

Order Review and Verification Checklist

The American Society for Parenteral and Enteral Nutrition (ASPEN) champions evidence-based practices that support parenteral nutrition (PN) therapy across varying patient populations, disease states, and practice settings. The appropriate use of PN aims to maximize clinical benefit while minimizing the potential risks.

This checklist promotes safe PN order review and verification practices for pharmacists and other clinicians. It focuses particularly on compatibility and stability issues, including during times of PN component shortages. Use this checklist along with companion checklists on PN prescribing, compounding, and administration.

- Each order is reviewed by a pharmacist, whether the prescribed PN starts with a standardized, commercially available multi-chamber bag (MCB) PN product, a compounded PN that meets an organization's standard formulas, or one that is custom compounded to patient-specific needs.
- The pharmacist review of PN orders should include an evaluation of formulation safety in terms of compatibility and stability before approval for compounding.
- Any identified concern is discussed with the prescriber to generate an appropriately revised PN order.

Verify standardized PN order elements for:

- Patient name or other identifier
- Date of birth and/or age
- Allergies and associated reactions
- Height and dosing weight (metric units)
- Diagnosis/diagnoses
- Indication(s) for PN
- Administration route/venous access device (VAD) (central vs. peripheral)
- Prescriber contact information
- Date and time order submitted
- Administration date and time, beyond use date for home PN
- Volume and infusion rate
- Infusion schedule (continuous or cyclic)
- Type of formulation (2-in-1 PN admixture with separate infusion of lipid injectable emulsion [ILE] or a total nutrient admixture)

Verify standardized PN order format including a standardized sequence of PN components:

- Adults – amounts/day
- Pediatrics – amounts/kg/day
- Neonates – amounts/kg/day
- Electrolytes as complete salt form
- A dose for:
 - » each macronutrient
 - » each electrolyte, if ordered
 - » multivitamins
 - » individual vitamins, if ordered
 - » multi-trace elements
 - » individual trace elements, if ordered, paying particular attention to units and decimal points
 - » regular insulin as appropriate, if ordered

- » non-nutrient medications, if ordered and previously confirmed to be stable and compatible with the specific PN order (check with manufacturer for compatibility/stability information)

- Check for any potentially missing additives

Perform clinical review of PN order for:

- Indication consistent with published guidelines
- Appropriate dose of each ingredient for the specific patient
- Order volume, infusion rate, and ingredient dosing consistent with the most current nutrition care plan for the patient
- Appropriate osmolality for route of administration (central vs. peripheral)
- Contraindications to the use of PN (hypertriglyceridemia with ILE, allergies, altered organ function, consider total calorie and dextrose dose)

Compare current order to previous order to assess component doses for substantial changes, and evaluate/correct any potential compatibility/stability concerns.

Perform independent double-check for:

- Transcribed order data prior to compounding
- Calculations or conversion of units of measure

Perform PN order safety review for:

- Compatibility of all ingredients at the ordered doses and PN volume
- Stability of all ingredients and of the final PN admixture for the duration of the infusion or stability for home infusions where components are added just prior to administration.

Table 1. Common Challenges and How to Address Them With Prescriber

Challenges	Suggested Approaches
TNA emulsion instability risk	<ul style="list-style-type: none"> • Infuse ILE separately from the 2-in-1 PN admixture • Infuse ILE separately from the 2-in-1 PN admixture, at a separate time (i.e., off-cycle) • If clinically practical and appropriate, alter the macronutrient doses to a more stable regimen within acceptable concentration limit ranges • If clinically practical and appropriate, increase the ILE dose to within an acceptable concentration limit range; reduce PN days with ILE to maintain weekly ILE dose • Decrease calcium and/or magnesium content to within acceptable concentration limit ranges • Consider slow intravenous infusion of the calcium and/or magnesium through another lumen or vascular access or when feasible consider enteral/oral supplementation of a bioavailable form of the mineral • Limit chloride salts if possible; avoid adding L-cysteine
Calcium phosphate insolubility risk	<ul style="list-style-type: none"> • If amino acid product-specific stability curve indicates incompatibility, consider increasing concentration of amino acids or dextrose concentration, if clinically practical and appropriate • Consider the addition of L-cysteine when clinically indicated, in the absence of ILE • Decrease calcium and/or phosphate content • Note that increasing PN volume (with sterile water) will reduce the calcium and phosphate concentrations, but will also decrease final concentrations of the macronutrients that were supporting solubility • Consider slow intravenous infusion of calcium or phosphate through another lumen or vascular access; or when feasible consider enteral/oral supplementation of a bioavailable form of the mineral

Abbreviations: ILE, lipid injectable emulsion; PN, parenteral nutrition; TNA, total nutrient admixture. Reprinted from Boullata JI, et al.

For full recommendations, rationale, and references, go to:

- Boullata JI, Salman G, Mirtallo JM, et al. Parenteral nutrition compatibility and stability: Practical considerations. *Nutr Clin Pract.* 2024;39(5):1150-63.
- Ayers P, Adams S, Boullata J, Gervasio J, Holcombe B, Kraft M, et al. ASPEN Parenteral Nutrition Safety Consensus Recommendations. *JPEN J Parenter Enteral Nutr.* 2014;38: 296-333.
- Cober MP, Gura KM, Mirtallo JM, et al. ASPEN Lipid Injectable Emulsion Safety Recommendations, Part 2: Neonate and Pediatric Considerations. *Nutr Clin Pract.* 2021 Dec;36(6):1106-1125.
- Mirtallo JM, Ayers P, Boullata J, et al. ASPEN Lipid Injectable Emulsion Safety Recommendations, Part 1: Background and Adult Considerations. *Nutr Clin Pract.* 2020 Oct;35(5):769-782.

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