FRESENIUS KABI

Advancing parenteral nutrition (PN) with **3-chamber bags**

An all-in-one solution in a 3-chamber bag can help simplify:

- Calculations for dietitians
- Prescription writing for clinicians
- Compounding for pharmacists
- Administration for nurses

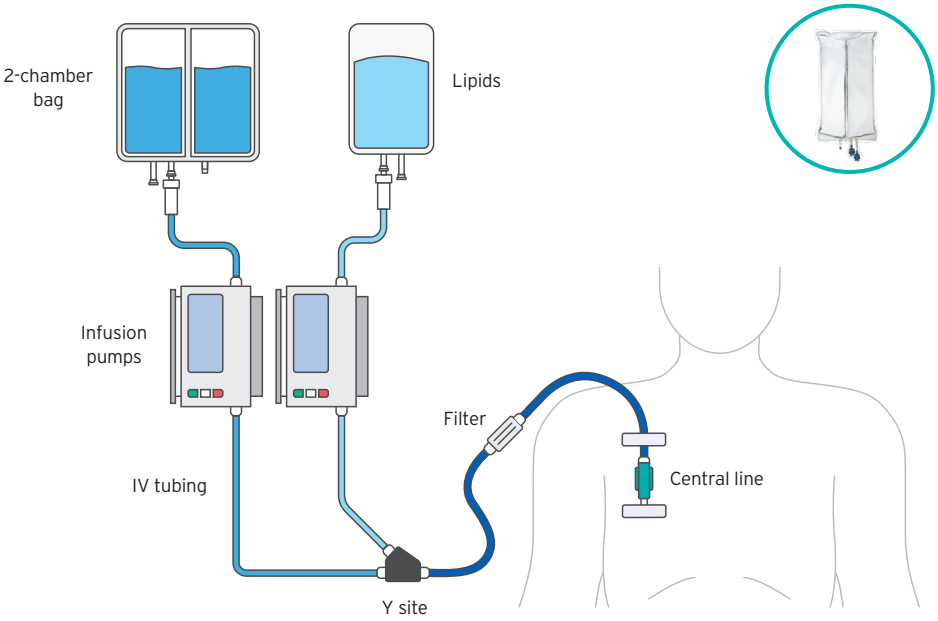
Standardization with commercial PN products can:

- Eliminate the need to piggyback or add lipids
- Be dispensed by the pharmacy anytime, including nights and weekends
- Provide a full complement of electrolytes
- Require less manipulation during preparation and administration

The American Society for Parenteral and Enteral Nutrition (ASPEN) advocates for a standardized PN delivery process to enhance safety.[1]

Please see Indications and Important Safety Information on page 5.

2-chamber bag with Y-site lipid setup

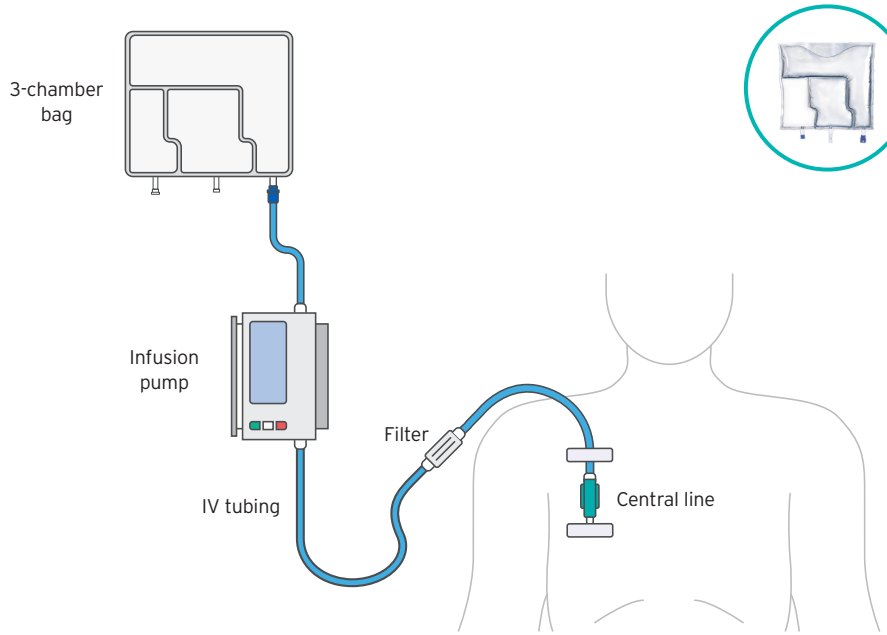


2-chamber bag ports are not marked, and the infusion ports are not resealable

- 2 PN bags (amino acids/dextrose/electrolytes + lipids)
- 2 non-vented DEHP-free IV tubing sets (1 with a 1.2 micron filter)
- 2 infusion pumps
- 2 rates on the pumps

Adding lipids either directly into a 2-chamber bag or via a Y-site reduces the final concentration of macronutrients and electrolytes delivered.

3-chamber bag setup

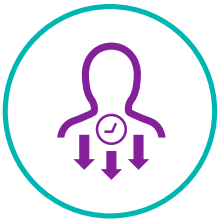


3-chamber bag ports are color coded and marked with arrows for infusion/additive port. The infusion port utilizes flow-stop, which prevents leakage after removal of the needle or spike

- 1 PN bag
- 1 DEHP-free IV tubing set with an integrated or added 1.2 micron filter
- 1 infusion pump
- 1 rate on the pump

Evaluating time, labor, and cost savings

In a multicenter, prospective, time and motion study evaluating PN delivery systems, the 3-chamber bag delivery system was associated with a 62% reduction in pharmacy staff time and workload as well as a 37% reduction in costs compared with hospital-compounded bags (representing PN prepared with automated compounding devices). The cost per bag included labor, PN products, medical consumables, and equipment. One hundred thirty-six PN prescriptions were prepared during the study (66 for 3-chamber bags and 70 for hospital-compounded bags).[2]



62% reduction
in pharmacy staff time[2]

37% reduction
in costs[2]

Exploring guidelines and consensus recommendations

ASPEN PN Clinical Guidelines: "We suggest that **commercially available premade multichambered PN formulations** be considered as an available option for patients alongside compounded (customized or standardized) PN formulations to best meet an organization's patient needs."[3]

ASPEN PN Safety Consensus Recommendation: **"Standardized, commercially available PN products** may be viable options to manually compounded sterile PN products when compliance with USP Chapter <797> and accepted guidelines from patient safety organizations is not feasible."[4]

Did you know?

- 3-chamber bags have a long history of use around the world*
- Fresenius Kabi launched its first 3-chamber bag in Sweden and Germany in 1999*

Fresenius Kabi is the leader in 3-chamber bags, which are used globally†

Fun facts about Fresenius Kabi's 3-chamber bags

1. **More than 25 million liters** of fluid were supplied to patients worldwide in 3-chamber bags last year alone—enough to fill 10 Olympic-sized swimming pools*

2. The contents of those 3-chamber bags comprised **21.5 billion kilocalories**, which would take the average runner 8,580 laps around the earth*

*Data on file.
†MIDAS Database MAR2024.

INDICATIONS AND USAGE

KABIVEN and PERIKABIVEN are each indicated as a source of calories, protein, electrolytes and essential fatty acids for adult patients requiring parenteral nutrition when oral or enteral nutrition is not possible, insufficient, or contraindicated. KABIVEN and PERIKABIVEN may be used to prevent essential fatty acid deficiency or treat negative nitrogen balance in adult patients.

Limitations of Use

Neither KABIVEN nor PERIKABIVEN is recommended for use in pediatric patients <2 years including preterm infants because the fixed content of the formulation does not meet nutritional requirements in this age group.

IMPORTANT SAFETY INFORMATION

KABIVEN is indicated for intravenous infusion into a **central vein**. PERIKABIVEN is indicated for intravenous infusion into a **peripheral or central vein**. It is recommended to mix the contents thoroughly by inverting the bags upside down to ensure a homogenous admixture. Ensure the vertical seals between chambers are broken and the contents of all three chambers for KABIVEN and PERIKABIVEN are mixed together prior to infusion. The dosage of KABIVEN and PERIKABIVEN should be individualized based on the patient's clinical condition (ability to adequately metabolize amino acids, dextrose and lipids), body weight and nutritional/fluid requirements, as well as additional energy given orally/enterally to the patient. Prior to administration of KABIVEN and PERIKABIVEN, correct severe fluid, electrolyte and acid-base disorders. Before starting the infusion, obtain serum triglyceride levels to establish the baseline value. Do not exceed the recommended maximum infusion rate of 2.6 mL/kg/hour for KABIVEN and 3.7 mL/kg/hour for PERIKABIVEN.

KABIVEN and PERIKABIVEN are contraindicated in:

- Concomitant treatment with ceftriaxone in neonates (28 days of age or younger)
- Known hypersensitivity to egg, soybean, peanut, or any of the active or inactive ingredients.
- Severe disorders of lipid metabolism characterized by hypertriglyceridemia (with serum triglyceride concentration >1,000 g/dL).
- Inborn errors of amino acid metabolism.
- Cardiopulmonary instability
- Hemophagocytic syndrome

Clinical Decompensation with Rapid Infusion of Lipid Injectable Emulsions in Neonates and Infants: Acute respiratory distress, metabolic acidosis, and death after rapid infusion of intravenous lipid emulsions have been reported.

Parenteral Nutrition-Associated Liver Disease: Increased risk in patients who receive parenteral nutrition for greater than 2 weeks. Monitor liver tests; if abnormalities occur, consider discontinuation or dosage reduction.

Pulmonary Embolism and Respiratory Distress due to Pulmonary Vascular Precipitates: If signs of pulmonary distress occur, stop the infusion and initiate a medical evaluation.

Hypersensitivity reactions: Monitor for signs or symptoms and discontinue infusion if reactions occur.

Precipitation with Ceftriaxone: Do not administer ceftriaxone simultaneously with KABIVEN or PERIKABIVEN via a Y-site.

Infection, fat overload, hyperglycemia and refeeding complications: Monitor for signs and symptoms; monitor laboratory parameters.

The most common adverse reactions for KABIVEN (≥3%) are nausea, pyrexia, hypertension, vomiting, decreased hemoglobin, decreased total protein, hypokalemia, decreased potassium, and increased gamma glutamyltransferase. The most common adverse reactions for PERIKABIVEN (≥3%) are hyperglycemia, hypokalemia, pyrexia, and increased blood triglycerides.

To report SUSPECTED ADVERSE REACTIONS, contact Fresenius Kabi USA, LLC at 1-800-551-7176, option 5, or FDA at 1-800-FDA-1088 or www.fda.gov/medwatch.

Coumarin and coumarin derivatives, including warfarin: Anticoagulant activity may be counteracted; monitor laboratory parameters

This Important Safety Information does not include all the information needed to use KABIVEN and PERIKABIVEN safely and effectively. Please see full prescribing information for KABIVEN and PERIKABIVEN (amino acids, electrolytes, dextrose and lipid injectable emulsion), for intravenous use at www.FreseniusKabiNutrition.com/KabivenPI and www.FreseniusKabiNutrition.com/PerikabivenPI.

Sources: 1. Kochevar M, Guenter P, Holcombe B, Malone A, Mirtallo J; ASPEN Board of Directors and Task Force on Parenteral Nutrition Standardization. *JPEN J Parenter Enteral Nutr.* 2007;31(5):441-448. **2.** Cogle SV, Martindale RG, Ramos M, et al. *JPEN J Parenter Enteral Nutr.* 2021;45(7):1552-1558. **3.** Boullata JI, Gilbert K, Sacks G, et al. *JPEN J Parenter Enteral Nutr.* 2014;38(3):334-377. **4.** Ayers P, Adams S, Boullata J, et al. *JPEN J Parenter Enteral Nutr.* 2014;38(3):296-333.

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