Factors leading to hospital readmissions in patients on Home Parenteral Nutrition

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Introduction

Home Parenteral Support (HPS), either in the form of Home Parenteral Nutrition (HPN) or home intravenous (IV) fluids +/- electrolytes, has dramatically improved the prognosis of patients with chronic intestinal failure (CIF)[1].

However, it is associated with a range of complications and a necessity for readmission to hospital in many cases.

National guidelines[2] recommend reporting of outcome data for patients on HPN, including number and type of complications and readmissions to hospital and their cause.

Catheter related blood stream infections (CRBSI) are an important complication for patients receiving HPS and the incidence of CRBSI is considered to be a key marker of the safety and quality of care in intestinal failure[1].

Methods

Data on hospital readmissions among patients receiving HPS in Tallaght University Hospital (TUH) were collected prospectively over 4 years from 2022-2025.

Information collected included reason for admission, length of stay (LOS) and prevalence of admissions due to HPN related issues including CRBSI.

The CRBSI rate is expressed as the number of catheter related episodes of infection per 1000 catheter days.

Results

A total of 30 patients received HPS during the study period; 26 HPN & 4 home IV fluids +/- electrolytes.

There were 89 hospital readmissions over 4 years accounting for a total of 1277 inpatient bed days.

There were on average 1.4 hospital admissions per patient annually and 20 bed days per patient per year. The median length of stay (LOS) was 11 days (range 1 - 72 days). 73% (n=65) of admissions were unplanned.

The majority of readmissions (69%, n=61) were due to issues relating to a patient's underlying diagnosis or due to other co-morbidities. 31% (n=28) were deemed to be HPS related.

CRBSI accounted for 21% (n=19) of total hospital readmissions. A total of 11 patients presented with CRBSIs with 5 patients having ≥2 CRBSI admissions during the 4 year timeframe. The CRBSI rate was 1.1 per 1000 catheter days.

Hospital presentations due to hydration or electrolyte issues were rare with acute kidney injury and high output stomas accounting for only 4 (4%) readmissions over 4 years.

Table 1. Reason for hospital readmissions among patients on HPS 2022-2025

Reason for re-admission	Number of re-admissions
Home Parenteral Support (HPS) related	28
Underlying Diagnosis/ Co-morbidity related	61
CVC Related Issues	
Catheter Related Bloodstream Infection (CRBSI)	19
Planned line exchange	6
Bleeding at CVC site	1
Dislodged CVC	1
Blocked CVC	1
Sepsis	
Urosepsis	9
Respiratory	6
Other Infection	6
Surgical/ Procedures	
Surgery - GI continuity	6
Surgery - Other	2
Interventional Radiology procedure	4
Endoscopic procedure	2
Other	
Low Hb/ requiring blood transfusion	5
Cardiovascular	4
Abdominal pain	3
Fistula management	2
Acute kidney injury	2
High output stoma	2
Fall	2
Peripheral Vascular Disease	2
Pulmonary Embolism	1
Cholecystitis	1
Small bowel obstruction	1
To commence chemotherapy	1

Conclusion

The risk of complications and need for hospital admissions remains a burden for HPS patients.

Internationally CRBSIs are a significant cause of morbidity and occasionally mortality for patients on HPS. CRBSI rates vary greatly, with reported rates between 0.22 and 11.5 episodes per 1000 catheter days[3].

Ongoing monitoring of our outpatient CRBSI rate and bringing it in line with the target set out by many Intestinal Failure units in the UK of <1 per 1000 catheter days is a priority for our service.

In TUH, the Clinical Specialist Dietitian plays a pivotal role in monitoring patients on HPS and identifying risks or issues at the earliest opportunity in order to reduce the likelihood of hospital readmission.

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