Survey of Home Parenteral Nutrition Programs in Canada

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Abstract

Background:

Home parenteral nutrition is a life saving therapy but tempered by significant risks. Nutrition support teams provide expertise in the delivery and monitoring of the nutritional state and complications while on therapy. In Canada, no guidelines exist for staffing of nutritional support teams or policies regarding care delivery in home parenteral nutrition programs.

Methods:

We surveyed eight home parenteral nutrition programs across Canada. Six programs participated. Descriptive statistics were used to describe results.

Results:

The results of the HPN survey revealed a wide variation in policies, staffing and funding of HPN programs across Canada. The results showed variable policies on the presence of size limitations, waiting lists, and prioritization of patients. There are significant variations in allocation of staff time to the HPN programs as well as variation in coverage for staff of the HPN team.

Conclusion:

This data supports the need for pan-Canadian guidelines for standardization of staffing and resource allocation for home parenteral nutrition programs.

AUTHOR CONFLICT OF INTEREST STATEMENT AND INFORMATION

- ***The author declares no conflict of interest***
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Introduction

Intestinal failure is defined as severely decreased absorption of water and nutrients where macro/micronutrient, water and electrolyte supplementation is required by parenteral supplementation[1]. In patients with severe and prolonged intestinal tract failure, long-term parenteral nutrition (PN) may be indicated[2]. PN is a life-saving therapy for these malnourished patients enhancing quality of life and promoting rehabilitation[3]. Home parenteral nutrition (HPN) is used in patients who are unable to receive adequate nutrition by enteral intake and are able to receive treatment in a homecare setting. It is a life-saving therapy for patients with irreversible gastrointestinal tract failure[3]. However, the use of parenteral nutrition is tempered by significant risks. The major complications are liver disease, central venous catheter (CVC) infections, loss of CVC sites and major fluid and electrolyte imbalances[4]. Additionally these patients require close monitoring for development and treatment of metabolic bone disease[4].

Therefore, nutritional support teams (NSTs) are recommended for patients requiring HPN[2]. According to European Society for Parenteral and Enteral Nutrition (ESPEN) guidelines, nutritional support teams must consist of a physician, a nurse specialized in nutrition, a dietitian, and a pharmacist[5]. There may be other healthcare professionals involved in the team when necessary. Guidelines exist for the administration of HPN in both Europe and the United States through ESPEN and the American Society for Parenteral and Enteral Nutrition (ASPEN)[6]. Currently no standardized guidelines exist in Canada for the composition of HPN programs.

There is a need for pan-Canadian guidelines for Home PN Programs for staffing and resource allocation to ensure the highest quality of care is delivered for all patients who require HPN regardless of where patients live. The Canadian Nutrition Society (CNS) has successfully launched the Home TPN registry to track patient characteristics, complications and outcomes from participating programs[7]. However, due to resource allocation, many programs are not currently able to participate. Prior to engaging in a nation-wide effort to develop guidelines for home parenteral nutrition program staffing in Canada, we recently surveyed staffing and funding mechanisms of HPN programs in Canada.

CLINICAL RELEVANCY STATEMENT

- ***In Canada, no guidelines exist for staffing home parenteral nutrition support teams.***
- ***We need Canadian guidelines for standardization of staffing which will have implications for resource allocation.***

Methods

Centers administering HPN to adults in Canada were surveyed in 2015 in order to determine the number of patients as well as the level of staffing and resources allocated for HPN. Eight number of surveys were sent out with six surveys returned. Those returned included the British Columbia HPN Program, Hamilton Health Sciences HPN Program, London Health Science Center HPN Program, Northern Alberta Home Nutrition Support Program, Southern Alberta Home Nutrition Support Program, and University Health Network (Toronto) HPN Program. Descriptive statistics were used to report results.

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Results

All surveys returned provided information about adult HPN except for Northern Alberta Home Nutrition Support Program which also included pediatric patients when completing their survey. Size of HPN programs surveyed ranged from 28 to 75 patients (Table 1). The London and Hamilton programs have a size limitation of 25 patients, both of which are overcapacity with 33 and 28 patients, respectively. No other programs had a size limitation for the number of patients permitted to manage. Of the programs surveyed British Columbia, London and Hamilton had a waiting list of patients to be admitted to the HPN program, however, only London and Hamilton HPN programs prioritize patients who are inpatients at their base hospital. All surveyed sites admit patients with malignant disease into the HPN program. Only Southern Alberta will admit patients for short term nutritional support prior to surgery.

TABLE 1
Registration information on Home parenteral nutrition programs across Canada

	British Columbia	Northern Alberta	Southern Alberta	London	Hamilton	Toronto (UHN)
Number of patients	75	71	28	33	28	51
Patient cap	No	No	No	Yes (25)	Yes (25)	No
Region population*	4.6	1.5	1.5	1.5	1.4	4.0
Wait list	Yes	No	No	Yes	Yes	-
Prioritization of patients	No	No	No	Yes	Yes	-
Nutrition prior to surgery	No	No	Yes	-	No	-
Malignancy	Yes	Yes	Yes	Yes	Yes	Yes

*unit =millions.

Information about physician, registered nurse, registered dietician, and pharmacist involvement as part of the HPN team was collected. The number of physicians working with adult patients in the HPN program varied between one and two physicians (Table 2). Time allocation of the physicians varied between 0.1 and 0.2 full-time equivalent (FTE). Physicians on the HPN team in British Columbia, Southern Alberta, and London receive a stipend. The number of nurses involved in the HPN team was one at all sites other than Northern Alberta which had three, and Southern Alberta which had four to five nurses. Southern Alberta reported that nurses allocated to the HPN team were also part of the home enteral nutrition team. The total nursing time allocated to the HPN team varied between 0.0 and 2.0 FTE except for Southern Alberta which allocated 4.84 FTE due to the home enteral nutrition team time allocation being included in the data. The number of registered dieticians involved in the HPN team varied between one and two and time allocated to the HPN program varied between 0.3 to 1.2 FTE. Only British Columbia and Toronto had a pharmacist on the HPN team. Those on the HPN team in British Columbia as well as Northern and Southern Alberta have some form of coverage for vacation or illness while the HPN team in London and Hamilton do not.

Funding of the HPN program varied between the sites surveyed (Table 3). Funding for the HPN team was provided by either provincial, hospital, or the gastrointestinal program. Funding for the HPN salaries also varied between sites and was provided by provincial, regional, hospital, or GI program. Funding for central lines varied between regional, hospital and GI program. HPN solution was provided by provincial funding in all sites except for Northern Alberta where it was funded by the HPN program. Funding for home nursing also varied with some sites being funded regionally and others provincially.

TABLE 2
HPN team members number and hours.

	British Columbia	Northern Alberta	Southern Alberta	London	Hamilton	Toronto (UHN)
Physicians						
# per team	1	2 (+2)*	2	1	1	1
Time: FTE	(0.15)	(0.2)	(0.1)	(0.1)	(0.1)	-
Stipend	Yes	No	Yes	Yes	No	-
RN						
# per team	1	3	4-5	1	1	1
Time: FTE	(1.0)	(2.0)	(4.84)	(0.0)	(0.5)	(1.0)
RD						
# per team	1	1	2	1	1	1
Time: FTE	(0.5)	(0.7)	(1.1)	(0.3)	(0.5)	(1.0)
Pharmacist						
# per team	1	0	0	0	0	1
Time: FTE						(1.0)
Coverage of HPN team	Yes (limited)	Yes	Partial	No	No	-

*Two physicians are allocated to both the adult and pediatric team. FTE Full time equivalent; RN Registered Nurse; RD Registered Dietician

Discussion

The results of the HPN survey revealed a wide variation in policies, staffing and funding of HPN programs across Canada. The results showed variable policies on the presence of size limitations, waiting lists, and prioritization of patients. There are significant variations in allocation of staff time to the HPN programs as well as variation in coverage for staff of the HPN team. The presence of a pharmacist on the HPN team was not consistent across HPN programs. Funding for the HPN team and salaries varied greatly with funding being provided by provincial, regional, hospital or GI programs. Funding for home nursing also varied between regional and provincial funding. Funding for supplies such as central lines and HPN solution also varied between HPN programs with central line funding being provided by region, hospital or GI program, and HPN solution funding being provided by the province or program.

The ESPEN has published guidelines for administration of HPN in adult patients[5]. These guidelines support standardized treatment protocol between HPN programs and act as a framework for building policies and procedures. The ESPEN guidelines recommend that all patients on HPN have a nutritional support team (NST) consisting of a physician, a nurse specialized in nutrition, a pharmacist, and registered dietician. Currently, only 2 of the HPN sites surveyed in Canada had a pharmacist on the team.

The ESPEN guidelines recommend the physician on the NST be a gastroenterologist, gastrointestinal surgeon or a clinical biochemist. The role of the NST is to prepare protocols for patient education, monitor patient skills of recognizing complications, minimize complications of HPN, provide physical and psychological support to patients, and audit their practice.[1] Complications of HPN can be minimized by the NST by adhering to treatment protocols, managing and auditing complications, and reporting to a national registry of HPN if one exists. The ESPEN predicts that a NST will likely have significant impact in the management of HPN patients, and that an experienced NST can allow improved quality of life by using monitoring protocols which allow patients to stay at home[3]. Guidelines are needed to serve as a framework for the establishment of appropriate polices, staffing allocation and funding of HPN programs across Canada.

No data was collected on the indications for initiation of HPN, duration of HPN use, and admission rates of patients to the HPN programs; this is an where further research is needed. The Canadian Nutrition Society has a HPN registry to collect information on patient demographics and other clinical data, however, it is lacking in completion since less well-funded programs are unable to submit data due to resource allocation[7].

We do note the correlation between provincial level funding and hospital based funding with resource allocation. The Alberta programs, BC program and the University of Toronto are directly funded by their respective provincial health authorities and are well staffed. We observe that programs in London and Hamilton which are funded by their local hospital systems are less well staffed and have waiting-lists. This may indicate the need for provincial involvement in terms of co-ordination and funding with local hospital systems, to ensure patients can receive care at the closest centre to where they live.

Conclusion

Given the marked heterogeneity of how HPN practices are staffed and funded, we believe there is a strong need for Canadian Guidelines in the delivery of home parenteral nutrition, and argue this should be a priority area in the future. Programs that are poorly resourced currently have no Canadian guidelines to refer to when discussing resource allocation for their respective programs. Canadian guidelines would help address this issue by serving as a quality measure for and permit better standardization of care. We further postulate that development of these guidelines would be best underneath the umbrella of Canadian Association of Gastroenterology (CAG), given the extensive experience of CAG in guideline development[8].

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