

# Clinical guidelines for home start parenteral nutrition still needed for patient safety and prevention of refeeding syndrome



Lisa Kinder, RD, CNSC; Shirley Au, RD, CNSC; Yvette Jones, MS, RD, LDN, CNSC; Optum Infusion Pharmacy

## Background

Initiating parenteral nutrition (PN) at home (home start) can benefit patients requiring PN therapy with no alternate reason for hospitalization. Home start PN requires the expertise of experienced clinicians equipped to assess appropriateness and to implement a safe plan of care, ensuring patient safety and prevention of refeeding syndrome (RS).

In 2007, “Home Initiation of Parenteral Nutrition” was published. In 2020, ASPEN published “Consensus Recommendations for Refeeding Syndrome,” which provides guidance on categorizing risk and preventing RS, but not specific to home start PN. In 2021, *Infusion Magazine* published “ASPEN 2020 Consensus Recommendations for Refeeding Syndrome: Adapting screening tools for the home infusion setting,” which adapts the ASPEN Consensus Recommendations for the home setting. However, current published guidelines are still lacking for safe home start PN, particularly in patients at significant RS risk. Often, prescribers rely on the infusion team to provide PN recommendations, reinforcing the need for clinicians proficient with home start PN and RS prevention.

## Purpose

This abstract spotlights case presentations of safe home start PN when significant risk for RS is present and emphasizes the need for current and comprehensive home start PN guidelines specific to significant RS risk.

## Methods

It is not uncommon for home start PN patients to be at risk for RS. Case reports highlight how an experienced home infusion team can navigate and initiate home start PN successfully and safely when certain clinical parameters fall outside of optimal home start standards.

Figure 1. Case report #1

Background	Assessment	Plan	Outcome
<ul style="list-style-type: none"> <li>Longstanding intestinal failure with malabsorption, chronic pseudoobstruction r/t congenital malrotation, s/p multiple bowel resections, presents with nausea, vomiting and abdominal distention exacerbated by oral intake</li> <li>Extensive experience with home PN in the past, last on PN over 5 years ago</li> <li>Works as pediatric nurse and is experienced with CVD care and lab draw for self</li> </ul>	<ul style="list-style-type: none"> <li>Weight: 55kg with 8% weight loss in 3 weeks</li> <li>Limited oral intake: soft foods and protein shake, PO ~400-500kcal, &lt;1000 mL per day</li> <li>Baseline labs WNL, except serum K<sup>+</sup> mildly low at 3.6mMol/L</li> <li>Significant risk for refeeding syndrome</li> <li>Need home PN to be initiated over 12 hours cycle to accommodate full-time work schedule</li> </ul>	<ul style="list-style-type: none"> <li>Initiate PN with low dextrose content (100g) to accommodate shorter 12 hours cycle</li> <li>Moderate PN volume 1000 mL, AA 45g, lipids 25g per day</li> <li>Adequate electrolyte provisions in accordance with ASPEN Recommendations* with K<sup>+</sup> at 1.5 mEq/kg</li> <li>Multivitamin, multi-trace elements, additional thiamine (100 mg) daily for 7 days</li> </ul>	<ul style="list-style-type: none"> <li>Initial PN well tolerated over 12 hours</li> <li>Lab draw 3 days post-PN start stable with serum K<sup>+</sup> WNL at 3.7 mMol/L</li> <li>PN advanced to 1500 mL with AA 65g, dextrose 200g, and lipids 40g daily at goal</li> <li>Subsequent weekly lab draws stable</li> </ul>

**Take aways:** Individualized assessment enabled safe home start PN while meeting patient’s unique need to start on PN over 12 hours cycle.

\*Appropriate Dosing for Parenteral Nutrition. (2019). ASPEN | Parenteral Nutrition Resources (nutritioncare.org), Accessed June 7, 2024.

Figure 2. Case report #2

Background	Assessment	Plan	Outcome
<ul style="list-style-type: none"> <li>Malnutrition r/t metastatic fallopian carcinomatosis and high output end ileostomy</li> <li>Severe hypomagnesemia, likely r/t high ileostomy output                             <ul style="list-style-type: none"> <li>Serum Mg<sup>2+</sup> 0.6 mg/dL</li> </ul> </li> <li>Prescriber team arranged for 2 days of Mg<sup>2+</sup> IV replacement therapy at outpatient infusion center, and prescribed oral Mg<sup>2+</sup> supplement</li> <li>Serum Mg<sup>2+</sup> improved slightly but still with moderate hypomagnesemia at 1 mg/dL</li> </ul>	<ul style="list-style-type: none"> <li>Significant risk for refeeding syndrome according to ASPEN Consensus Criteria for Identifying Adult Patients at Risk for Refeeding Syndrome*</li> <li>Still need correction of serum Mg<sup>2+</sup> for safe PN start</li> </ul>	<ul style="list-style-type: none"> <li>Home nutrition support team (NST) collaborate with prescriber team</li> <li>As per home NST recommendation, initiate MgSulf 4g (32 mEq) in 1000 mL normal saline for IV replacement daily for 7 days at home</li> </ul>	<ul style="list-style-type: none"> <li>Serum Mg<sup>2+</sup> corrected and normalized to 1.7 mg/dL</li> <li>Initiate home start PN regimen: 1500 mL over 18 hours, AA 64g, dextrose 150g, lipids 50g, with adequate MgSulf 25 mEq as precaution</li> <li>Labs remained stable after PN start and throughout PN advancement</li> </ul>

**Take aways:** Correction of electrolyte abnormalities prior to starting PN at home is vital for patient safety. Collaboration between home nutrition support team and prescriber team is key to devising a safe and effective plan for home start PN.

\*Da Silva JSV. (2020). ASPEN Consensus Recommendations for Refeeding Syndrome. *Nutrition in Clinical Practice*, 15 (2) 178-195. <https://doi.org/10.1002/ncp.10474>

## Results

**Case report #1:** Safe home start in patient with significant weight loss, minimal oral intake, mildly low serum K<sup>+</sup>, significant RS risk; with the need for PN to start over 12 hours (much less than the standard 18- to 20-hour starting cycle) to accommodate full-time work schedule (Figure 1).

**Case report #2:** Safe home start in patient with hypomagnesemia, significant RS risk, with correction of serum Mg<sup>2+</sup> level via IV replacement with hydration prior to PN start (Figure 2). In both cases, the prescriber requested PN recommendations be provided by the home infusion team.

## Discussion

At the time patients are referred for home start PN, diminished oral intake, significant weight loss experienced, electrolyte imbalance evidenced, and dehydration may be present.

These case reports and author experience demonstrate that many home start PN patients have significant RS risk, where previous published guidelines advised against home start PN. However, recent publications such as the “ASPEN Consensus Recommendations for Refeeding Syndrome” and *Infusion Magazine’s* “Adapting ASPEN Consensus Recommendations for home” can guide clinicians for safe home start PN.

## Conclusion

In situations where home start is contraindicated such as allergy to PN ingredients or severe electrolyte abnormalities refractory to normalization in the home setting, hospitalization for PN initiation should be recommended. Once PN tolerance is established, patient can safely transition home with PN.

Further research on home start PN when RS risk is significant, and the development of published clinical practice guidelines is still needed.

## Disclosures

Authors of this presentation have the following to disclose: Nothing to disclose.

