Incorporating ASPEN consensus recommendations for Refeeding Syndrome into the home infusion setting: Assessing homestart PN risk of refeeding

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Background

The American Society for Parenteral and Enteral Nutrition (ASPEN) published the Consensus Recommendations for Refeeding Syndrome (RS) in 2020. The consensus redefined RS as "a measurable reduction in levels of 1 or any combination of potassium, phosphorus, and/or magnesium, or the manifestation of thiamin deficiency, developing shortly (hours to days) after initiation of calorie provision to an individual who has been exposed to a substantial period of undernourishment. RS may manifest in a wide variety of severities, from slight, clinically insignificant decrements in electrolyte levels to severe and sudden decreases, which lead to or risk development of end organ failure if not preempted or corrected".

Purpose

The consensus established RS risk assessment based on criteria including BMI, weight loss, calorie intake, abnormal prefeeding serum potassium, phosphorus, or magnesium and high-risk comorbidities, as well as recommendations for avoidance and treatment of RS. In home infusion, when a referral is received for "homestart" of PN, patients are frequently at risk for RS. This abstract assesses risk for RS with homestarts according to consensus criteria and current company protocol for initiating home PN compared to ASPEN recommendations.

Methods

Retrospective chart reviews of 84 adult homestart PN referrals to a national provider were analyzed. Patients with varying diagnoses and geographical regions were initiated on PN in the home setting between 1/1/20-6/30/20. Initial PN assessments including BMI, weight loss history, caloric intake, prefeeding labs, and comorbidities were compared to the ASPEN Consensus Recommendations and categorized to determine frequency and severity of RS risk factors.

Results

Ninety four percent of 84 patients were determined to be at RS risk, with 75% at significant risk and 19% at moderate risk. Almost half (49%) had severe disease, placing them at significant refeeding risk. The most common condition was cancer at 44%, followed by malabsorption at 29%, bariatric surgery complications and protein malnutrition, both at 18%. Sixty percent of the total group experienced significant weight loss classified as significant RS risk, interestingly only 8% had BMI < 16 kg/m2. Half of the total group (51%) were categorized at significant refeeding risk due to minimal oral intake for greater than 7 days, with most having minimal intake for weeks or even months. In total, 38% had abnormal prefeeding electrolyte concentrations, with 32% at minimally low concentrations, placing them at moderate risk. Six percent had moderate/significantly low concentrations, indicating significant RS risk. This provider's protocol for PN home initiation was nearly identical to the Consensus Recommendations, with a difference in monitoring given the ASPEN recommendations were developed for hospitalized patients.

Discussion

This analysis demonstrated that malnutrition and risk of refeeding syndrome was inherent with almost all referrals for homestart PN. Practitioners should be aware of the risk of RS before implementing a plan for nutrition support and familiarize themselves with the new consensus recommendations. This provider's protocol for initiating PN in the home was developed based on existing ASPEN guidelines and clinical resources, so it was already in alignment with the Consensus Recommendations.

Conclusion

Home PN providers should have policies and procedures in place that incorporate consensus guidelines for identification and treatment of RS, prompting this provider to add the new RS risk assessment into the company's electronic PN Initial Assessment.

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Figure 1
Adult homestart PN Patients at risk for refeeding syndrome

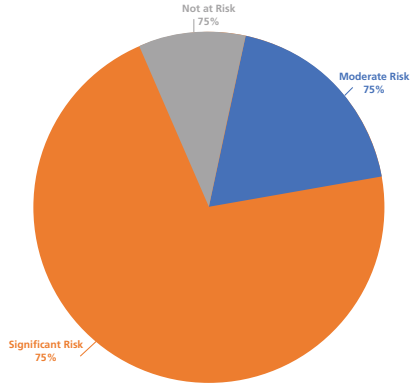
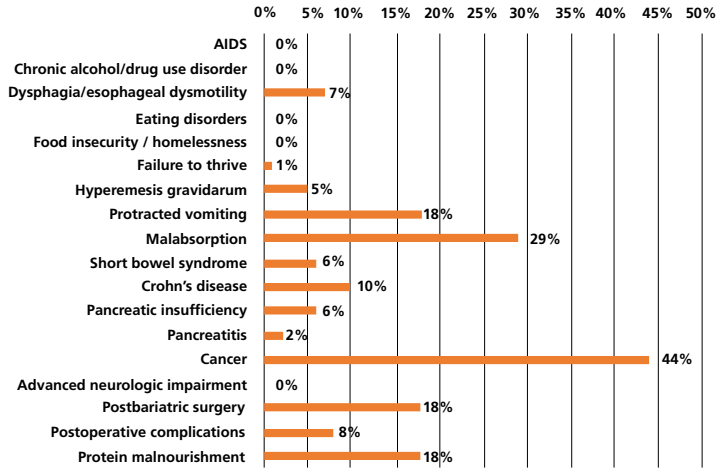


Figure 2
Disease associated with increased refeeding risk in this homestart PN population



	ASPEN consensus recommendations for avoidance and treatment of refeeding syndrome in at-risk adults	Infusion Pharmacy protocol: Initiating PN in the Home
Initiation of calories	100-150 g/day dextrose, or 10-20 kcal/kg for first 24 hours, advance by 33% of goal every 1-2 days	100-150 g/day dextrose to start, final concentration< 10% over 18-24 hours, dextrose can slowly be advanced based on tolerance and monitoring of P, K, and Mg levels over the first 48-72 hours
	In patients with low electrolyte levels, hold initiation or increase of calories until electrolytes are supplemental/normalized	If the patient has a significant risk for refeeding syndrome, electrolytes should be replenished via dextrose-free hydration prior to the start of PN
Fluid restriction	No recommendation	Initiate at 75-100% of goal fluid volume
Sodium restriction	No recommendation	No restriction
Protein restriction	No recommendation	No restriction
Electrolytes	Check serum K, Mg, and Phos before initiation of nutrition	CBC with diff, CMP, Mg, Phos, TG and prealbumin should be drawn within the past 48 hours and reviewed prior to initiation of PN
	Monitor every 12 hours for first 3 days in high-risk patients	Monitor 48-72 hours after initiation of PN
	Replete low electrolytes based on established standards of care	Electrolytes should be replenished prior to start of PN and advancement
	If electrolytes become difficult to correct or drop precipitously during initiation of nutrition, decrease dextrose by 50% and advance dextrose/calories by approx. 33% of goal every 1-2 days based on clinical presentation	Initial electrolyte doses in a PN order must be individualized for each patient, careful monitoring, and correction of abnormalities prior to initiation of PN and slow gradual advancement of PN should occur
Thiamin and multivitamins	Supplement thiamin 100 mg/day before initiation and for 5-7 days or longer in patients with high risk for deficiency	Intravenous thiamine at 100 mg for 7-10 days
	MVI is added to PN daily, unless contraindicated, as long as PN is continued	MVI (with Vitamin K) 10ml daily
Monitoring and long-term care	Recommend vital signs every 4 hours for the first 24 hours after initiation of calories	Nursing in-home follow-up to assess physical, psychosocial, and learning needs, with daily visits for the first 3-5 days or until patient/caregiver demonstrates adequate administration techniques
	Cardiorespiratory monitoring is recommended for unstable patients	Significantly unstable patients are not appropriate for home start PN
	Daily weights with monitored intake and output	Once or twice a week depending on patient's status. If hydration status is in question, daily weights may be an"'appropriate
	Evaluate short- and long-term goals for nutrition care daily during the first several days until patient is deemed stabilized and then based on institutional standards of care	Initial PN assessment and follow-up by nutrition support clinician