

## HOME PARENTERAL NUTRITION AND INTRAVENOUS FLUID THERAPY



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**Home Parenteral Nutrition (HPN) and Home Intravenous Fluid Therapy (HIFT) are supportive treatments that are intended to allow patients with Intestinal Failure (IF) to go home and live as normal a life as possible. Prolonged intestinal failure is fortunately quite rare. Only 472 new adult patients were registered with the British Artificial Nutrition Survey (BANS) in 2013 and there were only 1,082 adults who were registered as being on HPN or HIFT on 31 December 2013 (personal communication from Geoff Cooke).**

The level of parenteral support required varies markedly, depending on the underlying disease process, gastrointestinal fluid losses, protein and energy requirements, the length, health, anatomy and absorptive capacity of the remaining

port. Strict aseptic technique is required when connecting and disconnecting feeds and fluids and when flushing the venous access device.

HPN/HIFT-related deaths are very rare and survival is largely determined by the underlying disease. A recent review of HPN in non-malignant disease found that survival was worse in patients aged >60 years, those with an end jejunostomy or small bowel remnant less than 50cm, those with IF due to radiation enteritis or systemic sclerosis and where the HPN team lacked experience (1). Catheter-related sepsis (CRS) is the easiest complication to measure and is largely determined by compliance with aseptic technique. Published CRS rates are typically 0.14-0.48 infections per catheter year (1). The use of Taurolidine line locks appears to reduce the risk of CRS substantially in patients with more frequent infections. Another strategy is to use qualified nurses to do all connections and disconnections of feeds and fluids in the home, but this is expensive.

There have been several attempts to draw up guidelines for HPN and HIFT, but the evidence base is poor and there is some variation in both scope and detail ▶

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accessible gut and many other factors. Some patients may only require a litre of 0.9% sodium chloride solution with 20mmol magnesium added once or twice a week. Others require four or five litres of parenteral nutrition every day.

Feeds and fluids are usually infused overnight by means of an infusion pump via a tunnelled venous access device (e.g. single lumen 'Hickman' CVC), a peripherally inserted central venous catheter ('PICC'), or an implantable

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in the published documents (2). The guidelines published by the National Institute for Health and Clinical Excellence (NICE) in 2006 drew attention to the need for patient-centred care, good communications and co-ordination by a multi-disciplinary nutrition support team (3). These principles have been widely accepted in the UK since the formation of the British Association for Parenteral and Enteral Nutrition (BAPEN) in 1992. BAPEN has published a number of very useful publications covering all aspects of nutrition support and the annual conference is always a superb event and an excellent way of sharing information and experience between professionals involved in nutrition support. A National 'Framework Agreement' was implemented in 2013 which includes many quality standards.

#### WORKING WITH COMMERCIAL HOMECARE COMPANIES

Collaboration between the NHS and private sector seems to be an exciting new idea to politicians at the moment, but we have been doing it for decades. The logistics' resources required to support HPN and HIFT are not widely available within the NHS, so they have usually been provided by one of several homecare companies. These companies deliver the feeds, fluids and flushes for the venous access device once a week or fortnightly, provide a refrigerator to store them in, the pump, drip stand, dressing trolley, cleaning materials and any other equipment necessary. Nurses employed by the homecare company may also help to facilitate discharge from hospital, provide training for the patient or a carer to do the connections and disconnections themselves, or provide a full HPN/HIFT nursing service long term.

Homecare companies usually require at least five working days from receipt of a completed

patient registration form and the prescriptions for feeds, fluids and equipment to set up HPN or HIFT. Changes to home prescriptions may take up to two weeks to implement, so patients need to be stable on a particular feed or fluid regimen before a prescription can be prepared. In practice, there may also be illness-related, social or other patient factors or resource issues in the hospital or homecare company that delay discharge further. The whole process therefore often takes about three or four weeks. We have (in exceptional circumstances) arranged discharge of unstable patients in less than a week, but there are risks involved and contingency arrangements are required.

#### QUALITY ISSUES

In the past five years, most HPN centres have seen a year-on-year increase in the numbers of patients referred. Both nutrition support teams and homecare companies have been struggling to find ways of coping with the increasing workload. The mean age of patients discharged on HPN/HIFT has also increased and a higher proportion of our patients have multiple comorbidities, complex requirements and social problems. One of the consequences of this is that patients on HPN/HIFT are being admitted to local hospitals in another town or under other specialists in our own Trust more frequently. All this means that communication and flexibility are becoming more important than ever. Some healthcare companies are particularly good at responding to the individual needs of such patients and, when you see it in action, it is very impressive.

A HPN/HIFT service that is organised according to BAPEN/NFA standards should have adequate resources and first-rate protocols and low complication rates will follow; but we should be aiming higher. Most patients on short- ▶

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term HPN do not experience any complications at all, but they do experience communication problems, misunderstandings, delayed and incorrect deliveries, long waiting times in clinics and other arrangements that do not suit their circumstances. These are often important to patients, but are rarely measured at present. Some more patient-centred key performance indicators would be quite useful.

#### HPN IN ADVANCED CANCER

Parenteral nutrition is often used in patients who are undergoing active treatment for cancer, but the use of HPN in a palliative setting has been far less common in the UK than it has in other European countries or the USA. We know that HPN permits and improves compliance with anti-tumour therapies associated with high GI toxicity, reduces weight loss and improves nutritional and functional status in patients with cancer-associated anorexia and prevents starvation in patients with GI obstruction (4), but there is a lack of clarity about indications in advanced cancer. The Sheffield HPN/HIFT service is unusual in the UK in that advanced malignancy has always accounted for approximately 25 percent of our patients.

Just one example: 'H' was a 63-year-old man who presented with right iliac fossa pain. A CT scan showed a caecal tumour and he underwent a right hemicolectomy. Widespread peritoneal and omental disease was noted during the operation, but he recovered well and opted for no further treatment at that stage. Ten months later he returned with small bowel obstruction. A PICC and a nasogastric tube were inserted and PN and chemotherapy were started. He became very unwell and the obstruction persisted so a venting gastrostomy was inserted six weeks after admission. A Hickman CVC was placed and HPN was

arranged to support ongoing chemotherapy, but the expectation was that both would be discontinued if there was no clinical response soon. Much to everyone's surprise, the obstruction then resolved and he was able to discontinue HPN after two months and remained in remission for nearly a year. Small bowel obstruction then recurred and was again managed with HPN and chemotherapy - which induced another clinical remission lasting more than six months before he finally succumbed to his cancer.

The most recent GMC guidelines on care of patients with the terminal illness make it clear that nutrition and hydration needs must be assessed for all patients approaching the end of their lives, and that consideration must be given to 'what forms of clinically assisted nutrition or hydration may be required to meet their needs' (5). The benefit of HPN is widely believed to be dependent on a patient's functional status and length of prognosis, with an estimated survival of at least two months being required before HPN should be considered. However, estimated survival is often grossly inaccurate and can vary widely between healthcare professionals. HPN was clearly beneficial for 'H' and we have had many other patients for whom it has been beneficial, even in the absence of anti-tumour therapy. HPN has permitted patients to go home, to achieve personal goals and to remain active until the cancer finally caught up with them. We have also had many cases where the hoped-for benefits did not materialise. This is sometimes due to unexpected clinical deterioration, but an equally important factor in the success (or failure) of HPN is symptom control. Persistent uncontrolled pain, nausea, vomiting, or the presence of marked ascites or peripheral oedema seem to have a bigger influence on quality of life than does the HPN and often lead to readmission af- ▶

ter only a short time at home. Working closely with a community Palliative Care Team and the General Practitioner can make a difference, but cannot always guarantee that you will achieve what you had hoped for when you initiated the HPN pathway.

Patients can often be discharged on HIFT sooner than they can on HPN because there is no need to build up feeds gradually and a home prescription can usually be issued much sooner. If a patient is already on PN, however, there is often little difference in time to discharge and the daily cost is also not hugely different, especially when the nursing input is included. The bottom line is that every patient is different and deserves a careful assessment of their needs and an individualised care plan that will deliver what is best for them.

#### CONCLUSION

The three most important words in HPN and HIFT are 'team', 'communication' and 'flexibility'.

HPN requires an effective multidisciplinary team, careful communication with homecare companies and other healthcare professionals and the ability to respond to individual patients' needs. In the past 20 years, I have been privileged to work with some wonderful people. We have a well-established HPN/HIFT team in Sheffield which really does work well together. Of course, it might help that we all play musical instruments. Making music together means we really do have to listen to each other and reflect on the quality of our work as a team, not just as individuals. Likewise, team-working in nutrition support is important, not only because of the individual skills and specialist knowledge that each member brings to the team, but because of the sharing of responsibility and support for each other that occurs, as well as the way it facilitates flexibility and change as a response to the increasing challenges we face as we try to help people with IF in a resource-limited NHS.

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**Questions relating to:** *Home parenteral nutrition and intravenous fluid therapy*

Type your answers below and then **print for your records** or print and complete answers by hand.

**Q.1** What is Home Parenteral Nutrition (HPN) and Home Intravenous Fluid Therapy (HIFT) and how are feeds infused?

A

**Q.2** Describe the considerations that affect the level of parenteral support required for patients.

A

**Q.3** What are the factors affecting the survival rate of patients who undergo HPN?

A

**Q.4** Outline the NICE guidelines that have become the accepted principles on HPN and HIFT in the UK.

A

**Q.5** What is the current process for provision of HPN resources in the NHS?

A

**Q.6** Describe the factors that affect the quality standards of the HPN/HIFT service.

A

**Q.7** What are the benefits of providing HPN in a palliative setting?

A

**Q.8** Give reasons why HPN can be beneficial in end-of-life care.

A

**Q.9** Describe the importance of a multidisciplinary approach to the provision of HPN/HIFT.

A

Please type additional notes here . . .