

Initiation of Home Parenteral Nutrition in a Complex Patient with Use of a Home Parenteral Nutrition Checklist



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Introduction

Safe and effective initiation of parenteral nutrition (PN) in the home requires establishment of: admission criteria that identify appropriate candidates, role delineation for responsible personnel, a patient education process, and a clinical monitoring program. Extensive knowledge of potential complications, such as refeeding syndrome, is required. This knowledge is especially important in the care of patients at nutrition risk.

The goal of this case study was to demonstrate how a complex patient can be safely initiated onto home parenteral nutrition (HPN) with the use of an HPN Checklist, which can help to identify the risks and benefits of the use of HPN.

HPN Checklist

- Contains admission criteria used to determine risk factors and identify patients who are appropriate for safe initiation of HPN.
- Evaluates patient's medical history, clinical status, appropriateness of therapy, patient/caregiver ability to administer HPN, and safety of home environment.
- Requires a multi-disciplinary approach. The team for this case included the homecare team — comprised of a Registered Nurse (RN), Registered Dietitian (RD), Registered Pharmacist (RPh), and Medical Director — as well as the prescriber, patient, and caregiver.

Risk Factors

A key risk factor for PN patients is refeeding syndrome, which is a metabolic complication associated with overly aggressive reintroduction of nutrients. It is characterized by intracellular shifts of electrolytes (K⁺, PO₄, Mg) with potential to cause cardiac and respiratory dysfunction. The risk of refeeding syndrome can be reduced with a “start low and go slow” approach in which PN is initiated with reduced energy concentration and optimal electrolyte content, and then slowly advanced to goal.

Description

Case Study

- The patient was a 58-year-old female with weight loss, low body weight, and chronic diarrhea who four months previously had undergone a small bowel resection (165 cm mid-to-terminal ileum) for ischemic bowel.
- The patient developed progressive malnutrition despite adequate oral intake, the use of anti-diarrheal agents, and oral vitamin/mineral/electrolyte supplementation.
- The patient declined to be hospitalized and her prescriber agreed to closely manage her needs in the home setting.

HPN Checklist Findings

- The patient was at risk for refeeding syndrome due to low body weight, weight loss, and gastrointestinal (GI) losses.
- Despite the patient's baseline electrolyte profile being within normal range, she was potentially at risk for electrolyte disorder due to chronic diarrhea.
- The patient's glycemic control was not optimal (she had a history of type 2 diabetes).

Anthropometric Data

Height: 60"
Weight: 72 lbs
Usual weight: 120 lbs
Percentage of usual body weight: 60

RD Home Assessment Findings

- Weakness
- Depleted muscle/fat stores
- Nasolabial seborrhea
- Angular cheilitis
- Edema
- Atrophic filiform papillae

Course of HPN Therapy

- HPN therapy was initiated at 35 g protein, 50 g dextrose, and 0 g fat in 750 mL over 24 hours.
- The therapy advanced to goal over the following two weeks (see Table 1).
- Initial laboratory profile was normal with exception of glucose of 200 mg/dL and triglyceride of 308 mg/dL. During HPN advancement, blood sugar ranged from 182 to 267 mg/dL and serum triglyceride ranged from 87 to 444 mg/dL.
- Blood sugars were managed using subcutaneous (SQ) long-acting insulin and a sliding scale of short-acting insulin. SQ insulin was adjusted to improve glycemic control, and hypertriglyceridemia resolved.
- Electrolytes were in normal range at HPN initiation and remained stable through advancement of HPN.
- Initially the patient followed a carbohydrate-controlled oral diet; after dietary counseling, oral intake was modified in an attempt to decrease diarrhea/improve absorption.

Table 1. HPN Progression

Date	Dex (g)	Protein (g)	Lipid (g)	Fluid (mL)	Infusion (hrs)
11/9/10	50	35	0	750	24
11/12/10	75	50	20	1,000	20
11/17/10	100	60	35	1,000	16
11/24/10	110	60	45	1,250	12

Patient Outcome

After eight weeks of HPN therapy and a modified diet, the patient's diarrhea resolved. Over a period of seven months, her body weight and BMI increased (see Table 2 and Chart 1). The macronutrient content of the HPN formula remained stable, and oral intake was adequate. After four months of daily HPN, infusion days were reduced. Tapering continued over time, and after seven months of HPN, the therapy was discontinued (see Chart 2).

Table 2. Weight Advancement and HPN Weaning

Date	Weight (lbs)	BMI (kg/m ²)	Infusion Days
11/9/2010	72	14.2	7
12/8/2010	84	16.6	7
2/8/2011	95	18.7	6
3/8/2011	101	19.9	5
5/4/2011	107	21.1	3
6/1/2011	110	21.7	2
6/18/2011	111	21.9	0

Chart 1. Patient BMI

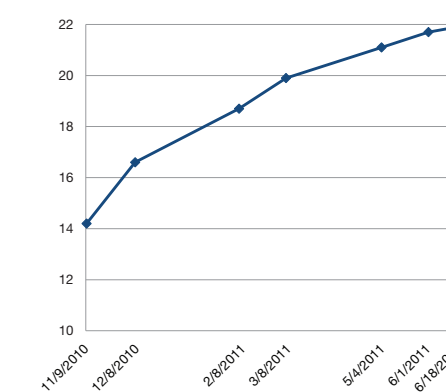
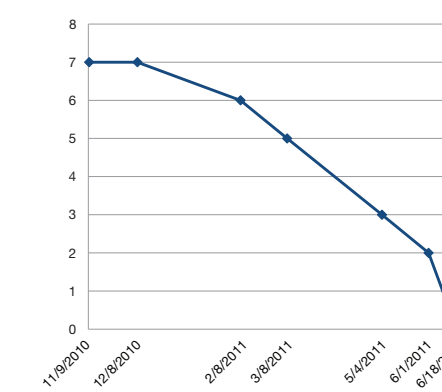


Chart 2. Number of HPN Infusion Days



Six months after starting HPN therapy, the RD home reassessment was completed. The patient's muscle and fat mass were restored, and physical manifestations of vitamin/mineral deficiency resolved. The patient reported increased energy and was exercising (walking up to a mile daily).

Discussion

An HPN Initiation Checklist can help to identify risk factors associated with starting PN in the home as well as determining appropriate candidates. In this case, after careful clinical monitoring, the patient was successfully weaned from HPN after seven months of therapy. This case demonstrates how a complex patient can be safely initiated on PN in the home with provision of customized PN that is cautiously advanced to goal with intensive monitoring by the home nutrition support team.