

PHARM

NUTRITION

NGN 2026

Total Parenteral Nutrition (TPN)

Also known as Hyperalimentation — High-Yield NCLEX Review

① DEFINITION & OVERVIEW

- **TPN** = IV delivery of complete nutrition: hypertonic glucose, amino acids, water, minerals, vitamins
- Used when the GI tract cannot be used (surgery, severe malnutrition, bowel obstruction)
- Also called **Hyperalimentation** — remember this synonym for the exam

② ROUTES OF ADMINISTRATION

Central IV line



✓ Preferred

Peripheral IV



Max 48–72 hrs only

Lipid emulsions can run via **central OR peripheral** line — piggybacked at the port closest to insertion site.

③ COMPOSITION

- Hypertonic glucose
- Amino acids
- Water
- Minerals & electrolytes
- Vitamins
- Lipid emulsions (often pre-mixed)

④ MONITORING (EVERY 6 HRS)

- **#1 — Accu-check** (blood glucose) — highest priority due to high dextrose load
- **#2 — Urine glucose/acetone**
- Monitor for fluid overload signs
- Daily weights (same time each day)
- Electrolytes regularly

⑤ RATE RULES

- **NEVER** speed up if 2 hrs behind
- **NEVER** slow down if client leaves unit
- **NEVER** shake lipid emulsions
- Rate must stay **constant** — body relies on steady glucose load

⑥ PRIORITY NURSING INTERVENTIONS

- **Monitor** blood glucose every 6 hours
- **Assess** central line site for infection each shift
- **Maintain** constant infusion rate — do not alter independently
- **Weigh** client daily at same time
- **Change** TPN tubing per facility protocol (typically every 24 hrs)
- **Do not** piggyback other drugs into TPN line — use separate lumen

⑦ SIGNS & SYMPTOMS TO RECOGNIZE

HYPOGLYCEMIA (rate slowed/stopped)

- Diaphoresis, shaking, confusion
- Tachycardia, anxiety

HYPEROSMOLAR (rate too fast)

- Confusion, dehydration signs
- Polyuria, lethargy

INFECTION (central line #1 complication)

- Fever, redness/swelling at insertion site
- Elevated WBC

⑧ NCLEX TEST TRAPS ⚠️

TRAP **Rate behind?** Students want to speed up — NEVER do this. Hyperosmolar crisis results.

TRAP **Client leaves unit?** Do NOT slow the rate — hypoglycemia will follow as body expects the glucose load.

TRAP **Shaking lipids?** Never shake — damages the fat molecules. Gently rotate only.

TRAP **Piggyback meds into TPN?** Never — use a separate lumen to prevent incompatibility and contamination.

TRAP **Peripheral TPN forever?** No — max 48–72 hours only. Osmolarity damages peripheral veins.

TRAP **Monitor frequency?** Glucose checks are EVERY 6 HOURS — not just once a shift.

9 CLINICAL JUDGMENT – NCJMM FRAMEWORK

RECOGNIZE CUES

Confusion, diaphoresis, shaking → hypoglycemia; or confusion/dehydration → hyperosmolar state

ANALYZE CUES

Was rate altered? Has client been NPO long? Is infusion running on time? Check blood glucose immediately

PRIORITY ACTION

Check Accu-check FIRST → notify HCP → maintain/restore correct rate → do NOT alter rate independently

EXPECTED OUTCOME

Blood glucose 70–110 mg/dL; stable VS; no signs of infection; weight stable; client tolerating TPN

10 PATIENT EDUCATION

- Report any pain, redness, or swelling at the IV site immediately
- Do not adjust or tamper with the infusion pump rate
- Report signs of low blood sugar: shakiness, sweating, confusion
- Daily weights at home help monitor fluid balance
- Notify nurse before leaving unit — rate must NOT be altered

11 MEMORY BOOSTERS

Mnemonic

"TPN = Two No-Nos" — Never Speed Up. Never Slow Down.

Quick Association

TPN stops → "**Sugar Crash**" = Hypoglycemia
TPN too fast → "**Sugar Flood**" = Hyperosmolar

Pattern Recognition

Rate question? → **KEEP CONSTANT.**
Monitoring question? → **BLOOD GLUCOSE FIRST.**

RED FLAG PRIORITY SIGNS

Sudden TPN Stop

→ Profound hypoglycemia risk — give dextrose solution, notify HCP immediately

Too-fast Infusion

→ Hyperosmolar state — confusion, dehydration, polyuria

Central Line Fever

→ #1 complication = Infection — assess site, obtain cultures, notify HCP

Glucose > 200 mg/dL

→ Hyperglycemia — may need insulin adjustment per HCP order