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Review

Utilization of Collaborative Practice Agreements between Physicians and Pharmacists as a Mechanism to Increase Capacity to Care for Hematopoietic Stem Cell Transplant Recipients

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A B S T R A C T

Survival after hematopoietic stem cell transplantation (HSCT) has improved and the number of allogeneic HSCTs performed annually in the United States is expected to reach 10,000 by 2015. The National Marrow Donor Program created the System Capacity Initiative to formulate mechanisms to care for the growing number of HSCT recipients. One proposed method to increase capacity is utilization of pharmacists to manage drug therapy via collaborative practice agreements (CPAs). Pharmacists have managed drug therapy in oncology patients with CPAs for decades; however, there are limited HSCT centers that employ this practice. Engaging in collaborative practice and billing agreements with credentialed pharmacists to manage therapeutic drug monitoring, chronic medical conditions, and supportive care in HSCT recipients may be cost-effective and enable physicians to spend more time on new or more complex patients. The goal of this paper is to provide a framework for implementation of a CPA and address how it may improve HSCT program capacity.

INTRODUCTION

Over 20,000 hematopoietic stem cell transplants (HSCT) are performed in the United States each year [1]. The number of HSCT procedures is expected to rise as a result of increased utilization because of increased diversity and availability of graft sources, improved supportive care, more frequent use of reduced intensity regimens, and expanding indications for HSCT [2]. Current projections forecast the number of allogeneic HSCTs performed by 2015 will double compared with 2010 [2,3]. Additionally, advances in transplantation techniques and supportive care practices have improved long-term survival after HSCT [4]. Health care providers are exploring ways to expand the capacity to care for the increasing number of HSCT recipients. Pharmacists are key contributors to HSCT recipient care and are routinely involved in therapeutic drug monitoring, managing adverse drug reactions, addressing drug interactions, providing supportive care management, and conducting patient education. Other processes pharmacists may facilitate to improve efficiency and HSCT patient capacity include responses to prescription insurance prior authorization requests, compliance with Risk Evaluation and Mitigation Strategies programs, and medication requests from patient assistance programs.

Drug therapy is one of the foundations of health care delivery. Effective management of complex drug therapy regimens and reduction in medication errors are essential. According to the Institute of Medicine, medication errors harm approximately 1.5 million patients in the United States each year, resulting in over 3 billion dollars in medical costs [5]. A multidisciplinary team approach that includes pharmacists in the oncology setting has been shown to significantly reduce medication errors [5,6]. The use of a collaborative practice agreement (CPA) is one avenue to formalize clinical pharmacy practice as part of the multidisciplinary team. A CPA is formal partnership between a pharmacist(s) and physician(s) that permits a pharmacist(s) to manage a patients' medication therapy [7-10].

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A CPA may increase capacity to care for HSCT recipients, as this allows pharmacists to manage medication therapy after a physician has established a diagnosis [11]. The first-published description of a formalized collaborative practice between physicians and pharmacists was within the Indian Health Service in the early 1970s [12,13]. Pharmacists have utilized CPAs successfully in oncology for several decades to manage supportive therapies, such as antiemetics and colony-stimulating factors, as well as complications of malignancies and their treatment, including anemia, mucositis, diarrhea, constipation, and pain (Table 1) [6,14-20]. Pharmacists can help alleviate some of the burden created by the demand for physicians to care for more patients by engaging in CPAs and serving as "physician extenders" via medication therapy management (MTM) visits [6]. MTM, a distinct service designed to optimize therapeutic drug outcomes for individual patients, does not require the development of formal CPAs between an individual pharmacist(s) and physician(s) [10].

One-third of allogeneic HSCT recipients and two-thirds of autologous HSCT recipients are over the age of 50 [1]. Given their increasing age, HSCT recipients require management of not only their post-transplant medications but also those indicated for pre-existing conditions. Allogeneic HSCT recipients often take more than 15 medications, including immunosuppressant, antimicrobial, anticoagulant, antihypertensive, and hypoglycemic medications [21]. Numerous drug interactions must be managed and medication dose adjustments are often required to ensure the avoidance of drug misadventures in this population. The complexities of the HSCT recipient makes the pharmacist uniquely suited to support other practitioners to optimize patient's medication therapy. The goal of this paper is to provide a framework for determining how to create and implement a formalized CPA and how it may improve HSCT center capacity and patient care.

CPA DEFINITION

A CPA involves a signed contract between a pharmacist(s) and physician(s) permitting a pharmacist(s), in collaboration with the prescriber(s), to select and modify medication therapy indicated within that specified contract [7-9]. Pharmacists may perform some or all of the following activities under a CPA: patient assessment; initiate, adjust, or discontinue drug therapy; order, interpret, and monitor laboratory tests; formulate clinical assessments and develop therapeutic plans; provide care coordination for wellness and prevention of disease; and conduct essential patient education [9]. Pharmacists can also facilitate research if they are listed as an investigator on the protocol by utilizing a CPA to order study-related medications and laboratory tests.

At the present time, 43 states have specific regulatory authority for pharmacist-physician collaboration; 6 states do not (Alabama, Delaware, Illinois, Kansas, Oklahoma, and

Table 1
Collaborative Practice Agreements between Pharmacists and Physicians in Hematology/Oncology

Study	Setting	Measures	Outcomes	Impact
Chung C, et al. 2011 [19]	Oncology program in community hospital	• Review chemotherapy orders before/after implementation of interdisciplinary program • Dosing errors • Schedule errors	• Cost savings (dose rounding protocol) $120,000/year • 45% reduction ($P < .0625$) in chemotherapy-related errors	• Positive • Stronger relationships between disciplines and enhanced communication
Valgus J, et al. 2011 [6]	Adult outpatient oncology clinics at university hospital	• Management of supportive care by pharmacist/nurse team • Education of cancer patients • Improvement in efficiency of infusion center	• Development of Supportive Care Consultation Service led to increase in patient encounters from 43% preimplementation to 77% postimplementation • Pharmacist made 186 interventions • Chemotherapy counseling service led to >900 billable patient education sessions over 18 months • Developed rapid infusion protocol for Rituximab	• Positive • Improved supportive care management • Chemotherapy unit more efficient • Standardized patient education for patients receiving new chemotherapy regimens
Shah S, et al. 2006 [18]	Hematology/oncology outpatient clinic at Veterans Health Administration clinic	• Documentation of pharmacist driven: supportive care provided, drug-specific interventions, number of prescriptions written between 11/1/2002 to 10/31/2003 • Number of patient visits	• 423 patient visits • 342 supportive care issues addressed • 308 drug specific interventions • 445 prescriptions written	• Positive • Increased exposure of pharmacists to patients and other health care providers
Bernstein B, et al. 1999 [14]	Community hospital- oncology service	• Pharmacy-based CSF protocol which allowed pharmacist to stop CSF when ANC >1500 cells/mm^3 x 2 days after neutrophil nadir	• CSF discontinued by a pharmacist 32% of the time • Cost savings of $22,416 for CSF during first 6 mo of protocol initiation • No effect on clinical efficacy	• Positive
Horne A, et al. 1997 [17]	Outpatient oncology clinic	• Protocol for pharmacist management of adjuvant medications	• Patient satisfaction survey with 51% response rate indicated patients rated their satisfaction over 90% for pharmacist performance counseling, knowledge/professionalism, and outpatient chemotherapy time	• Positive
Martin JK, et al. 1988 [15]	Ambulatory care oncology clinic	• Pharmacy management/ prescribing of antiemetics	• More than 1200 patients managed (95% of patients in clinic) • 82% reported no emesis at 24-hour follow-up call	• Positive

ANC indicates absolute neutrophil count; CSF, colony stimulating factor.