

DAY 14 · 2026 NGN NCLEX-RN · PHARMACOLOGY MASTERY SERIES

OB, Postpartum, Newborn & Pediatric Pharmacology

A clinical study guide built for the long night before clinical.

DRUGS COVERED

17 high-yield medications

NCLEX CATEGORIES

*Pharm + Parenteral Therapies ·
Safety · Reduction of Risk · Physio
Adaptation*

FRAMEWORK

*2026 NGN Test Plan · NCJMM 6-
step clinical judgment*

FORMAT

*Drug profiles · Safety rules · Quick
reference · Answer key*

*Three mantras for the perinatal floor:
Methergine + HTN = stroke.
Carboprost + asthma = bronchospasm.
Mag toxicity ladder = DTRs → RR → arrest.*

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SECTION I

Uterotonics — Stop the Bleed

Postpartum hemorrhage is the #1 cause of maternal death worldwide. The first-line drug is always oxytocin; the second-line drugs each carry a single absolute contraindication you must memorize.

01 · UTEROTONIC

Oxytocin

PITOCIN · POSTERIOR PITUITARY HORMONE

HIGH-ALERT · ISMP

Synthetic version of the body's own hormone — binds uterine receptors and forces the muscle to contract on a tighter, more frequent rhythm.

WHY GIVEN

Labor induction/augmentation; postpartum hemorrhage (PPH) prevention & treatment; promotion of milk ejection.

MUST ASSESS BEFORE

- Reassuring (Category I) FHR strip
- Baseline maternal VS, fluid status, I&O
- Contraction pattern & cervical status
- No contraindications: prior classical C/S, placenta previa, malposition

MOST DANGEROUS ADVERSE EFFECT

Uterine tachysystole (>5 contractions/10 min averaged over 30 min) → fetal hypoxia, uterine rupture; **water intoxication** with prolonged infusion (ADH-like effect).

HOLD / NOTIFY

Tachysystole, contractions >90 sec or <2 min apart, late or recurrent variable decels, abnormal BP, reduced UO.

ANTIDOTE / ACTION

No antidote. **STOP infusion**, left lateral, O₂ 10L NRB, IV fluid bolus, notify provider. Terbutaline 0.25 mg SQ if uterine relaxation needed.

NURSING ACTION

Always on pump as secondary, piggybacked at port closest to IV site; continuous EFM; titrate per protocol; document strip q15 min in active labor.

PATIENT TEACHING

Expect stronger, more regular contractions. Report pelvic pressure, sudden severe abdominal pain, or "popping" sensation immediately.

NGN CLINICAL-JUDGMENT CUE

Contractions every 90 sec lasting 110 sec, late decels, FHR 110→90 bpm — tachysystole with non-reassuring FHR. Stop the drip.

PRIORITY QUESTION

A client receiving oxytocin for labor augmentation has 7 contractions in 10 min, each lasting 95 sec, with recurrent late decelerations. Which action is the priority?

- A. Slow the infusion to 1 mU/min
- B. Position client supine
- C. Stop the oxytocin infusion
- D. Administer terbutaline IM

Answer: C – Stop the oxytocin infusion

Rationale: Tachysystole + late decels = stop the drug immediately. Slowing isn't enough when fetal compromise is evident. Supine worsens uteroplacental flow. Terbutaline comes after stopping oxytocin if relaxation is still needed.

Test-Taking Tip: When a medication is causing the harm, the first action is almost always STOP the drug, not treat the symptom.

05 · UTEROTONIC · ERGOT ALKALOID

Methylergonovine

METHERGINE · ERGOT ALKALOID

HIGH-ALERT · CONTRAINDICATION CRITICAL

Causes powerful, sustained smooth muscle contraction — clamps down the uterus AND every blood vessel in the body, including coronary and cerebral arteries.

WHY GIVEN

Postpartum hemorrhage from uterine atony; second-line after oxytocin.

MUST ASSESS BEFORE

- **BP — NEVER give if elevated or hx of HTN/preeclampsia**
- Cardiac history
- Calcium level (hypocalcemia reduces effect)

MOST DANGEROUS ADVERSE EFFECT

Hypertensive crisis, stroke, MI. Coronary vasospasm. **Absolute contraindication** in HTN, preeclampsia, eclampsia, cardiac disease.

HOLD / NOTIFY

BP >140/90, hx HTN or preeclampsia, hx MI/stroke, peripheral vascular disease.

ANTIDOTE / ACTION

No specific antidote. Treat HTN crisis with IV antihypertensives (labetalol, hydralazine); nitroglycerin for coronary spasm.

NURSING ACTION

Check BP before EVERY dose. Usually IM 0.2 mg q2–4 hr or PO q6–8 hr × multiple doses. Continuous BP and bleeding monitoring.

PATIENT TEACHING

Tell us immediately about chest pain, severe headache, blurry vision, or numbness. Continue to monitor bleeding at home.

NGN CLINICAL-JUDGMENT CUE

BP 158/96 in a client with PPH and history of preeclampsia — Methergine absolutely contraindicated. Anticipate carboprost or misoprostol instead.

PRIORITY QUESTION

Which client with postpartum hemorrhage is the BEST candidate for methylergonovine 0.2 mg IM?

- A. G3P3 with chronic HTN, BP 150/90
- B. Postpartum day 1 with preeclampsia treated with mag
- C. **G2P2 with asthma, BP 118/72**
- D. Postpartum after MI 2 years ago

Answer: C — Asthmatic with normal BP

Rationale: Methergine is contraindicated in HTN, preeclampsia, and cardiac disease. The asthmatic with normal BP can receive Methergine safely (carboprost would be the contraindicated drug for her). Match the drug to the patient's contraindications.

Test-Taking Tip: *Methergine + HTN = stroke. Carboprost + asthma = bronchospasm. Two drugs, two opposite contraindications — memorize the pair.*

06 · UTEROTONIC · PROSTAGLANDIN F2A

Carboprost

HEMABATE · PROSTAGLANDIN F2A

HIGH-ALERT · CONTRAINDICATION CRITICAL

Synthetic prostaglandin that locks the uterus into tight contraction — but also causes massive smooth muscle activity everywhere (gut → diarrhea; bronchi → bronchospasm).

WHY GIVEN

Refractory postpartum hemorrhage when oxytocin and methylergonovine fail.

MUST ASSESS BEFORE

- **Respiratory hx — NEVER give if asthma**
- Lung sounds, SpO₂
- Bowel pattern (causes severe diarrhea)
- Temperature (causes fever)

MOST DANGEROUS ADVERSE EFFECT

Bronchospasm / status asthmaticus. Absolute contraindication in asthma. Severe diarrhea, vomiting, hyperthermia.

HOLD / NOTIFY

Hx of asthma, active bronchospasm, hypersensitivity.

ANTIDOTE / ACTION

No reversal. Bronchodilators (albuterol) for bronchospasm; antiemetic, antidiarrheal, antipyretic for side effects.

NURSING ACTION

Premedicate with antiemetic + antidiarrheal. IM only (deep), 250 mcg q15–90 min, max 2 mg. Continuous lung sounds, SpO₂, vitals.

PATIENT TEACHING

Expect cramping, diarrhea, feeling warm/feverish — that's the medication. Tell us immediately about wheezing or shortness of breath.

NGN CLINICAL-JUDGMENT CUE

Wheezing and SpO₂ 89% after carboprost dose — re-check for asthma history; treat bronchospasm; do not redose.

PRIORITY QUESTION

A postpartum client with severe atonic hemorrhage has the following history. Which is the priority concern before administering carboprost?

- A. History of preeclampsia, current BP 110/68
- B. History of asthma, well-controlled
- C. Type 1 diabetes
- D. Cesarean section 6 months ago

Answer: B – History of asthma

Rationale: Asthma — even well-controlled — is an absolute contraindication for carboprost (bronchospasm risk). Preeclampsia matters for Methergine, not carboprost. Misoprostol would be the safe substitute.

Test-Taking Tip: If the chart says ASTHMA → Carboprost is OFF the list. No exceptions.

07 · UTEROTONIC · PROSTAGLANDIN E1

Misoprostol

CYTOTEC · PROSTAGLANDIN E1

COMMONLY TESTED

Synthetic prostaglandin that softens (ripens) the cervix and triggers uterine contractions; also protects gastric mucosa.

WHY GIVEN

PPH treatment (rectal/sublingual), cervical ripening for induction, medical abortion, second-trimester loss management.

MUST ASSESS BEFORE

- Pregnancy status — contraindicated if pregnancy to continue (cat X)
- FHR if antepartum
- Allergy
- GI status

MOST DANGEROUS ADVERSE EFFECT

Uterine tachysystole, rupture (especially with prior C/S — black-box warning against use for induction with prior uterine scar). Diarrhea, fever, chills.

HOLD / NOTIFY

Hx of prior classical C/S or uterine rupture, contraindication to vaginal delivery, fetal distress.

ANTIDOTE / ACTION

No specific antidote. Stop further doses; supportive care; emergency C/S if rupture suspected.

NURSING ACTION

PPH dose: 800–1000 mcg rectal. Induction dose: 25 mcg vaginal q3–6 hr (NEVER more — risk of hyperstimulation). Always cross-check route — dose is route-specific.

PATIENT TEACHING

Expect cramping, fever, chills, diarrhea — these are common. Report severe abdominal pain or heavy bleeding.

NGN CLINICAL-JUDGMENT CUE

Order reads 'misoprostol 100 mcg vaginal for cervical ripening' — this is 4× the standard 25 mcg dose. Clarify before giving.

PRIORITY QUESTION

An order reads: "Misoprostol 100 mcg vaginally for cervical ripening." The nurse should:

- A. Administer as ordered
- B. Cut a 200 mcg tablet in half and give
- C. **Hold the dose and clarify with the provider**
- D. Give 25 mcg and document the deviation

Answer: C — Hold and clarify

Rationale: Standard cervical ripening dose is 25 mcg vaginal q3–6 hr. 100 mcg is 4× standard and risks hyperstimulation/rupture. Never administer a clearly unsafe dose — clarify first. Never alter a dose without provider order.

Test-Taking Tip: Misoprostol vaginal for ripening = 25 mcg. Anything bigger is suspicious. The PPH rectal dose (800 mcg) is different — don't mix them up.

SECTION II

Tocolytics & Antenatal Steroids

When preterm labor starts, the goal is 48 hours — long enough for steroids to mature fetal lungs. Tocolytics quiet contractions; magnesium adds neuroprotection; betamethasone is the prize at the end.

02 · TOCOLYTIC · CNS DEPRESSANT

Magnesium Sulfate

ELECTROLYTE · CNS DEPRESSANT · ANTICONVULSANT

HIGH-ALERT · ISMP

Calms over-excited nerves and smooth muscle — quiets seizure activity in preeclampsia and slows preterm contractions; also provides fetal neuroprotection <32 weeks.

WHY GIVEN

Seizure prophylaxis in preeclampsia/eclampsia, tocolysis for preterm labor, fetal neuroprotection.

MUST ASSESS BEFORE

- Baseline BP, RR, DTRs, LOC, UO
- Serum Mg (therapeutic 4–7 mEq/L)
- Renal function (excreted by kidneys)
- Have calcium gluconate at bedside

MOST DANGEROUS ADVERSE EFFECT

Magnesium toxicity → respiratory depression, loss of DTRs, cardiac arrest. Toxicity sequence: **DTRs disappear FIRST → RR <12 → loss of consciousness → arrest.**

HOLD / NOTIFY

RR <12, absent DTRs, UO <30 mL/hr, Mg >7 mEq/L, altered LOC.

NURSING ACTION

Hourly RR, DTRs, UO, LOC; continuous fetal monitoring; loading 4–6 g over 15–30 min, then maintenance 1–2 g/hr per pump.

ANTIDOTE / ACTION

Calcium gluconate 1 g IV over 3 min. Stop infusion. Support airway/breathing. Notify provider stat.

PATIENT TEACHING

You'll feel flushed and warm — that's expected. Tell us if you feel weak, can't breathe deeply, or feel your reflexes "go away."

NGN CLINICAL-JUDGMENT CUE

Patellar reflex 0/4+, RR 10, UO 20 mL/hr over 2 hours — classic toxicity ladder. Stop infusion and give calcium gluconate.

PRIORITY QUESTION

A client receiving magnesium sulfate for severe preeclampsia has RR 10, absent patellar reflexes, and UO 18 mL/hr for the past 2 hours. The nurse should first:

- A. Decrease the magnesium infusion to 1 g/hr
- B. Administer calcium gluconate 1 g IV
- C. **Stop the magnesium infusion**
- D. Notify the provider

Answer: C – Stop the infusion FIRST

Rationale: STOP the infusion FIRST — you must remove the cause. Then administer calcium gluconate. Decreasing alone is insufficient when toxicity is present. Notifying the provider comes after stopping the harm.

Test-Taking Tip: Three-strike rule for Mg toxicity: low RR + lost DTRs + low UO = STOP first, then antidote, then call.

04 · TOCOLYTIC · BETA-2 AGONIST

Terbutaline

BRETHINE · BETA-2 AGONIST · TOCOLYTIC

HIGH-ALERT

Activates beta-2 receptors on uterine smooth muscle to relax contractions; also activates cardiac beta-1 as a side effect → tachycardia.

WHY GIVEN

Short-term tocolysis (≤ 48 hr); emergency uterine relaxation for tachysystole or fetal distress; severe asthma (off-label).

MUST ASSESS BEFORE

- Maternal HR (hold if >120)
- Cardiac history — contraindicated with arrhythmias, heart disease
- Glucose (causes hyperglycemia)
- K⁺ (causes hypokalemia)
- Fetal HR

MOST DANGEROUS ADVERSE EFFECT

Maternal cardiac events — MI, pulmonary edema, arrhythmias. **FDA black-box:** NOT for prolonged use (>48 – 72 hr) or oral home use due to maternal death risk.

HOLD / NOTIFY

Maternal HR >120 , chest pain, dyspnea, glucose >180 , K⁺ <3.5 .

ANTIDOTE / ACTION

Beta-blocker (e.g., propranolol) for severe tachycardia; supportive care.

NURSING ACTION

Continuous maternal cardiac monitor, FHR; subcut 0.25 mg q20–30 min $\times$ 3 doses; monitor I&O, lung sounds for pulmonary edema; check fingerstick glucose.

PATIENT TEACHING

Expect a "racing heart" and feeling jittery — that's the medicine working. Report chest pain, severe SOB, or coughing up pink frothy sputum immediately.

NGN CLINICAL-JUDGMENT CUE

Maternal HR 138, crackles in lung bases, SpO₂ 91% — early pulmonary edema. Stop drug, sit upright, O₂, notify.

PRIORITY QUESTION

A nurse is preparing to administer terbutaline 0.25 mg subcut to a client in preterm labor. The client's HR is 124 bpm. The nurse should:

- A. Administer as ordered and reassess in 30 min
- B. Administer and hold the next dose if HR remains elevated
- C. **Hold the dose and notify the provider**
- D. Give half the dose

Answer: C – Hold and notify

Rationale: Hold parameter is maternal HR >120 — already exceeded. Giving it would push the heart further. You don't "split" a tocolytic dose. Notify the provider for further orders.

Test-Taking Tip: Beta-agonists = beta-1 spillover = tachycardia. Any maternal HR >120 is a hard stop.

08 · ANTENATAL CORTICOSTEROID

Betamethasone

CELESTONE · CORTICOSTEROID · ANTENATAL

TEACHING-HEAVY

Crosses the placenta and signals fetal lungs to mature, accelerating surfactant production to reduce neonatal respiratory distress syndrome (RDS).

WHY GIVEN

Fetal lung maturation at 24–34 weeks gestation when preterm birth is anticipated; reduces RDS, IVH, NEC.

MUST ASSESS BEFORE

- Gestational age 24–34 wk
- Maternal glucose (causes hyperglycemia, especially in GDM)
- Infection (mask signs)
- Fetal status

MOST DANGEROUS ADVERSE EFFECT

Maternal hyperglycemia (especially diabetics — may need insulin coverage); masking of infection. Pulmonary edema risk when combined with tocolytics + fluids.

HOLD / NOTIFY

Active untreated infection; gestational age outside 24–34 wk window (single repeat course OK if needed before 34 wk).

ANTIDOTE / ACTION

None needed — short course.

NURSING ACTION

12 mg IM q24 hr × 2 doses (24 hr apart). Peak benefit 24–48 hr after dose 2 (the "24+24 rule"). Monitor fingerstick BG q4h × 24 hr, especially diabetics.

PATIENT TEACHING

These two shots help your baby's lungs mature. They take about 24 hours to start working and 48 hours for peak effect — that's why we try to delay delivery if possible.

NGN CLINICAL-JUDGMENT CUE

Diabetic client receives betamethasone, BG rising 220 → 280 → 340 over 24 hr — anticipate insulin drip; not a reason to skip the dose.

PRIORITY QUESTION

A client at 30 weeks gestation receives the first dose of betamethasone for preterm labor. When is the optimal effect achieved?

- A. Within 4 hours of dose 1
- B. 24 hours after dose 1
- C. 48 hours after dose 2
- D. 1 week after the series

Answer: C – 48 hours after dose 2

Rationale: Course is 2 doses 24 hr apart; peak benefit is 24–48 hr after the SECOND dose. Goal is to delay delivery long enough to complete the course and reach peak effect.

Test-Taking Tip: Betamethasone = "24+24" rule. 24 hr between doses, 24+ hr to peak after dose 2.

SECTION III

Neonatal Routine & Prophylactic

In the first hour of life, every newborn gets vitamin K, erythromycin eye ointment, and (with consent) hepatitis B vaccine. Rh-negative mothers get RhoGAM. Premature infants may need surfactant. These are the rituals that prevent the preventable.

09 · IMMUNE GLOBULIN

Rho(D) Immune Globulin

RHO GAM · IMMUNE GLOBULIN

SAFETY-ALERT · TEACHING

Coats fetal Rh+ RBCs that crossed into maternal circulation so the mother's immune system destroys them before making anti-Rh antibodies — protects FUTURE pregnancies.

WHY GIVEN

Rh-negative mother carrying potentially Rh-positive baby: at 28 weeks gestation, within 72 hr of delivery of Rh+ infant, after miscarriage/abortion, after amniocentesis, or any antepartum bleeding.

MOST DANGEROUS ADVERSE EFFECT

Hemolytic disease of the newborn in future pregnancies if dose is missed. Anaphylaxis (rare).

HOLD / NOTIFY

Mother Rh+, antibody screen positive (already sensitized), infant Rh-negative postpartum.

NURSING ACTION

300 mcg (1500 IU) IM in deltoid within 72 hr of delivery; antepartum dose at 28 wk. Document carefully — wrong-patient errors are sentinel events.

MUST ASSESS BEFORE

- **Maternal blood type Rh-negative confirmed**
- **Indirect Coombs (antibody screen) NEGATIVE** — if already positive, RhoGAM won't work
- Infant Rh status postpartum (give only if baby Rh+)

ANTIDOTE / ACTION

None. Anaphylaxis support if reaction.

PATIENT TEACHING

This shot protects your future babies. Without it, your body could make antibodies that would attack the next baby's blood cells. Carry your Rh card.

NGN CLINICAL-JUDGMENT CUE

Postpartum chart: mother Rh-, antibody screen positive, baby Rh+ — already sensitized; RhoGAM will not help. Notify provider; document; counsel about future pregnancies.

PRIORITY QUESTION

Which postpartum client most clearly needs RhoGAM?

- A. Rh+ mother, Rh- infant, negative antibody screen
- B. Rh- mother, Rh+ infant, positive antibody screen
- C. Rh- mother, Rh+ infant, negative antibody screen
- D. Rh- mother, Rh- infant, negative antibody screen

Answer: C — Mom Rh-, Baby Rh+, Screen NEG

Rationale: RhoGAM works only when: mom is Rh-, baby is Rh+, and mom is NOT yet sensitized (antibody screen NEGATIVE). Positive screen = already sensitized = drug doesn't help. Rh- baby = no exposure risk. Rh+ mom = irrelevant.

Test-Taking Tip: Three checkboxes for RhoGAM: Mom-NEG, Baby-POS, Screen-NEG. All three or it's pointless.

10 · FAT-SOLUBLE VITAMIN

Vitamin K

PHYTONADIONE · AQUAMEPHYTON

SAFETY-ALERT

Newborns have sterile gut + insufficient placental transfer = vitamin K deficiency. Vit K is the cofactor the liver needs to make clotting factors II, VII, IX, X — prevents hemorrhagic disease of the newborn.

WHY GIVEN

ALL newborns within 1 hr of birth to prevent vitamin K deficiency bleeding (VKDB) including intracranial hemorrhage.

MUST ASSESS BEFORE

- Parent consent (some refuse — counsel on risks)
- Gestational age
- Birth trauma/bruising
- Time of birth

MOST DANGEROUS ADVERSE EFFECT

VKDB / intracranial hemorrhage if missed (especially breastfed infants — breast milk is low in K). Rare hypersensitivity.

HOLD / NOTIFY

Documented parent refusal (after thorough counseling); document refusal in chart.

ANTIDOTE / ACTION

Not applicable — Vit K IS an antidote (for warfarin in adults).

NURSING ACTION

0.5 mg (preterm) or 1 mg (term) IM in vastus lateralis.
Use 25 g, 5/8-inch needle. Within 1 hour of birth.

PATIENT TEACHING

Newborns can't make their own vitamin K for several days, and without it they could bleed dangerously. This single shot prevents that — including bleeding inside the brain.

NGN CLINICAL-JUDGMENT CUE

Parents refuse Vit K; infant develops jaundice plus bruising on day 4 — assess for VKDB; notify; consider lab workup.

PRIORITY QUESTION

When teaching parents who are considering declining vitamin K injection, the nurse should emphasize:

- A. The injection is required by law in most states
- B. Refusal greatly increases the risk of life-threatening internal bleeding
- C. Breastfeeding provides adequate vitamin K
- D. The injection only prevents minor bruising

Answer: B — Educate on real risk

Rationale: Therapeutic communication: educate honestly about real risk (VKDB/intracranial hemorrhage) without coercion. "Required by law" is false in most states. Breast milk is LOW in vit K. The risk is serious bleeding, not minor bruising.

Test-Taking Tip: When parents refuse a routine pediatric med — educate truthfully, document, and respect autonomy. Don't lie or coerce.

11 · TOPICAL ANTIBIOTIC

Erythromycin 0.5%

OPHTHALMIC OINTMENT · MACROLIDE

SAFETY-ALERT

Topical antibiotic that prevents ophthalmia neonatorum — eye infection from gonorrhea or chlamydia acquired during vaginal delivery, which can cause permanent blindness.

WHY GIVEN

Prophylaxis against gonococcal and chlamydial conjunctivitis in ALL newborns regardless of delivery mode (legally mandated in most states).

MUST ASSESS BEFORE

- Eye condition (clean before applying)
- Birth time (give within 1 hour ideal; can delay up to 1 hr for parent-newborn bonding)
- Parent consent

MOST DANGEROUS ADVERSE EFFECT

Chemical conjunctivitis (mild, self-limited). Rare hypersensitivity.

HOLD / NOTIFY

Documented parent refusal (varies by state); active eye infection (treat differently).

ANTIDOTE / ACTION

Not applicable.

NURSING ACTION

1/4-inch ribbon along inner→outer canthus of each lower conjunctival sac. Do NOT wipe off excess immediately — let it spread. Use new tube per infant.

PATIENT TEACHING

This ointment protects your baby's eyes from infections that could cause blindness. The eyes may look a bit blurry or have ointment residue for a few hours.

NGN CLINICAL-JUDGMENT CUE

Infant's eye becomes red and swollen 2 days after birth with purulent discharge — concern for gonococcal or chlamydial infection that escaped prophylaxis; culture, treat systemically.

PRIORITY QUESTION

Which technique describes correct administration of erythromycin ophthalmic ointment to a newborn?

- A. Apply 1-inch ribbon to each upper eyelid
- B. Apply 1/4-inch ribbon along outer→inner canthus
- C. Apply 1/4-inch ribbon along inner→outer canthus in the lower conjunctival sac
- D. Apply directly to the cornea, then wipe immediately

Answer: C — 1/4-inch, inner→outer, lower sac

Rationale: Standard technique: 1/4-inch ribbon, inner-to-outer canthus, lower conjunctival sac. Outer-to-inner could push organisms into the tear duct. Never apply directly to cornea. Don't wipe — let it spread.

Test-Taking Tip: Inner-to-outer is the rule for ALL eye drops/ointment — preserves the lacrimal system from contamination.

15 · NICU · PULMONARY SURFACTANT

Surfactant

BERACTANT · SURVANTA · PULMONARY SURFACTANT

EMERGENCY · NICU

Replaces missing surfactant in premature lungs — lowers alveolar surface tension so the lungs stay open between breaths.

WHY GIVEN

Treatment/prophylaxis of neonatal respiratory distress syndrome (RDS) in preterm infants <37 wk.

MUST ASSESS BEFORE

- ET tube placement confirmed (auscultation, CXR, color change)
- VS, SpO₂, ventilator settings
- Suction performed BEFORE — not after, for 1–2 hr

MOST DANGEROUS ADVERSE EFFECT

Pulmonary hemorrhage, transient bradycardia/desaturation during instillation, plugging of ET tube.

HOLD / NOTIFY

Improper ET tube position, unstable infant requiring stabilization first.

ANTIDOTE / ACTION

Not applicable. Support ventilation; reposition; manage bleeding.

NURSING ACTION

Intratracheal instillation; rotate infant position with each aliquot to distribute. **Do NOT suction for 1–2 hr afterward** (would remove the drug).

PATIENT TEACHING

(For NICU family) This medicine coats your baby's lungs so they don't collapse. We give it directly into the breathing tube. We avoid suctioning for an hour or two so the medicine can work.

NGN CLINICAL-JUDGMENT CUE

Bradycardia to HR 90 and SpO₂ drop to 78% during surfactant instillation — pause administration, reposition, ventilate, then resume when stable.

PRIORITY QUESTION

Immediately after surfactant instillation, the priority nursing action is to:

- A. Suction the ET tube to assess airway patency
- B. Position the infant flat with head midline
- C. **Continuously monitor HR, SpO₂, and chest expansion; avoid suctioning**
- D. Increase ventilator PEEP by 2 cm H₂O

Answer: C — Monitor and don't suction

Rationale: After surfactant, monitor closely and DO NOT suction for 1–2 hr (would remove the drug). Suctioning is done BEFORE instillation. Position changes occur during, not after. Vent changes are provider-driven, not routine post-instillation.

Test-Taking Tip: Surfactant is a "leave-it-alone" med after dosing — no suction, just watch.

17 · RECOMBINANT VACCINE

Hepatitis B Vaccine

ENGRIX-B · RECOMBIVAX HB

SAFETY · TEACHING

Recombinant HBsAg triggers the infant's immune system to make protective antibodies before potential lifelong exposure to hepatitis B.

WHY GIVEN

Universal newborn immunization within 24 hr of birth (standalone or with HBIG if mother HBsAg+).

MUST ASSESS BEFORE

- Maternal HBsAg status (if positive → vaccine + HBIG within 12 hr)
- Birth weight (full dose for term)
- Parent consent
- Allergy to yeast

MOST DANGEROUS ADVERSE EFFECT

Anaphylaxis (rare). No causal link to autism, SIDS, or developmental delay despite myths.

HOLD / NOTIFY

Severe hypersensitivity to prior dose or yeast; defer if moderate-severe acute illness.

ANTIDOTE / ACTION

Not applicable; epinephrine for anaphylaxis.

NURSING ACTION

0.5 mL IM in vastus lateralis; separate site/syringe from other newborn injections; document lot, site, time. Series: birth, 1–2 mo, 6 mo.

PATIENT TEACHING

Hep B can be passed during birth or close contact. This vaccine protects your baby for life with 3 doses. The shot may cause a small sore spot or low-grade fever.

NGN CLINICAL-JUDGMENT CUE

Mother HBsAg-positive, infant not yet given HBIG at 14 hours of life — HBIG must be given within 12 hr. Notify provider, give now, document delay.

PRIORITY QUESTION

An infant is born to a mother who is HBsAg-positive. What is the priority intervention regarding hepatitis B prophylaxis?

- A. Give Hep B vaccine within 24 hr; HBIG can wait until 7 days of life
- B. Give Hep B vaccine AND HBIG within 12 hr of birth at separate sites
- C. Defer all vaccines until breast/bottle feeding established
- D. Test the infant for HBsAg first before vaccinating

Answer: B – Both within 12 hr, separate sites

Rationale: Infant of HBsAg+ mother needs BOTH vaccine and HBIG within 12 hours, at different sites. HBIG provides immediate passive immunity; vaccine starts active immunity. Delay reduces efficacy. Testing the infant doesn't prevent transmission.

Test-Taking Tip: HBsAg+ mom = double dose: Vaccine + HBIG, within 12 hours, different limbs. Two injections, two sites.

SECTION IV

Pediatric Analgesia & Antipyretics

Pediatric meds are always weight-based. The two giants — acetaminophen and ibuprofen — have similar uses but different age limits, different mechanisms, different toxicities, and different antidotes. Confusing them costs livers and kidneys.

12 · PEDIATRIC · ANALGESIC-ANTIPYRETIC

Acetaminophen (Pediatric)

TYLENOL · ANALGESIC · ANTIPYRETIC

TEACHING · CALCULATION-HEAVY

Inhibits prostaglandins in the CNS, reducing fever and mild pain — no anti-inflammatory effect at the gut/joint.

WHY GIVEN

Mild-moderate pain, fever in infants >2 months old.

MUST ASSESS BEFORE

- **Weight (kg)** — dose by mg/kg, NOT age
- Total 24-hr intake (max 75 mg/kg/day or 4 g adult)
- Liver function/hx of liver disease
- Other Tylenol-containing meds (combination products)

MOST DANGEROUS ADVERSE EFFECT

Hepatotoxicity / fulminant hepatic failure — usually overdose or with chronic alcohol use. Toxic dose: >150 mg/kg single dose.

HOLD / NOTIFY

Existing liver disease, recent dose within 4 hr, total >75 mg/kg in 24 hr.

ANTIDOTE / ACTION

N-acetylcysteine (NAC / Mucomyst) — most effective within 8–10 hr of overdose.

NURSING ACTION

10–15 mg/kg/dose q4–6 hr; max 5 doses/day; max 75 mg/kg/day. Verify concentration — infant drops vs children's liquid differ. Use included dropper/syringe.

PATIENT TEACHING

Use the dropper that comes WITH this bottle — different brands have different concentrations. Never combine with other "cold" or "pain" medicines that contain acetaminophen.

NGN CLINICAL-JUDGMENT CUE

Parent reports giving "a teaspoon every 3 hours" of children's Tylenol to 12 kg toddler — 5 mL q3h × 8 doses = 800 mg = 67 mg/kg = approaching toxicity. Educate and assess for hepatotoxicity.

PRIORITY QUESTION

A nurse is teaching parents about giving Children's Acetaminophen 160 mg/5 mL to their 16 kg child. What is the appropriate single dose?

- A. 2.5 mL (80 mg)
- B. 5 mL (160 mg)
- C. 7.5 mL (240 mg)
- D. 10 mL (320 mg)

Answer: C – 7.5 mL (240 mg)

Rationale: Dose: $16 \text{ kg} \times 15 \text{ mg/kg} = 240 \text{ mg}$. $240 \text{ mg} \div (160 \text{ mg/5 mL}) = 7.5 \text{ mL}$. Always calculate from kg $\rightarrow$ mg $\rightarrow$ mL using the available concentration. The 5 mL option is the "typical adult assumption" trap.

Test-Taking Tip: Pediatric meds = always weight $\times$ mg/kg $\rightarrow$ then convert to mL using the concentration on the bottle. Three-step math, every time.

13 · PEDIATRIC · NSAID

Ibuprofen (Pediatric)

MOTRIN · ADVIL · NSAID

TEACHING · SAFETY-ALERT

Inhibits COX-1 and COX-2 in the body and CNS — anti-inflammatory, pain, and fever relief with peripheral effects (gut, kidney).

WHY GIVEN

Mild-moderate pain and fever in children ≥ 6 months old; juvenile arthritis.

MUST ASSESS BEFORE

- **Age ≥ 6 months** (renal/dehydration risk under 6 mo)
- Weight (kg)
- Hydration status
- Hx of GI bleed, asthma, renal disease
- Coagulation status

MOST DANGEROUS ADVERSE EFFECT

GI bleed, renal injury (especially dehydrated kids), bronchospasm in NSAID-sensitive asthma, Reye-like illness very rare.

HOLD / NOTIFY

<6 mo old, dehydration, active GI bleed, severe asthma with aspirin-triad, renal impairment.

ANTIDOTE / ACTION

No specific antidote. Supportive care; PPI for GI bleed; hydration for AKI.

NURSING ACTION

5–10 mg/kg/dose q6–8 hr; max 40 mg/kg/day. **Give with food.** Ensure hydration. Verify ≥ 6 months.

PATIENT TEACHING

Give with a snack or meal to protect the stomach. Don't use under 6 months. Push fluids. Don't combine with other NSAIDs.

NGN CLINICAL-JUDGMENT CUE

5-month-old with fever given ibuprofen by mother — under-age contraindication; assess for dehydration and renal compromise.

PRIORITY QUESTION

Which pediatric client should NOT receive ibuprofen?

- A. 8-month-old with otitis media and fever
- B. 4-year-old with juvenile idiopathic arthritis
- C. 4-month-old with teething pain
- D. 10-year-old with sprained ankle

Answer: C — 4-month-old (under 6 mo)

Rationale: Ibuprofen is contraindicated under 6 months due to renal immaturity. The 8-month-old, 4-year-old, and 10-year-old all clear age criteria. For under 6 mo, acetaminophen is the safer choice.

Test-Taking Tip: Under 6 months → Tylenol only. Over 6 months → both options open. Age before everything else.

SECTION V

Emergency Antidotes & Rescue

These three drugs are the ones you grab when something is going very wrong: calcium gluconate at every mag bedside, epinephrine in every anaphylaxis kit, naloxone for the apneic newborn whose mother received an opioid. Each carries a critical caveat that NCLEX loves to test.

03 · EMERGENCY · MG ANTIDOTE

Calcium Gluconate

ELECTROLYTE · MAGNESIUM ANTIDOTE

EMERGENCY ANTIDOTE

Floods the system with calcium to push magnesium off receptors and restore normal nerve/muscle/cardiac conduction.

WHY GIVEN

Reversal of magnesium sulfate toxicity; severe hypocalcemia; hyperkalemia cardiac membrane stabilization.

MUST ASSESS BEFORE

- Indication: Mg toxicity signs
- Cardiac rhythm — push slowly
- IV patency (vesicant — infiltration → tissue necrosis)
- **Digoxin status — Ca + dig = lethal arrhythmia**

MOST DANGEROUS ADVERSE EFFECT

Cardiac arrhythmia/arrest with rapid IV push or in digitalized client. Extravasation → severe tissue necrosis.

HOLD / NOTIFY

Hold if patient on digoxin without provider order; never push faster than 1.5 mL/min.

ANTIDOTE / ACTION

Not an antidote drug itself. If extravasation occurs: stop, aspirate, warm compress, notify.

NURSING ACTION

Always have at bedside for any Mg infusion. Push slowly over 3 min via central or large-bore peripheral. Continuous cardiac monitor.

PATIENT TEACHING

You may feel warm or have a metallic taste — that's normal. Tell us if you feel chest pain or your heart racing.

NGN CLINICAL-JUDGMENT CUE

Client on digoxin develops Mg toxicity — high-risk: notify provider before administering calcium gluconate. Anticipate alternative management.

PRIORITY QUESTION

Which order would the nurse question for a postpartum client with magnesium toxicity?

- A. Stop magnesium infusion
- B. Calcium gluconate 1 g IV push over 3 minutes
- C. Calcium gluconate 1 g IV push over 30 seconds
- D. Continuous cardiac monitoring

Answer: C – Push too fast

Rationale: Rapid IV push of calcium causes lethal arrhythmia. Standard rate is over 3 minutes minimum. The other options are all appropriate. Question rate-of-administration orders that violate safety standards.

Test-Taking Tip: Calcium IV = always slow. Any "fast push" calcium order should trigger a stop-and-verify.

14 · EMERGENCY · ADRENERGIC AGONIST

Epinephrine Auto-Injector

EPIPEN · EPIPEN JR · AUVI-Q

EMERGENCY · LIFE-SAVING

Activates ALL adrenergic receptors at once — alpha-1 constricts vessels (raises BP), beta-1 strengthens heart, beta-2 opens airways. Reverses anaphylaxis cascade.

WHY GIVEN

Anaphylaxis: airway swelling, bronchospasm, hypotension, urticaria with systemic symptoms.

MUST ASSESS BEFORE

- Signs of anaphylaxis (don't delay for full assessment if obvious)
- Weight for dose selection
- Time since exposure
- Prior epinephrine dose

MOST DANGEROUS ADVERSE EFFECT

Cardiac arrhythmia, hypertensive event in cardiac patients. **Accidental IV injection or thumb injection** — never put thumb over the tip!

HOLD / NOTIFY

NEVER hold for anaphylaxis. Use even with uncertain diagnosis — risk of withholding > risk of giving.

ANTIDOTE / ACTION

No reversal needed if dosed appropriately. Beta-blocker for sustained tachyarrhythmia.

NURSING ACTION

EpiPen 0.3 mg for ≥ 30 kg; EpiPen Jr 0.15 mg for 15–30 kg. Press into mid-outer-thigh (vastus lateralis), HOLD 3 seconds, can give through clothing. Massage site 10 sec. Call 911. Repeat in 5–15 min if no improvement.

PATIENT TEACHING

Carry two pens always. Inject the thigh — through pants if needed. After injection, go to ER even if you feel better (biphasic reaction possible up to 8 hr later).

NGN CLINICAL-JUDGMENT CUE

Child 25 kg given EpiPen (0.3 mg) instead of EpiPen Jr — overdose; monitor cardiac rhythm and BP; usually transient.

PRIORITY QUESTION

A child weighing 22 kg is experiencing anaphylaxis at school. The school nurse should administer:

- A. EpiPen 0.3 mg into the deltoid
- B. EpiPen Jr 0.15 mg into the vastus lateralis
- C. EpiPen 0.3 mg into the vastus lateralis
- D. Oral diphenhydramine and call 911

Answer: B – EpiPen Jr, vastus lateralis

Rationale: EpiPen Jr (0.15 mg) is correct for 15–30 kg; full-strength EpiPen (0.3 mg) is for ≥ 30 kg. Site is mid-outer thigh (vastus lateralis), not deltoid. Diphenhydramine alone is never sufficient for anaphylaxis — epi is the only first-line.

Test-Taking Tip: Weight-based: <15 kg = special peds dosing, 15–30 kg = Jr (0.15 mg), ≥ 30 kg = adult (0.3 mg). Thigh. Always.

16 · EMERGENCY · OPIOID ANTAGONIST

Naloxone (Neonatal)

NARCAN · OPIOID ANTAGONIST

EMERGENCY · CAUTION IN OPIOID-DEPENDENCE

Pure opioid receptor antagonist — kicks opioids off receptors, reversing respiratory depression and sedation.

WHY GIVEN

Severe respiratory depression in newborn from maternal opioid administration during labor.

MUST ASSESS BEFORE

- Apnea or RR depression NOT responding to PPV
- **Maternal opioid history — CONTRAINDICATED in chronic maternal opioid use** (precipitates neonatal seizures/withdrawal)
- Heart rate

MOST DANGEROUS ADVERSE EFFECT

Precipitated severe withdrawal/seizures in opioid-dependent infant. Brief duration — re-narcotization possible (opioids outlast naloxone).

HOLD / NOTIFY

Maternal hx of chronic opioid use, methadone, or buprenorphine — manage with PPV and ventilation support instead.

ANTIDOTE / ACTION

Not applicable — naloxone IS an antidote.

NURSING ACTION

0.1 mg/kg IV, IM, or via ETT. First-line for neonatal apnea = PPV, not naloxone. Monitor RR, HR, color, neuro status; redose if respiratory depression returns.

PATIENT TEACHING

(NICU/family) This medication reverses the opioid effect from labor pain medicine. We may need to support breathing for a while.

NGN CLINICAL-JUDGMENT CUE

Newborn given naloxone after delivery; mother's chart shows daily methadone for 2 years — high risk of precipitated withdrawal/seizures; monitor closely; supportive care.

PRIORITY QUESTION

Which finding would cause the nurse to question an order for neonatal naloxone?

- A. Maternal labor epidural with single fentanyl dose 2 hr before delivery
- B. Newborn RR 8 not improving with PPV
- C. Maternal history of daily methadone maintenance therapy
- D. Apgar 4 at 1 minute

Answer: C — Chronic maternal opioid use

Rationale: Chronic maternal opioid use (methadone, buprenorphine) is a contraindication — naloxone will precipitate severe withdrawal and possibly seizures in the dependent infant. Acute single-dose maternal opioid is the typical indication. Apgar score alone doesn't dictate naloxone — RR and PPV response do.

Test-Taking Tip: Naloxone in a baby of an opioid-dependent mother = withdrawal storm. Always check the maternal medication list first.

Appendix

Quick reference, safety rules, look-alikes, answer key.

A1 · Five Must-Not-Miss Safety Rules

RULE 01 · THE METHERGINE RULE

Never give methylergonovine to anyone with HTN or hx of preeclampsia.

Ergot vasoconstriction over an already-hypertensive system = stroke or MI. **BP before every dose.** Substitute is carboprost — but only if no asthma. If both contraindications exist, use misoprostol.

RULE 02 · THE CARBOPROST RULE

Never give carboprost to anyone with asthma.

Prostaglandin F2 α causes severe bronchospasm; can trigger status asthmaticus. **Always ask about asthma before giving Hemabate**, no matter how severe the bleeding. Substitute is misoprostol or Methergine (if BP allows).

RULE 03 · THE MAG TOXICITY LADDER

DTRs drop FIRST. Then RR <12. Then arrest.

Therapeutic Mg is 4–7 mEq/L. If DTRs are absent, stop the infusion BEFORE the breathing or LOC fail. **Calcium gluconate 1 g IV over 3 min is at every bedside.** UO <30 mL/hr is an early-warning red flag.

RULE 04 · THE TACHYSYSTOLE SEQUENCE

Stop the oxytocin BEFORE anything else.

Don't slow it. Don't try to fix the strip first. **STOP → left lateral → O₂ 10L NRB → IV fluid bolus → notify → terbutaline if still tetanic.** When the drug is the cause, removing it is always the first action.

RULE 05 · THE NEWBORN IM RULE

Vastus lateralis. Always. For every IM injection.

Not deltoid, not dorsogluteal, not ventrogluteal. Newborns and infants <12 mo: **vastus lateralis with a 25 g, 5/8-inch needle.** Use a fresh syringe per medication (Vit K, Hep B, etc. — separate sites).

A2 · Quick-Reference Drug Table

DRUG	KEY DOSE / ROUTE	CRITICAL CONTRAINDICATION	ANTIDOTE / REVERSAL
<i>Oxytocin</i>	IV pump, titrated	Prior classical C/S, placenta previa	None — STOP infusion
<i>Magnesium sulfate</i>	4–6 g load, 1–2 g/hr IV	Renal failure, myasthenia gravis	Calcium gluconate 1 g IV
<i>Calcium gluconate</i>	1 g IV over 3 min	Digoxin therapy	—
<i>Terbutaline</i>	0.25 mg SQ q20 min × 3	Maternal HR >120, cardiac dz	Beta-blocker (propranolol)
<i>Methylergonovine</i>	0.2 mg IM q2–4 hr	HTN, preeclampsia, cardiac dz	Antihypertensives
<i>Carboprost</i>	250 mcg IM q15–90 min	Asthma (absolute)	Bronchodilators
<i>Misoprostol</i>	25 mcg PV ripening · 800 mcg PR for PPH	Prior classical C/S (induction only)	—
<i>Betamethasone</i>	12 mg IM q24h × 2	Active infection	—
<i>Rho(D) Ig (RhoGAM)</i>	300 mcg IM in deltoid	Antibody screen positive	—
<i>Vitamin K</i>	1 mg IM vastus lateralis	Documented refusal	—
<i>Erythromycin eye oint.</i>	1/4-inch ribbon, inner→outer	Active eye infection	—
<i>Acetaminophen (peds)</i>	10–15 mg/kg PO q4–6 hr	Liver disease, >75 mg/kg/day	N-acetylcysteine (NAC)
<i>Ibuprofen (peds)</i>	5–10 mg/kg PO q6–8 hr	<6 mo, dehydration, GI bleed	—
<i>Epinephrine auto-inj.</i>	0.3 mg ≥30 kg · 0.15 mg 15–30 kg · IM thigh	None for anaphylaxis	—
<i>Surfactant (Beractant)</i>	Intratracheal aliquots	Improper ET tube position	—
<i>Naloxone (neonatal)</i>	0.1 mg/kg IV/IM/ETT	Chronic maternal opioid use	—
<i>Hep B vaccine</i>	0.5 mL IM vastus lateralis	Yeast allergy	—

A3 · Look-Alike / Sound-Alike Comparisons

TRAIT	<i>Magnesium Sulfate</i>	<i>Oxytocin</i>
PURPOSE	Seizure prophylaxis · Tocolysis · Fetal neuroprotection	Induction/augmentation · PPH treatment
EFFECT ON UTERUS	Relaxes	Contracts
HOLD PARAMETER	RR <12, no DTRs, UO <30, Mg >7	Tachysystole, late decels, abnormal VS
ANTIDOTE	Calcium gluconate	None — stop infusion
THERAPEUTIC LEVEL	4–7 mEq/L	N/A (titrate to contraction pattern)

TRAIT	<i>Methylergonovine</i>	<i>Carboprost</i>
CLASS	Ergot alkaloid	Prostaglandin F2α
MECHANISM	Sustained smooth muscle contraction (everywhere)	Uterine + GI + bronchial smooth muscle
ABSOLUTE CONTRAINDICATION	HTN, preeclampsia, cardiac dz	Asthma
KEY ADVERSE EFFECT	Stroke, MI, HTN crisis	Bronchospasm, severe diarrhea, fever
ROUTE	IM 0.2 mg or PO	IM only (deep), 250 mcg

TRAIT	<i>Acetaminophen (Peds)</i>	<i>Ibuprofen (Peds)</i>
MECHANISM	Central COX inhibition; antipyretic, analgesic	Peripheral & central COX-1/2; anti-inflammatory
MINIMUM AGE	>2 months	≥6 months
DOSE	10–15 mg/kg q4–6 hr	5–10 mg/kg q6–8 hr
MAX DAILY	75 mg/kg/day	40 mg/kg/day
TOXICITY	Hepatotoxicity	GI bleed, AKI, bronchospasm
ANTIDOTE	N-acetylcysteine (NAC)	None — supportive
GIVE WITH FOOD?	Not required	Yes — protects GI

A4 · Answer Key

01 Oxytocin	C	02 Magnesium Sulfate	C
03 Calcium Gluconate	C	04 Terbutaline	C
05 Methylergonovine	C	06 Carboprost	B
07 Misoprostol	C	08 Betamethasone	C
09 Rho(D) Immune Globulin	C	10 Vitamin K	B
11 Erythromycin Ophthalmic	C	12 Acetaminophen (peds)	C
13 Ibuprofen (peds)	C	14 Epinephrine Auto-Injector	B
15 Surfactant	C	16 Naloxone (neonatal)	C
17 Hepatitis B Vaccine	B		

DAY 14 · MANTRA

*Stop the drug before treating its harm.
Match the drug to the patient's contraindications.
Calculate by weight, give by route, document by exception.
And remember: the vastus lateralis is always the answer for the newborn.*