

★ NGN NCLEX 2026 · MASTER REFERENCE CARD

Priority Lab Values Every Nurse Must Know

A complete clinical-judgment reference for the 2026 NGN NCLEX. Each lab includes the normal range, what it measures, low/high signs, priority nursing action, and the complication you must prevent.

⚡ Critical Values

🧠 Pattern Recognition

🏠 NCJMM Framework

⚠️ Test Traps

1 Definition & Why Labs Matter

FOUNDATIONS · CLINICAL JUDGMENT



WHAT THEY ARE

Lab values are objective clinical data the nurse uses to **recognize cues**, validate findings, and trigger interventions. Every value is tied to a body system.



WHY THEY MATTER

A **critical value** is a medical emergency. Recognizing it is half the answer — the NGN tests whether you act on the trend, not just the number.



NGN SKILL TESTED

Pattern recognition: *"Which finding is most concerning?" · "What action first?" · "Which lab confirms the diagnosis?"*

2 How a Nurse Uses a Lab Value

STEP-BY-STEP LOGIC



★ GOLDEN RULE

Always interpret a lab in the context of the **patient in front of you**. A K⁺ of 3.4 in a stable patient is treated differently than 3.4 in a patient on digoxin. **Trend > single number.**



Priority Lab Categories

NORMAL RANGES · CRITICAL FINDINGS · ACTION

⚡ Electrolytes



Sodium (Na⁺)

135 – 145 mEq/L

Fluid balance, neuro function. Where Na goes, water follows.

▼ HYPONATREMIA < 135

- Confusion, headache, lethargy
- Seizures, ↓LOC, N/V
- Muscle cramps, weakness

▲ HYPERNATREMIA > 145

- Thirst, dry mucosa, fever
- Restlessness, agitation
- Edema, ↑BP

ACTION: Low → seizure precautions, fluid restriction (if dilutional), hypertonic saline if severe. High → hypotonic IV fluids (D5W/0.45 NS), monitor neuro.

COMPLICATION: Seizures, cerebral edema, coma.

Potassium (K⁺)

3.5 – 5.0 mEq/L

Cardiac & skeletal muscle function. The MOST tested lab on NCLEX.

▼ HYPOKALEMIA < 3.5

- Muscle weakness, cramps
- Flat T waves, U waves
- Constipation, ileus
- ↑ digoxin toxicity risk

▲ HYPERKALEMIA > 5.0

- Peaked T waves, wide QRS
- Muscle weakness, paralysis
- Bradycardia → asystole
- Hyperactive bowels, diarrhea

ACTION: Low → IV K (NEVER push, max 10 mEq/hr peripheral), telemetry, oral K-rich foods. High → IV calcium gluconate (cardio-protect), insulin + D50, kayexalate, dialysis. **COMPLICATION:** Lethal dysrhythmias, cardiac arrest.

Calcium (Ca²⁺)

9.0 – 10.5 mg/dL

Bone, neuromuscular excitability, clotting. Inverse with phosphorus.

▼ HYPOCALCEMIA < 9.0

- Trousseau's & Chvostek's signs
- Tetany, muscle spasms
- Tingling lips/fingers, seizures

▲ HYPERCALCEMIA > 10.5

- Bone pain, fractures
- Kidney stones, polyuria
- Lethargy, confusion

- Prolonged QT

- Constipation, anorexia

ACTION: Low → IV calcium gluconate slowly, seizure precautions, vitamin D. High → IV NS + loop diuretic (furosemide), bisphosphonates, ambulate, increase fluids. **COMPLICATION:** Laryngospasm, cardiac arrest, kidney stones.

Magnesium (Mg^{2+})

1.3 – 2.1 mEq/L

*Neuromuscular function. **Mg behaves like Ca** — same symptoms, same direction.*

▼ HYPOMAGNESEMIA < 1.3

- Hyperactive DTRs, tremor
- Tetany, seizures
- Torsades de pointes

▲ HYPERMAGNESEMIA > 2.1

- Depressed/absent DTRs
- Hypotension, bradycardia
- Respiratory depression

ACTION: Low → IV magnesium sulfate (slow), seizure precautions. High → STOP Mg infusion, **IV calcium gluconate is the ANTIDOTE**, support breathing. **COMPLICATION:** Respiratory arrest, lethal dysrhythmias.

Phosphorus (PO_4)

3.0 – 4.5 mg/dL

Bone, ATP energy. Always inverse with calcium.

▼ HYPOPHOSPHATEMIA

- Muscle weakness, bone pain
- Confusion, respiratory failure
- Common in TPN/refeeding

▲ HYPERPHOSPHATEMIA

- Tetany (LOW Ca symptoms)
- Itching, soft tissue calcification
- Common in CKD

ACTION: Low → oral phosphate, treat underlying cause. High → phosphate binders (sevelamer, calcium acetate) WITH meals, dietary restriction. **COMPLICATION:** Soft tissue calcification, cardiac dysfunction.

Renal Function



BUN

10 – 20 mg/dL

Protein waste; affected by hydration, GI bleed, diet, steroids.

↑ **BUN**: dehydration, GI bleed, kidney injury, high-protein diet. ↓ **BUN**: overhydration, malnutrition, liver disease. **ACTION**: Trend with creatinine — BUN alone is not specific to kidney.

Creatinine ★

0.6 – 1.2 mg/dL

***BEST indicator of kidney function.** Not affected by hydration.*

↑ **Creatinine** = ↓ **kidney function**. Hold nephrotoxic drugs (NSAIDs, aminoglycosides, contrast). **COMPLICATION**: AKI → CKD → dialysis.

GFR

> 90 mL/min

Glomerular filtration rate — gold standard for staging CKD.

< 60 = **CKD**. < 15 = ESRD/dialysis. **ACTION**: Adjust meds, restrict K/Phos, prep for dialysis as appropriate.

BUN:Creatinine Ratio

10:1 – 20:1

↑ **Ratio (>20:1)**: dehydration, GI bleed (pre-renal). **Normal ratio with ↑ both**: intrinsic kidney damage.

Glucose



Blood Glucose (Fasting)

70 – 110 mg/dL

▼ HYPOGLYCEMIA < 70

- Cool, clammy, shaky
- Tachycardia, hunger
- Confusion, seizures

▲ HYPERGLYCEMIA > 180

- Polyuria, polydipsia, polyphagia
- Hot, dry skin; fruity breath
- Kussmaul respirations (DKA)

ACTION: Low → **15-15 rule** (15g fast carbs, recheck in 15 min).

Unconscious: IV D50 or IM glucagon. High → insulin, IV fluids, monitor K.

COMPLICATION: Coma, seizures, DKA, HHS.

Hemoglobin A1c

< 5.7% (DM goal < 7%)

*Average glucose over past **3 months**. Cannot be faked the day-of.*

5.7–6.4% = pre-diabetes. ≥ 6.5% = diabetes. Target < 7% for most diabetics. Check every 3 months.

Arterial Blood Gases (ABGs)



pH

7.35 – 7.45

▼ ACIDOSIS < 7.35

- Confusion, drowsy → coma
- Headache, hyperkalemia
- Kussmaul (metabolic)

▲ ALKALOSIS > 7.45

- Tetany, paresthesia
- Muscle cramps, hypokalemia
- Dizziness, hyperreflexia

ACTION: Treat underlying cause. Acidosis → support ventilation, IV bicarb if severe. Alkalosis → rebreathe (if respiratory), correct K/Cl/volume.

PaCO₂ (Respiratory)

35 – 45 mmHg

↑ PaCO₂ = **Respiratory ACIDOSIS** (hypoventilation: COPD, opioids, ↓RR). ↓ PaCO₂ = **Respiratory ALKALOSIS** (hyperventilation: anxiety, PE, fever).

HCO₃ (Metabolic)

22 – 26 mEq/L

↓ HCO₃ = **Metabolic ACIDOSIS** (DKA, diarrhea, kidney failure, lactic acidosis). ↑ HCO₃ = **Metabolic ALKALOSIS** (vomiting, NG suction, antacids, diuretics).

PaO₂ / SaO₂

80 – 100 mmHg / 95 – 100%

SaO₂ < 90% = **HYPOXEMIA**. Apply O₂, position upright, suction PRN, notify provider. Goal: SaO₂ ≥ 92% (≥ 88% for chronic COPD).

🎯 ROME — QUICK ABG INTERPRETATION

Respiratory Opposite: pH ↑ + CO₂ ↓ = Resp Alkalosis
pH ↓ + CO₂ ↑ = Resp Acidosis

Metabolic Equal: pH ↑ + HCO₃ ↑ = Met Alkalosis
pH ↓ + HCO₃ ↓ = Met Acidosis

CBC



Hemoglobin (Hgb)

M: 14–18 / F: 12–16 g/dL

↓ **Hgb**: fatigue, pallor, tachycardia, SOB. Transfuse if <7 (or <8 cardiac).

↑ **Hgb**: dehydration, polycythemia.

Hematocrit (Hct)

M: 42–52% / F: 37–47%

≈ 3 × Hgb. ↓ in anemia, bleeding. ↑ in dehydration.

WBC

5,000 – 10,000/mm³

↑ **WBC**: infection, inflammation, leukemia. ↓ **WBC** (< 5,000): immunocompromised — **NEUTROPENIC PRECAUTIONS** if ANC < 500.

Platelets ⚠️

150,000 – 400,000/mm³

BLEED RISK at < 50K. **SPONTANEOUS BLEED** at < 20K. Bleeding precautions: soft toothbrush, electric razor, no IM injections, no aspirin/NSAIDs.

Coagulation



PT

11 – 12.5 sec

Extrinsic pathway. Affected by warfarin & vitamin K.

INR ★ (Warfarin)

0.8 – 1.1 (Therapeutic 2 – 3)

WARFARIN monitoring. Therapeutic 2–3 (mechanical valve 2.5–3.5). > 4 = bleed risk → hold warfarin, give vitamin K (antidote).

aPTT / PTT ★ (Heparin)

30 – 40 sec (Therapeutic 60 – 80)

HEPARIN monitoring. Therapeutic 1.5–2.5 × control. **Antidote:** Protamine sulfate.

D-Dimer

< 0.5 mcg/mL

↑ in DVT, PE, DIC. Used to **rule out** clots.

ANTIDOTES — MEMORIZE

Warfarin → Vitamin K

Heparin → Protamine sulfate

tPA / Alteplase → Aminocaproic acid

Magnesium toxicity → Calcium gluconate



Liver Function



ALT

4 – 36 U/L

Most liver-specific enzyme. ↑ in hepatitis, fatty liver, acetaminophen toxicity.

AST

0 – 35 U/L

↑ in liver damage AND skeletal muscle/cardiac injury (less specific than ALT).

Albumin

3.5 – 5.0 g/dL

↓ **Albumin**: liver failure, malnutrition, kidney disease → edema, ascites, poor wound healing.

Ammonia ⚠️

15 – 110 mcg/dL

↑ **Ammonia** → **hepatic encephalopathy** (asterixis, confusion).

ACTION: Lactulose to expel ammonia in stool. Goal: 2–3 soft stools/day.

Total Bilirubin

0.3 – 1.0 mg/dL

↑ → jaundice, dark urine, clay stools. Hemolysis, liver disease, biliary obstruction.



Cardiac Markers



Troponin ★

< 0.04 ng/mL

BEST/most specific MI marker. Rises in 3–4 hr, peaks 12–24 hr, stays elevated 10–14 days. Trend serially.

CK-MB

0 – 3 ng/mL

Rises 4–6 hr post-MI. Less specific than troponin (also ↑ in skeletal muscle damage).

BNP

< 100 pg/mL

↑ **BNP** = **HEART FAILURE**. Released when ventricles stretch. >400 = HF likely.

Lipid Panel

See goals →

Total chol < 200 · **LDL** < 100 · **HDL** > 40 (M)/> 50 (F) · **TG** < 150. LDL = "Lousy" · HDL = "Healthy".



Therapeutic Drug Levels

Digoxin

0.5 – 2.0 ng/mL · Toxic > 2.0

EARLY toxicity: N/V, anorexia, headache. **LATE:** yellow-green halos, vision changes, bradycardia, dysrhythmias. **HOLD if HR < 60.** Risk ↑ with HYPOkalemia. Antidote: Digibind.

Lithium

0.6 – 1.2 mEq/L · Toxic > 2.0

Toxicity: tremor, N/V, thirst, confusion, ataxia, seizures. Risk ↑ with HYPOnatremia/dehydration. Maintain consistent Na & fluid intake (2–3 L/day). Avoid NSAIDs.

Theophylline

10 – 20 mcg/mL · Toxic > 20

LIFE-THREATENING toxicity. Tachycardia, tremors, seizures, coffee-ground emesis. Avoid caffeine.

Phenytoin (Dilantin)

10 – 20 mcg/mL

Toxicity: nystagmus, ataxia, gingival hyperplasia, slurred speech. IV must run with NS only (precipitates with D5W). Causes pink/red urine.

Vancomycin (Trough)

10 – 20 mcg/mL

Drawn 30 min before next dose. **Nephrotoxic & ototoxic.** Infuse over ≥ 60 min to prevent **Red Man Syndrome** (flushing, rash, hypotension).

Acetaminophen

10 – 30 mcg/mL · Toxic > 200

Hepatotoxic. Max 4 g/day adults (3 g if ETOH/liver dz). **Antidote:** N-acetylcysteine (Mucomyst).

4

Priority Nursing Actions

WHEN YOU SEE AN ABNORMAL LAB



ASSESS

- ▶ Match lab to patient symptoms (S/S validate the value)
- ▶ Apply ABCs — airway/cardiac labs first (K, ABG, Hgb)
- ▶ Check trend: worsening or improving?
- ▶ Compare to patient's baseline, not just textbook
- ▶ Verify accuracy if value doesn't match clinical picture



ACT

- ▶ Critical value → notify provider immediately
- ▶ Hold meds based on labs (digoxin if K low, anticoagulants if INR high)
- ▶ Implement precautions (seizure, bleeding, neutropenic)
- ▶ Anticipate orders — have antidote/treatment ready
- ▶ Document recognition, action, and patient response



MONITOR

- ▶ Continuous telemetry for K, Mg, Ca extremes
- ▶ Recheck labs after intervention (verify effect)
- ▶ Watch for complications (arrhythmia, seizures, bleeding)
- ▶ Strict I&O for renal/electrolyte issues
- ▶ Daily weights for fluid-related labs



TEACH

- ▶ Diet modifications (K, Na, protein based on lab)
- ▶ Med adherence and required lab follow-up
- ▶ Signs/symptoms of complication to report
- ▶ Hold-parameter teaching (HR for digoxin, etc.)
- ▶ S/S of bleeding for anticoagulant patients

5

NCLEX Test Traps ⚠

HIGH-YIELD WRONG-ANSWER PATTERNS

⚠️ ANTICOAGULANT LAB PAIRING

Heparin → aPTT (NOT INR). **Warfarin → INR** (NOT aPTT). Mixing these up is the #1 pharm trap. ~~Heparin uses INR~~ ❌

⚠️ BEST KIDNEY INDICATOR

Choose **Creatinine**, NOT BUN. BUN is altered by hydration, GI bleed, diet. Creatinine reflects pure kidney function.

⚠️ BEST MI MARKER

Choose **Troponin**, NOT CK-MB or myoglobin. Troponin is the most specific and stays elevated longest.

⚠️ HYPERKALEMIA: FIRST ACTION

Get an ECG / put on telemetry FIRST. Watch for peaked T waves before the K kills the heart. Then treat with calcium gluconate.

⚠️ NEVER IV PUSH POTASSIUM

IV K must be diluted and infused slowly (max 10 mEq/hr peripheral, 20 mEq/hr central). ~~"Give 20 mEq IV push"~~ ❌ = lethal.

⚠️ MAGNESIUM TOXICITY ANTIDOTE

Calcium gluconate is the antidote — NOT a diuretic, NOT naloxone. Same drug used for hyperkalemia cardio-protection.

⚠️ LITHIUM + HYPONATREMIA

Low Na → toxic Li level. Patient on Li who develops dehydration/sweating/diarrhea is at risk. **Maintain steady salt & 2–3 L water daily.**

⚠️ DIGOXIN + HYPOKALEMIA

Low K POTENTIATES digoxin → toxicity at therapeutic levels. Always check K before giving digoxin. Hold if HR < 60.

⚠️ TREND, NOT NUMBER

A K of 5.4 going DOWN from 6.8 is improving. A Hgb of 9 STABLE is different from a Hgb of 9 trending down. **Always look at the direction.**

⚠️ PHENYTOIN IV COMPATIBILITY

Phenytoin precipitates in D5W. **Run only with normal saline.** Filter required. Slow infusion to prevent cardiac arrest.

⚠️ VANCOMYCIN REACTION

Red Man Syndrome (flushing, hypotension) is from **infusing too fast** — NOT a true allergy. Slow infusion and antihistamines fix it.

⚠️ PLATELETS < 50K

Bleeding precautions, NOT neutropenic precautions. Confusing "low blood cell" precautions is a classic trap. **Low Plt = bleeding • Low WBC = infection.**

6 NCJMM Clinical Judgment Framework

APPLIED TO A LAB CRISIS



Case: Post-op patient · K⁺ 6.4 mEq/L, HR 52, T waves peaked on monitor

RECOGNIZE Critical hyperkalemia (K 6.4, normal 3.5–5.0); peaked T waves; bradycardia 52.

ANALYZE Cardiac membrane unstable → risk for lethal arrhythmia (V-fib, asystole). Renal cause vs. medication-induced (ACEi, K-sparing diuretic, K supplements).

PRIORITIZE #1 — Cardiac stabilization. #2 — Drive K back into cells. #3 — Remove K from body.

GENERATE IV calcium gluconate (cardio-protect) → IV insulin + D50 (shift K intracellular) → kayexalate or dialysis (eliminate K). Hold K-elevating meds.

TAKE ACTION Continuous telemetry · Notify HCP STAT · Stop K-containing IVs/meds · Administer calcium gluconate per order · Prepare insulin/D50 · Strict I&O.

EVALUATE Recheck K in 30–60 min · T waves normalize · HR rises > 60 · Patient remains hemodynamically stable · Urine output > 30 mL/hr.

7 Patient & Family Education

LAB-SPECIFIC TEACHING PEARLS

Warfarin (INR Patients)

- ✓ Keep **vitamin K intake CONSISTENT** (don't avoid greens — be steady)
- ✓ INR check at intervals ordered by HCP
- ✓ Report bleeding gums, dark urine, blood in stool, bruising
- ✓ No NSAIDs, aspirin, or alcohol without HCP approval
- ✓ Carry medical alert ID

Lithium Therapy

- ✓ Drink **2–3 L of water daily**, maintain steady salt intake
- ✓ Routine blood levels (every 1–2 weeks initially)
- ✓ Avoid NSAIDs, dehydration, excessive sweating
- ✓ Report tremor, vomiting, blurred vision, confusion
- ✓ Use sunscreen — Li causes photosensitivity

Digoxin Patients

- ✓ **Check pulse 1 full minute before each dose** — hold if < 60
- ✓ Eat K-rich foods if not on K-sparing meds
- ✓ Report N/V, anorexia, halos, blurred vision
- ✓ Take at the same time each day
- ✓ Don't double up on missed doses

Diabetics (A1c & BG)

- ✓ A1c every 3 months — reflects average BG
- ✓ Goal A1c < 7% (most adults)
- ✓ Check fingerstick before meals & at bedtime
- ✓ Carry fast-acting carb (juice, glucose tabs) at all times
- ✓ **15–15 rule** for hypoglycemia

Renal Patients (BUN/Cr)

- ✓ Avoid OTC NSAIDs and contrast unless cleared
- ✓ Limit dietary K, Phos, and protein per stage
- ✓ Daily weights — report > 2 lb in 24 hr or 5 lb/wk
- ✓ Monitor BP at home
- ✓ Track fluid intake per renal restriction

Bleeding Precautions (Plt < 50K)

- ✓ Soft toothbrush, electric razor (no straight blades)
- ✓ Avoid IM injections, contact sports, aspirin/NSAIDs
- ✓ No flossing, no hard foods that could cut gums
- ✓ Apply pressure to cuts ≥ 10 min
- ✓ Report nosebleeds, bruising, blood in urine/stool

8 Memory Boosters & Mnemonics

ANCHOR THE HIGH-YIELD NUMBERS

⚡ MURDER — Hyperkalemia

Muscle weakness
Urine (oliguria, anuria)
Respiratory distress
Decreased cardiac contractility
ECG changes (peaked T waves)
Reflexes hyperreflexia → flaccid

💧 SALT LOSS — Hyponatremia

Stupor / coma
Anorexia, N/V
Lethargy
Tendon reflexes diminished
Loss of urine & appetite
Orthostatic hypotension
Seizures
Stomach cramps

🔥 FRIED — Hypernatremia

Fever (low-grade), Flushed skin
Restless / irritable
Increased fluid retention & BP
Edema (peripheral / pitting)
Decreased urine output, Dry mouth

🐱 CATS — Hypocalcemia

Convulsions
Arrhythmias (prolonged QT)
Tetany (Trousseau's & Chvostek's)
Spasms / Stridor (laryngospasm)

🎯 ROME — ABG Interpretation

Respiratory **O**pposite — pH and CO_2 move opposite directions
Metabolic **E**qual — pH and HCO_3 move the same direction

Practice: pH 7.30, CO_2 50 → Resp Acidosis. pH 7.50, HCO_3 30 → Met Alkalosis.

📊 The "Magic Numbers"

2.0 — Lithium AND Digoxin toxicity threshold
20 — Theophylline & Phenytoin toxic ceiling
50K — Platelets bleeding-risk floor
20K — Platelets spontaneous-bleed floor
500 — ANC neutropenic precautions threshold
7.35 / 7.45 — pH life range

🧠 **PATTERN PEARL: "SAME SYMPTOMS, SAME DIRECTION"**

Calcium and Magnesium move together symptomatically. Low Ca = neuromuscular EXCITABILITY (tetany, seizures, hyperreflexia). Low Mg = same. High Ca = SLOWING (lethargy, constipation, weakness). High Mg = same. If you remember Ca, you remember Mg.

Sodium and Water move together. "Where sodium goes, water follows." Hypernatremia → fluid retention. Hyponatremia → fluid imbalance. K and Na are inverse in the kidney (K-sparing diuretic = Na out, K stays).

9 Critical Value Quick Card

MEMORIZE BEFORE TEST DAY



STAT Notification



K⁺ < 2.5 or > 6.5 — lethal arrhythmia risk

Na⁺ < 120 or > 160 — seizure / coma

Ca²⁺ < 7 or > 12 — tetany / cardiac

Glucose < 50 or > 400 — coma risk

pH < 7.20 or > 7.60 — life-threatening

Hgb < 7 — transfusion threshold

Platelets < 20K — spontaneous bleed

INR > 5 — major bleed risk

SaO₂ < 90% — hypoxemia



30-Second Recall List



Na 135–145 · K 3.5–5.0 · Ca 9–10.5

Mg 1.3–2.1 · Phos 3.0–4.5 · Cl 95–105

BUN 10–20 · Cr 0.6–1.2 · GFR >90

Glucose 70–110 · A1c <5.7

pH 7.35–7.45 · CO₂ 35–45 · HCO₃ 22–26

Hgb 12–18 · Hct 36–52 · WBC 5–10K

Plt 150–400K · INR 0.8–1.1 · aPTT 30–40

Troponin <0.04 · BNP <100

Albumin 3.5–5.0 · Ammonia 15–110

Built for Diane's NCLEX 2026 Library · Print-ready · Color preserved · NCJMM-aligned · Pattern-recognition focused