Innovative, Multidisciplinary Management of Home Parenteral Nutrition Patients

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ABSTRACT

Background

The total number of home parenteral nutrition patients in the United States grew steadily from 2011-2015 based on data from the American Society for Parenteral and Enteral Nutrition National Patient Registry for Nutrition Care. In the absence of an active national registry, some sources estimate 40,000 patients in the U.S. are prescribed home parenteral nutrition. The role and necessity of pharmacists within multidisciplinary nutrition support teams is described in numerous domestic and international studies, yet outpatient-based nutritional care for home patients is underrepresented in the literature. This descriptive analysis investigated the value of specially trained home infusion pharmacists and their roles in the management of home parenteral nutrition. The clinical initiative we describe introduces a unique partnership and shared service between 2 practice sites within an integrated health delivery system.

Implementation

A board-certified nutrition support pharmacist from the health-system home infusion pharmacy was embedded within the hospital-based clinic for approximately 30 hours a week. Pharmacist activities occurred under the oversight of the ordering physicians and included adjustment of fluid, electrolyte, macronutrient, and micronutrient content for intravenous therapies; general laboratory result monitoring and ordering; nutritional assessment; medication reconciliation; and patient education. In the scope of the agreement, pharmacists provided direct patient care without the participating providers' written or oral consent based on practice guidelines, patient-specific factors, and clinical judgment. Drug therapy management duties included adjustment of the drug regimen, strength, frequency, and route.

Conclusion

After a pilot program, pharmacists from a health-system home infusion pharmacy worked within a hospital-based clinic, managing a large home parenteral nutrition patient population. While the pharmacists are employed by the health-system home infusion pharmacy, they continue to interact with patients as an extension of the physician office. The success of the position resulted in the development of a collaborative practice agreement.

Background

Home infusion therapy in the United States has grown over 300% since 2010 and the market is valuated to reach $33.2 billion by 2030.[1] Site of care optimization, cost-containment, and trends in the wake of the COVID-19 pandemic continue to shift home infusion pharmacists to the forefront of therapy initiation, clinical assessment, and care management. While specialty infusion therapies have gained prevalence in the home setting, "traditional" medications such as intravenous anti-infectives, pain management, and parenteral nutrition remain pillars of this practice area.

The total number of home parenteral nutrition (HPN) patients in the United States grew steadily from 2011-2015 based on data from the American Society for Parenteral and Enteral Nutrition (ASPEN) National Patient Registry for Nutrition Care.[2] In the absence of an active national registry, some sources estimate 40,000 patients in the U.S. are prescribed HPN.[3] Home parenteral nutrition remains a complex and high-risk therapy requiring competency and expertise for sustainable management, although access to a specialized care team may not be available upon discharge.[4] The role and necessity of pharmacists within multidisciplinary nutrition support teams is described in numerous domestic and international studies, yet outpatient-based nutritional care for home patients is underrepresented in the literature.[5] The need for experienced nutrition teams throughout transitions of care remains critical to optimizing HPN.[4]

Salman et al. note that the use of HPN warrants pharmacists to be competent in related skillsets by graduation, however the Doctor of Pharmacy curriculum does not prioritize enteral and parental nutrition-specific learning.[6] This deficit, coupled with the sunsetting of postgraduate year 2 (PGY2) nutrition support training for pharmacists and projected physician shortages, including within the gastroenterology subspecialty, highlights the need for continued advocacy, mentorship, research, and engagement among clinicians in this niche of patient care.[7] External factors such as health care staffing shortages, cost constraints, and the consolidation and closure of numerous home infusion pharmacies could put strain on nutrition support teams managing high-acuity patients. Strategies to maintain safe and effective parenteral nutrition therapy throughout the continuum of care must be identified.

A Digestive Disorders Center (DDC) services a large university medical center's flagship facility comprising an integrated health delivery system with over 40 academic, community, and specialty hospitals and 800 outpatient sites servicing Pennsylvania, New York, Maryland, and multiple international campuses. The DDC's Inflammatory Bowel Disease Center supports complex patients from around the world requiring surgical, medical, and innovative disease-state management. This hospital-based clinic has an active census of approximately 100 patients receiving HPN and custom intravenous fluids. Physicians, advanced practice providers, nurses, and a registered dietitian comprise the team-based management of nutrition support patients throughout their continuity of care. Pharmacists engage in inpatient, multidisciplinary nutrition support services, but are not involved in home management with regard to DDC patients. Upon discharge, nursing and dietitian staff spearhead clinical management of outpatient care and follow-up.

Numerous studies describe the significance of pharmacists within the multidisciplinary nutrition support team specifically in the hospital setting. However, there is a gap in literature investigating the value of specially trained pharmacists in home infusion and their roles with the management of HPN. The clinical initiative we describe introduces a unique partnership and shared service between 2 practice sites within an integrated health delivery system. The aim of this descriptive analysis is to identify areas of quality improvement while also guiding future practice recommendations for HPN.

Implementation

In Spring 2019, an opportunity was presented to diversify clinic-based management of the DDC HPN population. Based on an established history of care collaboration, a board-certified nutrition support pharmacist (BCNSP) from the health-system home infusion pharmacy (HSIP) was embedded within the hospital-based clinic for approximately 30 hours a week beginning in April 2019. This established a hybrid, shared role between the HSIP and DDC clinic, while maintaining existing employment structure for the pharmacist. The scope of pharmacist care and interventions was cabined to patients actively on service with the HSIP for intravenous therapies. This model optimized continuity of care

for existing patients who were familiar with the HSIP's services and clinical team. Management of non-HSIP patients was maintained by advanced practice providers and dietitians per standard protocol. Pharmacist activities occurred under the oversight of the ordering physicians and included: adjustment of fluid, electrolyte, macronutrient, and micronutrient content for intravenous therapies; general laboratory result monitoring and ordering; nutritional assessment; medication reconciliation; and patient education.

Orders completed by the pharmacist and co-signed by the provider were relayed to the HSIP utilizing electronic workflows. The university medical center extends medication access via a health-system infusion and specialty pharmacy. The infusion and specialty pharmacy has multiple branches to support health-system initiatives in multiple regions. In contrast to an external provider, pharmacy services integrated within a system's care model enable clinical staff access to the patient's full electronic health record (EHR). On-demand insight into pertinent clinical data such as active laboratory values, medication profiles, and hospital visits is invaluable to clinical decision-making and care coordination. In addition, pharmacist access to the EHR and proprietary electronic prescribing workflows promote safety and efficacy during HPN prescription order entry and processing. Electronic workflows shared between DDC clinicians and pharmacists at the HSIP allow for simultaneous insight and collaboration within the patient record. The pharmacists collaborate with the DDC nutrition support team on a range of activities including but not limited to clinical monitoring and troubleshooting, patient education, and final coordination of drug compounding and delivery. Pharmacist participation as an extension of the clinic office bridged patient care needs while minimizing workflow disruption to either practice site. The pharmacists continue to fill an essential role within the hospital-based nutrition clinic team and are responsible for management of an estimated 15-20 HPN patients weekly.

After 3 years, the developed rapport between the pharmacists and DDC providers led to a collaborative practice agreement (CPA). Implementing a CPA allowed for further optimization of workflow, such as avoiding unnecessary interruptions to DDC providers. Both the HSIP team and DDC providers were receptive to sustaining the relationship and supported the initiation of the CPA. In accordance with the Pennsylvania State Board of Pharmacy Code and Regulations, the HSIP pharmacy team drafted the CPA document. Legal and administrative staff from both parties reviewed and vetted the contract until a final draft was shared with all stakeholders. A meeting was conducted with the DDC providers and the pharmacists to review and approve the final document. All participating individuals accepted and signed the CPA, which became effective on September 1, 2022. Subsequently, the CPA has also been renewed for a second year through 2024.

In the scope of the CPA, the pharmacists may provide direct patient care without the participating providers' written or oral consent based on practice guidelines, patient-specific factors, and clinical judgment. Drug therapy management duties include adjustment of the drug regimen, strength, frequency, and route. For example, the pharmacists may independently modify the HPN formula including the doses of macronutrients, micronutrients, and additives. HPN and intravenous fluid orders can be altered in terms of volume, frequency, and rate. To guide therapy management, the pharmacists regularly monitor and order required laboratory tests. Lastly, the pharmacists counsel patients, caregivers, and interprofessional team members on HPN and the management of medication therapies.

Discussion

Parenteral nutrition is a complex, high-touch, high-dollar infusion therapy that requires the involvement of experts from a multidisciplinary team. Skilled, experienced nutrition support teams in both the inpatient and outpatient settings can ensure smooth transitions of care and provide comprehensive, specialized management for HPN patients. The pharmacists included in the CPA have a background in traditional home infusion, postgraduate residency training, and board certification in nutrition support pharmacy. HPN patients requiring holistic care, combined with physician champions, created a unique opportunity in the home infusion setting to expand this clinical program. Pharmacist participation as an extension of the clinic office bridged patient care needs while minimizing workflow disruption to either practice site. In turn, the long-standing partnership with the DDC and HSIP led to the creation of the CPA.

Multiple factors aided in the success of this program. First, the unique relationship that exists between the health-system-home infusion pharmacy and clinic allowed for easier sharing of information and documentation. Agreement upon common policies and institutional standards also created a more stable transition of care into the outpatient setting. Additionally, the background and training of the pharmacists involved allowed for easy integration into multidisciplinary team and clinical management role. While no formal training process has been developed to date, the achievement of recognized board certification in nutrition support pharmacy and the experience required to achieve it permitted an initial foundation of trust with patient care.

Further research is needed to evaluate the impact of this nutrition support service model for patient care and to ensure that the goals of the CPA are being met. As a result of this symbiotic relationship, we expect the HSIP, clinic staff, and patients benefited from streamlined communication and continuity of care. Additional studies to identify, quantify and characterize pharmacist-led interventions are currently underway.

Conclusion

After a pilot program, a full-time clinic-embedded BCNSP employed by an HSIP was instilled in a hospital-based clinic with a large HPN patient population. While the health-system home infusion pharmacy employs the pharmacists, they continue to interact with patients as an extension of the physician office. The success of the position resulted in the development of a CPA, further cementing the role of pharmacists in the care of HPN patients. Currently, 2 board-certified nutrition support pharmacists rotate coverage of this shared service. Future research will be directed at quantifying and describing the interventions made and their impact on patient care and outcomes.

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