NHD
THE DIETITIANS' MAGAZINE

eArticle with CPD

SPONSORED BY
cme medical
Listen > Develop > Deliver

NHDmag.com Volume 3.17 - September 12th 2013

HOME PARENTERAL NUTRITION: THE ROLE OF DIETETICS WITHIN THE SERVICE

Home parenteral nutrition (HPN) is widely recognised as complex home therapy and is the treatment of choice for patients with long-term intestinal failure (IF). Currently, the majority of HPN patients in the UK are cared for by one of the two national intestinal failure centres: St Marks Hospital, London and Salford Royal Hospital, near Manchester, however this may change in the near future and more centres may be developed.

Kirstine Farrer
Consultant Dietitian
Intestinal Failure,
Salford Royal NHS
Foundation Trust,
Salford

Chris Slater
Senior Dietitian,
Intestinal Failure
Unit, Salford Royal
NHS Foundation
Trust, Salford

Home parenteral nutrition (HPN) is widely recognised as complex home therapy and is the treatment of choice for patients with long-term intestinal failure (IF). Currently, the majority of HPN patients in the UK are cared for by one of the two national intestinal failure centres: St Marks Hospital, London and Salford Royal Hospital, near Manchester, however this may change in the near future and more centres may be developed.

In April 2008, 'A Strategic Framework for Intestinal Failure and Home Parenteral Nutrition Services for Adults in England' document was published (1). This framework is based on the principles of providing consistent high standards of care throughout England for patients with IF and HPN. At present over 20 centres have been peer reviewed by multi-professional teams and hopefully the outcome will be published later in the year. This gives more dietitians the opportunity to develop skills in the provision of home parenteral nutrition.

Intestinal failure can be classified into three types (2) (see Table 1) and guidelines from ESPEN (3) not only recommend HPN for patients who have irreversible intestinal failure (Type 3 IF), but also for those with Type 2 IF - for example, patients awaiting surgical input to restore intestinal continuity or to close a fistula. Therefore HPN can also be a transient treatment.

The 2009 ESPEN guidelines (3) also recommend that an experienced nutrition support MDT should manage patients requiring HPN. The role of this specialist multi-professional team is to prevent and treat any major complications. Patient survival is determined by the severity of the underlying disease e.g. major problems can develop from venous access related complications, liver dysfunction and altered bone mineralisation (4) and there are growing numbers of oncology patients who require HPN.

The first case of HPN was reported by Shils in 1969 (5) and Salford was the first UK centre to send home a patient in 1977. Currently, the team in Salford run a weekly HPN clinic, 224 HPN patients are reviewed every three to four months. In 2012, the team coordinated the discharge of 67 new HPN patients. Patients are seen by a dietitian, pharmacist, nurse, gastroenterologist, associate specialist doctors and homecare company nurses. Every patient has anthropometric measurements completed (weight, BMI, MAMC) which allows nutritional progress to be monitored over a longitudinal time period. Biochemi-

Table 1: Classification of Intestinal Failure (Lal, et al 2006)

Type 1	Following abdominal surgery, short-term fluid/nutritional support
Type 2	Septic, metabolic complex patients usually following surgical resection e.g. Crohn's disease or mesenteric vascular disease
Type 3	Requires long-term home parenteral nutrition e.g. dysmotility patients, established short bowel syndrome which is irreversible

Kirstine Farrer is a Consultant Dietitian specialising in intestinal failure and has worked with the intestinal rehabilitation team since 2000. She is the professional lead for the nutrition and dietetic service across Salford Royal NHS Foundation and Primary Care Trusts. Kirstine is a visiting lecturer at the University of Chester and is an active member of the BAPEN education committee and British Dietetic Parenteral and Enetral Nutrition Group Committee.

cal and haematological monitoring is conducted which includes full blood count, LFTs, calcium and phosphate, zinc, magnesium, copper, selenium and vitamin D. DEXA scans are performed annually.

The role of the dietitian within the HPN clinic is to assess and monitor the patient's nutritional status, including anthropometric indices, biochemical indices and oral/enteral intake whilst taking into account any change in anatomy (e.g. due to reconstructive surgery if patient has Type 2 intestinal failure) or intestinal adaptation. Intestinal adaptation commences directly after the resection in the acute phase and can continue for a two-year period and is achieved by increasing intestinal nutrient exposure (6). Patients who need HPN generally absorb less than 35 percent of oral energy intake (7) and 61 to 81 percent of oral protein intake (8, 9). Therefore, the patients require an individualised dietetic treatment plan and careful monitoring.

All patients require a diet history to estimate their current intake; this includes the use of nutritional supplements, micronutrient supplements, fluid intake and the use of oral rehydration solutions. It is vital to gauge the patient's ability to adhere to dietary/fluid restrictions, manage oral supplements, enteral feeding and/or parenteral feeding. Patients are encouraged to eat whilst remaining mindful of fluid balance issues and their underlying disease/condition. This helps to improve quality of life and reduce hepatobiliary complications, as utilisation of the gut stimulates biliary secretions (10). Enteral intake also has a trophic effect on intestinal mucosa so should be used to promote gut adaptation, which is particularly important if reconstructive surgery is planned. However, oral intake in some patients may be contraindicated, e.g. such as in those with intra-abdominal collections, bowel perforations, or if the small bowel is obstructed due to ovarian cancer.

HPN patients need tailormade parenteral nutrition regimens factoring in medical condition, fluid balance, activity levels and organ function. Electrolyte and fluid balance can be particularly challenging for patients with an end jejunostomy and the electrolyte losses must be replaced. When devising an HPN regimen, it is rare to exceed 25kcals/kg/day, the non protein energy utilisation should be 1.0gN/100-150kcals and overall lipid is restricted to <1.0g/kg/day to prevent hepatobiliary complications, whilst ensuring the provision of EFA (3), (11). In the last decade, it is our practice to use more second generation lipid emulsions to replace traditional LCT lipid formulations, e.g. Clinoleic™ and lipid emulsion based on soybean oil, medium chain triglycerides, olive oil and fish oil (SMOFlipid)™. The daily requirement for essential fatty acids is 7.0-10g, which corresponds to 14-20g LCT fat from soya oil and 30-40g LCT fat from olive/soya oil. The pharmacist is crucial in advising on stability of the HPN formulation, sign the HPN prescription and liaise with the HPN co-ordinator and homecare companies. The majority of our HPN patients have fortnightly deliveries from the thee main homecare providers (BUPA, Baxter and Calea).

We audited a cohort of our patients who were receiving TPN for at least five nights a week. Of the 61 patients, 35 were female (median age 54 years) and 26 male (median 50 years). The main diagnostic categories included: Crohn's disease (18%), Mesenteric Infarction (26%), Radiation Enteritis (3%), Motility Disorder (8.0%) and Systemic Sclerosis (7.0%). The median energy intake from HPN prescription per day was 1,560 kcals/day. The median number of months a patient has been on HPN was 70 months (range six to 282 months).

Body weight is still the most widely recognised objective tool used in nutritional assessment. However, caution is required in patients with precarious fluid balance, such as those with high output stomas, as rapid fluctuations in weight are likely to reflect changes in hydration rather than lean body mass. Body fat and protein status can be estimated using mid-arm circumference (MAC), triceps skin fold thickness (TSF) and mid-arm muscle circumference (MAMC) (12). On examination of the female cohort: anthropometry median BMI 21.2kg/m2, MAC 25.3cm, TSF 10.9mm and MAMC 22cm and for the male cohort median BMI 22.9, MAC 28.5 TSF 9.8 MAMC 25.7cm. This highlights that patients act as their own control and the reference ranges for mid-arm muscle circumference from the 1960s (13, 14) cannot be applied to an HPN population.

Dietitians should be able to demonstrate evidence of health gain and improved clinical outcomes for patients. The measurement of MAMC is a unique skill that a dietitian can offer to the MDT to prospectively monitor HPN patients. It is vital that the same experienced individual performs all the measurements, as this will limit inter-observer variability (15). Patient outcomes is high on the agenda within most dietetic departments, therefore we believe that this is a skill we should use routinely to assess efficacy of nutrition treatment plans. Hopefully, if an English network for HPN and IF (HIFNET) is established, it might be possible to gather data on a larger scale for home parenteral nutrition and patient outcomes.

For article references please email: info@networkhealthgroup.co.uk

Total Parenteral Nutrition on the move...

The compact and lightweight **BodyGuard 323™ Ambulatory Infusion Pump** and the highly versatile **BodyGuard 2CH™ Twin Channel Infusion Pump** offer flexible TPN delivery solutions in a variety of clinical settings

- ✓ Intuitive, easy to use design
- ✓ Dedicated TPN programmes
- ✓ Comprehensive safety features
- ✓ Suitable for hospital and home care environments

For more information, contact us using the details below, quoting code **NHD-SEP13**

cme medical
Listen > Develop > Deliver

01253 206770
marketing@cmemedical.co.uk

www.cmemedical.co.uk

INVESTORS IN PEOPLE

MKGINT1320

THE DIETITIANS' MAGAZINE

eArticle with CPD

Volume 3.17 - September 12th 2013

Questions relating to: *Home parenteral nutrition: the role of dietetics within the service*
Type your answers below and then **print for your records.** Alternatively print and complete answers by hand.

Q.1	What is home parenteral nutrition (HPN)?
A	
Q.2	Describe the classification for the three types of intestinal failure.
A	
Q.3	Why do the 2009 ESPEN guidelines recommend that the management of patients requiring HPN should be by a multidisciplinary team?
A	
Q.4	What is the dietitian's role in an HPN clinic?
A	
Q.5	Why is a diet history taken for those on HPN?
A	
Q.6	What is the pharmacist's role in HPN?
A	
Q.7	How is body fat and protein status measured?
A	
Q.8	Describe the nutritional constituents of parenteral nutrition.
A	
Q.9	What have the second generation lipid emulsion in parenteral nutrition replaced?
A	
Q.10	What is the daily requirement for essential fatty acids?
A	
Q.11	Why is it important for an experienced dietitian to perform MAMC measurements?
A	

Please type additional notes here . . .