

AIRBORNE + CONTACT

PATHOGEN & TRANSMISSION

- **Variola virus** (orthopoxvirus, DNA)
- Respiratory droplets · direct contact · fomites
- Incubation 7–17 days · ~30% mortality

HALLMARK MANIFESTATIONS

- **Centrifugal rash** (face / extremities > trunk)
- ALL lesions in **same stage** at once
- Macule → papule → *vesicle* → pustule → crust

⚠ VARICELLA VS. VARIOLA — HIGH-YIELD DISTINCTION

- **Chickenpox (varicella):** rash spreads *trunk → outward*; lesions in **different stages** simultaneously (macules + vesicles + crusts)
- **Smallpox (variola):** rash spreads *face/limbs → trunk*; **uniform stage**, deeper, firmer, umbilicated

🔑 NCLEX PEARL · PUBLIC HEALTH RESPONSE

Declared **eradicated globally in 1980 (WHO)**; routine vaccination ceased in US in 1972. If suspected: **airborne + contact precautions, negative-pressure room**, notify **CDC immediately** (reportable bioterror event). Vaccinia (cowpox-based) vaccine given to military & lab workers — contraindicated in eczema, pregnancy, and immunocompromise.

Poliomyelitis

INFANTILE PARALYSIS · ENTEROVIRUS · ANTERIOR HORN CELL DESTRUCTION

CONTACT

PATHOGEN & TRANSMISSION

- **Poliovirus** (enterovirus, RNA) — types 1, 2, 3
- **Fecal–oral** primary · respiratory secondary
- Targets **motor neurons of anterior horn** → flaccid paralysis

CLINICAL SPECTRUM

- **~72% asymptomatic** · 24% minor flu-like illness
- 1–5% aseptic meningitis (non-paralytic)
- <1% **paralytic** — asymmetric flaccid paralysis, intact sensation

⚠ BULBAR POLIO & LATE EFFECTS

- **Bulbar polio:** CN 9/10/12 involvement → dysphagia, respiratory failure (historical "iron lung")
- **Post-polio syndrome:** new weakness/fatigue 15–40 yrs after recovery

NURSING PRIORITIES

- **Monitor respiratory status** — intubate if bulbar signs
- ROM exercises, skin integrity, DVT prevention
- Contact precautions · meticulous hand hygiene after diapering

> 🔑 NCLEX PEARL · IPV VS. OPV
>
> US schedule uses **IPV (inactivated, injected)** only: **2 mo, 4 mo, 6–18 mo, 4–6 yrs**. IPV is safe — cannot cause disease. **OPV (oral, live) is no longer used in the US** because it can rarely cause *vaccine-associated paralytic polio (VAPP)*. OPV is still used in global eradication campaigns. Wild poliovirus remains endemic in limited regions (Afghanistan/Pakistan) — vaccination is the only prevention.

§01 Side-by-Side — Isolation, Incubation & Immunization

QUICK COMPARE · HIGH-YIELD

	PERTUSSIS	MUMPS	RUBELLA	SMALLPOX	POLIO
Pathogen type	Bacterial (Gram-neg)	RNA virus (paramyxo)	RNA virus (toga)	DNA virus (ortho-pox)	RNA virus (entero)
Transmission	Respiratory droplet	Droplet + saliva	Droplet · transplacental	Airborne + contact + fomite	Fecal–oral (primary)
Incubation	7–10 days	16–18 days	14–21 days	7–17 days	7–14 days

	PERTUSSIS	MUMPS	RUBELLA	SMALLPOX	POLIO
Precaution tier	DROPLET	DROPLET	DROPLET	AIRBORNE CONTACT	CONTACT
Isolation duration	Until 5 days of effective abx	5 days after swelling onset	7 days after rash onset	Until all scabs separated	Duration of illness + hand hygiene
Vaccine	DTaP / Tdap	MMR (live)	MMR (live)	Vaccinia (not routine)	IPV (US)
Pregnancy note	**Tdap 27–36 wk** every pregnancy	MMR contraindicated	MMR contraindicated · CRS risk	Vaccine contraindicated	IPV safe if indicated
Red-flag sign	**Whoop** + post-tussive emesis	**Parotitis** ± orchitis	**Posterior auricular** adenopathy	**Same-stage** centrifugal rash	**Asymmetric flaccid** paralysis

§02 NGN Clinical Judgment — Six-Step Application

RECOGNIZE · ANALYZE · PRIORITIZE · ACT · EVALUATE

CASE A · PERTUSSIS

6-week-old with coughing fits and apnea

> *A 6-week-old unvaccinated infant is brought to the ED after a coughing fit that ended with bluish lips and a pause in breathing. Mom reports the baby "sounds like he's barking, then can't catch his breath." T 37.8°C · HR 172 · SpO_2 88% RA.*

01 **Recognize cues:** apnea, cyanosis, paroxysmal cough in unvaccinated infant

02 **Analyze:** classic pertussis in <6 mo — whoop may be absent; apnea is the danger sign

03 **Prioritize:** airway + oxygenation; droplet precautions + private room

04 **Generate solutions:** O_2, IV access, cardiorespiratory monitoring, admit; macrolide abx

05 **Act:** apply droplet mask, suction PRN, position upright, start azithromycin per order

06 **Evaluate:** SpO_2 >94%, no further apnea, cough fits less frequent → effective

CASE B · RUBELLA

Pregnant nurse assignment decision

> *A charge nurse is making assignments. One nurse is 10 weeks pregnant and rubella non-immune. An admission arrives: 6-year-old with low-grade fever, pink face-to-trunk rash, and tender bumps behind the ears.*

01 **Recognize cues:** classic rubella (rash descending, posterior auricular adenopathy)

02 **Analyze:** rubella is teratogenic — 1st-trimester exposure → CRS (cataracts, deafness, PDA)

03 **Prioritize:** protect fetus — reassign the non-immune pregnant nurse

04 **Generate solutions:** place child on droplet precautions × 7 d after rash onset

05 **Act:** assign an immune nurse; educate family; report case to health department

06 **Evaluate:** no exposure to pregnant staff; infection control team engaged

§03 Memory Aids — Five Letters, Five Mnemonics

RECALL ON TEST DAY

PERTUSSIS

WHOOP

- ***W*** **W**hooping cough (inspiratory)
- ***H*** **H**ighly contagious (catarrhal)
- ***O*** **O**xygen + suction infants
- ***O*** **O**utbreak = macrolide
- ***P*** **P**regnancy Tdap 27–36 wk

MUMPS

PAROTID

- ***P*** **P**arotid gland swelling
- ***A*** **A**septic meningitis risk
- ***R*** **R**NA paramyxovirus
- ***O*** **O**rchitis → sterility
- ***T*** **T**ender jaw on chewing
- ***I*** **I**solate droplet × 5 d
- ***D*** **D**eafness (sensorineural)

RUBELLA

ROSE

- ***R*** **R**ash face→down, 3 days
- ***O*** **O**cciput + posterior ear nodes
- ***S*** **S**oft palate (Forchheimer)
- ***E*** **E**xpectant moms avoid! (CRS)

SMALLPOX

SAME

- ***S*** **S**ame stage lesions
- ***A*** **A**irborne + contact + negpress
- ***M*** **M**ortality ~30%
- ***E*** **E**radicated 1980 · notify CDC

POLIO

LIMP

- ***L*** **L**ower motor neuron death
- ***I*** **I**PV (inactivated, safe)
- ***M*** **M**onitor airway (bulbar)
- ***P*** **P**aralysis is asymmetric flaccid

DIANE'S NCLEX STUDY SET

Vaccinate. Isolate. Educate.

PEDIATRIC · VOL. V · 2026