

— 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

Pertussis

BORDETELLA PERTUSSIS

M

Mumps

PARAMYXOVIRUS

R

Rubella

TOGAVIRUS

S

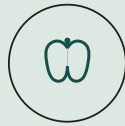
Smallpox

VARIOLA VIRUS

Po

Poliomyelitis

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

● HALLMARK MANIFESTATIONS

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

● THREE CLINICAL STAGES

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

● DX & TREATMENT

- ▶ Dx: **nasopharyngeal swab + PCR**
- ▶ Abx: **Azithromycin** (macrolide)
- ▶ Supportive O₂, 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**

● COMPLICATIONS △

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

● HALLMARK MANIFESTATIONS

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

● 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

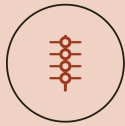
- ▶ **Centrifugal rash** (face / extremities > trunk)
- ▶ ALL lesions in **same stage** at once
- ▶ Macule → papule → *vesicle* → pustule → crust

● ▲ 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

● ▲ 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

● CLINICAL SPECTRUM

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

● 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 · SpO₂ 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:** O₂, IV access, cardiorespiratory monitoring, admit; macrolide abx
- 05 **Act:** apply droplet mask, suction PRN, position upright, start azithromycin per order
- 06 **Evaluate:** SpO₂ >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** Whooping cough (inspiratory)
- H** Highly contagious (catarrhal)
- O** Oxygen + suction infants
- O** Outbreak = macrolide
- P** Pregnancy Tdap 27–36 wk

MUMPS

PAROTID

- P** Parotid gland swelling
- A** Aseptic meningitis risk
- R** RNA paramyxovirus
- O** Orchitis → sterility
- T** Tender jaw on chewing
- I** Isolate droplet × 5 d
- D** Deafness (sensorineural)

RUBELLA

ROSE

- R** Rash face → down, 3 days
- O** Occiput + posterior ear nodes
- S** Soft palate (Forchheimer)
- E** Expectant moms avoid! (CRS)

SMALLPOX

SAME

- S** Same stage lesions
- A** Airborne + contact + negpress
- M** Mortality ~30%
- E** Eradicated 1980 · notify CDC

POLIO

LIMP

- L** Lower motor neuron death
- I** IPV (inactivated, safe)
- M** Monitor airway (bulbar)
- P** Paralysis is asymmetric flaccid

DIANE'S NCLEX STUDY SET

Vaccinate. Isolate. Educate.

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