Identifying and Correcting Missing Parenteral Nutrition Order Components During Transitions of Care

option care health®

Emily Boland Kramer, MS, RD, LDN, CNSC; Jessica Monczka, RD, CNSC, FASPEN; Tricia Laglenne, MS, RD, LDN, CNSC; Ashley Voyles, RD, LD, CNSC; Susan Dietze, PharmD, BCSCP; Kathy Martinez, RD, LDN
Option Care Health - Bannockburn, IL

Background

Parenteral nutrition (PN) is a critical therapy for patients who are unable to absorb nutrients adequately via the gastrointestinal tract.[1] PN is complex, with 10 or more individually dosed components in each order which inherently increases the risk for dosing errors.[2]

This study seeks to analyze the PN orders at hospital discharge received by a home infusion provider and identify the incidence of the omission of the standard components, as determined by ASPEN Recommendations on Appropriate Parenteral Nutrition Dosing.[3]

Purpose

The primary objective of this study was to identify missing sodium, potassium, magnesium, calcium, phosphorus, and multivitamin components in hospital discharge orders. The secondary objective was to determine whether identified missing components were added back during the transition of care (TOC) process from hospital to home.

Methods

This multi-center, retrospective chart review analyzed patients referred to a national home infusion provider over a 3-month period. Data was collected from the electronic medical record and internal surveillance software. The Registered Dietitian, Certified Nutrition Support Clinician (RD, CNSC) reviewed all PN hospital discharge orders for patients transitioning clinical management and PN therapy from hospital to home.

Inclusion criteria were patients 18 years of age or older with PN providing the majority of their nutritional needs, as defined in Table 1, who were missing sodium, potassium, magnesium, calcium, phosphorus, or multivitamin from their PN order at hospital discharge.

Exclusion criteria were patients less than 18 years of age, patients receiving supplemental PN not providing majority of nutritional needs, and patients with doses ordered for all electrolytes and multivitamin.

Disclosures

Authors of this presentation have the following to disclose concerning possible financial or personal relationships with commercial entities that may have a direct or indirect interest in the subject matter of this presentation: Emily Boland Kramer; Tricia Laglenne; Ashley Voyles; Susan Dietze; Kathy Martinez: Nothing to disclose. Jessica Monczka: Fresenius Kabi, Consultant.

Table 1: Inclusion and Exclusion Criteria

	Inclusion Criteria	Exclusion Criteria
Age in years	≥ 18	< 18
PN calories per kg		
BMI < 30	≥ 20	< 20
BMI 30-40	≥ 15	< 15
BMI >40	≥ 10	< 10
Dose ordered for sodium, potassium, magnesium, calcium, phosphorus, and multivitamin	No	Yes

Table 2: Demographics

	Range	Median
Age (years)	18-88	57
BMI (kg/m^2)	11-43.8	23.3
Calories/kg from PN	14-39.6	26.3
Gender	Female 170	Male 97

Figure 1: Primary PN Diagnosis

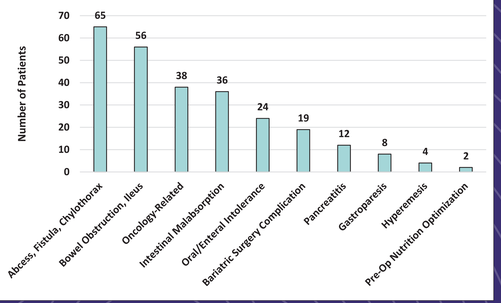
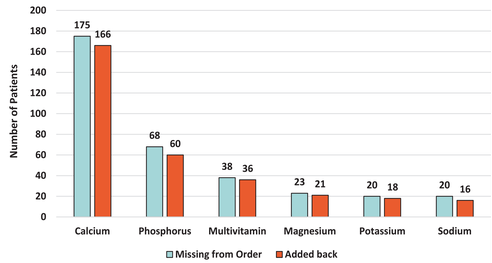


Figure 2: Components Missing from Order and Added Back During TOC Process



Results

During the 3-month period (April 1, 2024 to June 30, 2024), 267 patients were identified who were greater than 18 years of age, receiving the majority of their nutritional needs via PN, and missing at least one PN component in their hospital discharge order. See Table 2 and Figure 1 for demographics.

One hundred seventy-five (65.5%) patients were missing one component and 92 (34.5%) were missing multiple components from the hospital discharge order *(See Figure 2)*. One hundred seventy-five (65.5%) patients were missing calcium, 68 (25.5%) phosphorus, 38 (14%) multivitamin, 23 (8.6%) magnesium, 20 (7.5%) potassium, and 20 (7.5%) sodium. During the transition from hospital to home, after discussion with the provider, 94.9% of patients had calcium added back, 94.7% multivitamin, 91.3% magnesium, 90% potassium, 88.2% phosphorus, and 80% sodium.

Discussion

This study highlights the prevalence of missing components in PN hospital discharge orders, with calcium being the most frequently omitted at a rate of 65.5%. Given that many patients discharging home on PN will require long term therapy, adequate calcium supplementation is essential to prevent bone resorption and complications related to metabolic bone disease.

Conclusion

In hospital discharge orders that were identified by the RD, CNSC as missing calcium, 94.9% of the time the provider agreed that it was clinically appropriate to add calcium to the PN order during the TOC process. This underlines the importance of nutrition support clinician review and communication during the transition from hospital to home.

Future research should analyze the reasons why components are missing from PN orders and increase awareness of the need for a thorough clinical review of all patients going home on PN to ensure the adequacy of all components required for safe and optimized long term PN.

References

[1] Worthington P, Balint J, Bechtold M, et al. When is parenteral nutrition appropriate? J Parenter Enteral Nutr. 2017;41: 324-377.
[2] Mays A, Ayers P, Monczka J, Cober MP. Safety in parenteral nutrition compounding. Nutr Clin Pract. 2023;38:1253-1262.
[3] American Society for Parenteral and Enteral Nutrition. Appropriate dosing for parenteral nutrition: ASPEN Recommendations. November 17, 2020. Accessed September 10, 2024. http://www.nutritioncare.org/uploaded Files/Documents/Guidelines_and_ Clinical_Resources/PN%20Dosing%201-Sheet-FINAL.pdf

©2025 Option Care Health, Inc. All rights reserved.