

# Initiating parenteral nutrition in the home: a snapshot of dosing practices, clinical stability and outcomes



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## Background

Parenteral nutrition (PN) dosing guidelines are traditionally based on the acute setting with minimal published guidance specific for home initiation. Home nutrition support teams (HNSTs) rely on publications such as *ASPEN Consensus Recommendations for Refeeding Syndrome and Appropriate Dosing for Parenteral Nutrition: ASPEN Recommendations*. The *Consensus* concludes more studies are needed to compare initiation regimens and protocols for their effectiveness for avoiding refeeding syndrome (RS).

Initiating PN at home is complex because therapy tolerance is not established upon start of care. HNST experience, close monitoring and frequent assessments are vital since prescribers frequently rely upon HNST for therapy recommendations.

The purpose of this abstract is to review this national home infusion provider's HNST practice, initial dosing as compared to published recommendations, electrolyte trends, and therapy-related complications in home-initiated PN.

## Methods

HNST collected data on 109 home-initiated adult PN patients during a 12-month period analyzing:

- Patient population
- Teams providing PN dosing recommendations (prescriber, HNST, collaboration of both)
- RS risk category (per *ASPEN Consensus Criteria for Identifying Adult Patients at Risk for Refeeding Syndrome*)
- IV hydration pre-PN
- Electrolytes pre- and post-PN start
- Initial PN dosing
- Hospitalization

## Results

### Outcomes

- Patient population breakdown: 36% oncology, 35% GI, 16% bariatric, 8% hyperemesis gravidarum, 6% other
- 71% PN dosing recommendations managed by HNST, 21% collaboration between prescriber and HNST, 8% prescriber
- RS risk category: 56% significant, 27% moderate, 17% none/low (Table 1)
- 34% with electrolyte abnormalities pre-PN
- 27% received IV hydration pre-PN (Figure 1)
- 89% received custom PN, 11% received commercially available multi-chamber bag PN (MCB-PN: dextrose 5%/amino acid 4.25% with standard electrolytes)
- 100% received IV MVI (average 5 days/week - shortage affecting provision)
- 88% received IV thiamin  $\geq$  100mg/day

No hospitalizations due to PN complications (i.e., significant electrolyte/fluid imbalances, RS, adverse reaction to infusion) occurred during first week of therapy. Despite 56% of patients categorized at high RS risk, no complications were reported. Favorable trends in potassium, magnesium and phosphorus levels were observed 1-week post-PN start as compared to the 48-hour pre-PN labs (Figure 2).

Initial dosing of dextrose, potassium, magnesium and phosphorus were consistent with ASPEN published recommendations and HNST guidelines (Table 2).

Of note, 2 patients that received MCB-PN had significantly low pre-PN magnesium levels that increased but remained low at the post-PN start lab draw. Magnesium dosing was adjusted via custom PN, patients were monitored and there were no reported symptoms of hypomagnesemia.

## Conclusion

Home-initiated PN requires an experienced interdisciplinary HNST to assess therapy appropriateness, utilize safety protocols, monitor, and adjust PN throughout therapy. By following established guidelines, therapy complications and hospitalizations were avoided even for patients categorized at high RS risk.

The use of standard MCB-PN may not provide adequate electrolytes when pre-PN levels are low and may require custom PN or addition of electrolytes to MCB-PN. It is critical to continue to monitor PN labs, and when abnormal, correct by adjusting PN throughout therapy.

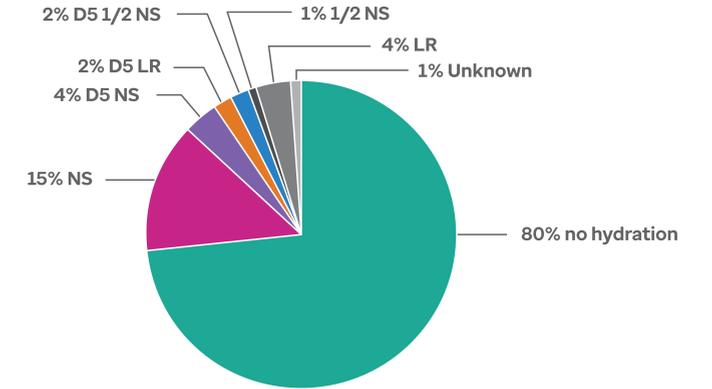
Although not specific for home-initiated PN, the *ASPEN Consensus* and *Appropriate Dosing* publications can be used as guides. All HNSTs providing home-initiated PN should have established safety protocols.

RS risk	%
None/low	17%
Moderate	27%
Significant	56%

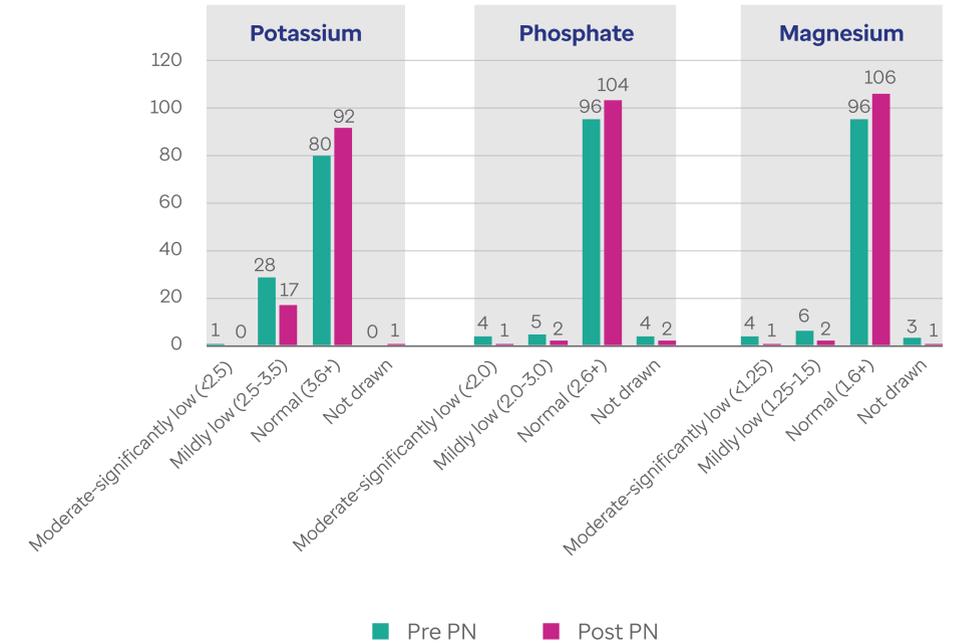
**Table 1. Refeeding syndrome risk category**

	ASPEN recommendation	HNST guidelines***	Average initial dosing
<b>Dextrose (g/d)</b>	100-150*	100-150	103.1
<b>K<sup>+</sup> (mEq/kg/d)</b>	1-2**	1-2	1.01
<b>Phos (mMol/d)</b>	20-40**	20-40	23.3
<b>Mg2<sup>+</sup> (mEq/d)</b>	8-20**	8-20	13.1
<b>MVI (days/week)</b>	7*	7	5.7
<b>Thiamin given (%)</b>	100*	100	88
<b>PN cycle (hrs/d)</b>	no recommendation	18-24 hours	16

**Table 2. Comparison of initial prescription and published recommendations**



**Figure 1. IV hydration prior to initiation of HPN**



**Figure 2. Electrolyte results pre- and post-PN start**

\* ASPEN Consensus Recommendation for Refeeding Syndrome  
 \*\* Appropriate Dosing for Parenteral Nutrition: ASPEN Recommendations  
 \*\*\* HNST clinicians to exercise sound clinical judgement based on individual patient needs

