Background: Hematopoietic stem cell transplantation (HCT) is a complicated treatment modality used to address hematologic malignancies and other disorders. The complex care of patients undergoing HCT places them at high risk for poor outcomes during times of transition. Education is a critical component of preparing patients and caregivers to move through the many phases of the HCT treatment trajectory (i.e., preadmission, preparative regimens, inpatient admission, discharge, outpatient management, survivorship). Knowledgeable nurses will be able to address these needs while also understanding various physical, psychosocial, caregiver, survivorship, and literacy issues and providing education at the appropriate readiness, informational, and developmental levels for patients and caregivers (Cohen, Jenkins, Holston, & Carlson, 2013; Khera et al., 2011; Syrjala et al., 2011). Although some studies have discussed the educational needs of patients undergoing HCT, few have explored the complete needs of patients across the entire trajectory of transplantation care, including the preadmission, admission, outpatient, survivorship, and palliative care dimensions (Brown, 2010; Cooke, Chung, & Grant, 2011; Cooke, Gemmill, & Grant, 2008, 2011).

Objectives: The purpose of this article is to provide a useful systematic approach to the standardization of patient teaching methods across various professional nursing roles in the HCT trajectory (i.e., nurse coordinator, midlevel staff, case manager, inpatient nurse, day hospital nurse) in an effort to improve outcomes related to patient transitions.

Methods: A performance improvement project based on physician and health services researcher Avedis Donabedian’s conceptual framework was implemented at a National Cancer Institute–designated comprehensive cancer center in the western United States, with the intention of enhancing nurses’ knowledge and standardizing the education of patients undergoing HCT and their caregivers from pretransplantation to survivorship.

Findings: Donabedian’s framework was a helpful model in enacting changes focused on transitions in care for the population of patients undergoing transplantation. For this population, implementing and sustaining coordinated care across multiple nursing roles in a treatment trajectory is complex. However, early possible indicators of success (e.g., decreased length of stay, lower readmission rates) were promising outcomes.
Transitions in Care

Transitions in care involve the activities of patient movement from one healthcare setting or provider to another, or from one unit to another within the same location, and they include a comprehensive set of actions done in a coordinated manner (Coleman, Mahoney, & Parry, 2005). Studies have demonstrated that quality of care and patient safety are negatively affected when transitions are implemented poorly (National Transitions of Care Coalition, 2008). Patient education and empowerment facilitate the communication needed to positively affect transitions (National Transitions of Care Coalition, 2008). Medically complex patients, such as those undergoing transplantation, are more likely to experience adverse events as a result of transitioning (Lattimer, 2011). When patients move from one unit to another, change from outpatient status to inpatient, transfer from an acute care facility to a lower level of care, or leave the hospital for home, this episode is known as a transition and, as such, requires coordination. Ineffective coordination of these transitions contributes to fragmentation of healthcare delivery (Craig, Eby, & Whittington, 2011). The transition to survivorship is often underemphasized, despite being a critical milestone in the trajectory of care. In some settings, survivorship care plans for patients undergoing transplantation are collaboratively created by the nurse coordinator (NC) and nurse practitioner (NP) using the National Marrow Donor Program’s (2015) guidelines. Case managers can assist in this process by ensuring that the primary care physician receives a copy of the plan and has the appropriate contact information, should consultation with the transplantation team be necessary.

Many reasons exist for poorly coordinated care transitions. Patients and family caregivers may not understand how to assist with self-care activities, experience anxiety regarding their feelings of unpreparedness, believe that their preferences are not respected, and have little input into care planning (Coleman et al., 2005). Nurses have described time constraints and a heavy work load, as well as a lack of advanced planning, as contributors to poorly coordinated transitions (Fuji, Abbott, & Norris, 2013).

For RNs, care coordination and patient education are core professional standards (American Nurses Association, 2012; Brant & Wickham, 2013). Care coordination occurs with the exchange of information among participants responsible for varied aspects of care, with the objective of facilitating patient care activities in a deliberate, organized manner (National Transitions of Care Coalition, 2008). RNs improve the coordination of care and prepare patients for transitions through education that is specifically tailored to patients’ individual needs. Improving responsiveness to patient needs, building relationships with patients and family caregivers, and improving communication demonstrate quality health care, as well as a patient-centered approach (Agency for Healthcare Research and Quality, 2011). To enable quality outcomes in the population of patients undergoing HCT, placing an emphasis on education at the time of transition is critical.

Conceptual Framework

In 1966, Avedis Donabedian, then a physician and health services researcher at the University of Michigan, developed the Donabedian model as a conceptual framework for examining health services and evaluating quality of care. Widely used in nursing literature, Donabedian’s structure-process-outcome framework provides a road map for effectively discussing the dynamics associated with planning and implementing care delivery changes.

Donabedian (1969) described structure as the setting in which care is delivered, including the dynamics within the care setting, as well as the variations and interactions between care provider groups. Patients undergoing HCT and their caregivers traverse a number of distinct settings throughout the continuum of treatment, culminating in their returning to homes and communities. Given the variety of settings in which care occurs, along with the dynamics that occur at each of the transitions between settings, more standardization, review, and consideration for quality improvement must occur.

The broad term of structure as described by Donabedian (1969) offers a way of understanding the resources needed to create safe and high-quality transitions. Care of patients undergoing HCT occurs in many locations (e.g., local hematology/oncology office, tertiary center, infusion center, donor apheresis center, operating room, radiologic center, radiation oncology department, inpatient unit, home). In addition, the resources required to carry out an HCT for patients with cancer are intensive, reaching a magnitude rarely encountered with treatments for other diseases. Within the structure of HCT care, tremendous variability exists in the preparation of patients and caregivers for the transplantation experience.

The process of care for patients undergoing transplantation consists a series of events: diagnosis, workup, treatment of underlying disease, identification of a donor, conditioning,
Of the 11 weekly general teaching episodes, 8 were less than 30 minutes in length and two were greater than 30 minutes in length. Staff of eight RN case managers focus on inpatient and outpatient hematology and transplantation. Created a standard of practice for discharge teaching for all midlevel staff. Attended two education sessions regarding role expectations. Staff of 20 (16 nurse practitioners, 4 physician assistants); each of the five teams of physicians includes about three midlevel staff. Focus on inpatient and outpatient hematology and transplantation support.

Outcome
- Of the 11 weekly general teaching episodes, 8 were less than 30 minutes in length and 3 were greater than 30 minutes in length.
- Of the seven discharge teaching episodes, five were less than 30 minutes in length and two were greater than 30 minutes in length.

The project, created to help decrease the vulnerability of patients undergoing transplantation during episodes of transition, began in July 2013 and involved nursing leaders, directors, and managers; nurse educators; NPs; physician assistants (PAs); case managers; and staff nurses.

Multiple nurses (e.g., NC, midlevel staff, case manager, inpatient nurse, day hospital nurse) are involved in the trajectory of transplantation care. Gaps in standardized processes related to patient education during transitions from one nurse to another were identified. Educational initiatives included evidence-based training of nurses regarding pathophysiology, treatment course, common complications, and preventive measures related to patients undergoing HCT. In addition, required patient and caregiver education at each phase of the transplantation trajectory was codified and continues to be evaluated for consistency in implementation.

Professional Nursing Roles in the Trajectory

Nurse Coordinators

NCs are responsible for coordinating patient evaluations and preparing patients for transplantation. Education about the transplantation process starts before patients arrive at the transplantation center and is initiated by NCs (Ezzone, 2013). The role of NCs begins at the time of referral with the initial screening of patients and donors. NCs gather medical information, assist with insurance issues, and confirm benefits. In addition, NCs facilitate referral to social services, schedule diagnostic tests and consultations, coordinate with the care team, and perform case reviews with referring physicians, case managers, and third-party payers. NCs also arrange for post-transplantation follow-up, including discharge planning for patients returning to their primary oncologist (Ezzone, 2013). The trajectory of care for NCs is from pretransplantation to patient transplantation admission, ending with a follow-up phone call at day 30 for patients undergoing autologous transplantation and at day 100 for patients undergoing allogeneic transplantation.

Project Summary

This performance improvement project took place at City of Hope National Medical Center, a National Cancer Institute-designated comprehensive cancer center in Duarte, California.
Located in a separate building using repurposed existing space in the
City of Hope National Medical Center has two inpatient units (autologous and allogeneic); each has 36 beds, and about 180 staff nurses service the two units. To prepare the nurses for the change to a coordinated teaching approach, a poster of all expected teaching behaviors, complete with specific time points during admission, were placed in each unit conference room. Changes to the teaching process were discussed at staff meetings. Four 15-minute teaching videos were created to review the content for specific periods in time during the trajectory. The videos were developed with assistance from the center’s creative services department. Video content was based on the transplantation trajectory, with each video representing one week of the trajectory. In each, a patient discussed relevant psychological issues, and an NP reviewed corresponding clinical care and patient education. Teaching forms to assist with charting were also created. No outcomes have been measured in this area; the implementation of a hospitalwide clinical documentation system that includes electronic medication administration record, computerized physician order entry, and nursing documentation delayed this process (see Figure 3).

Inpatient Nurses

City of Hope National Medical Center has two inpatient units (autologous and allogeneic); each has 36 beds, and about 180 staff nurses service the two units. To prepare the nurses for the change to a coordinated teaching approach, a poster of all expected teaching behaviors, complete with specific time points during admission, were placed in each unit conference room. Changes to the teaching process were discussed at staff meetings. Four 15-minute teaching videos were created to review the content for specific periods in time during the trajectory. The videos were developed with assistance from the center’s creative services department. Video content was based on the transplantation trajectory, with each video representing one week of the trajectory. In each, a patient discussed relevant psychological issues, and an NP reviewed corresponding clinical care and patient education. Teaching forms to assist with charting were also created. No outcomes have been measured in this area; the implementation of a hospitalwide clinical documentation system that includes electronic medication administration record, computerized physician order entry, and nursing documentation delayed this process (see Figure 4).

Day Hospital Nurses

A specific population of patients undergoing transplantation who could be transitioned from the inpatient setting to the outpatient surgery center

Case Managers

The case management department includes eight RNs who perform prior authorization, concurrent review, and discharge planning functions for patients undergoing HCT. They are responsible for inpatient discharge planning and outpatient care coordination. In an effort to formalize their role in the trajectory, education sessions that included didactic and engagement exercises were provided. Expectations were established regarding timely assessment of patient discharge planning needs and barriers to transitioning. Expectations included meeting daily with the clinical social worker and NP, actively participating in weekly multidisciplinary rounds, and leading the transitional care meetings. Transitional care meetings involve the medical team, family and caregivers, clinical social workers, and case managers; they take place at day 10 for patients undergoing autologous transplantation and at day 20 for patients undergoing allogeneic transplantation. Standards of practice regarding patients undergoing transplantation were developed for the case manager and are now reviewed annually. Follow-up phone calls are performed by the case manager within 72 hours of patient discharge. Patient responses and provider intervention data are tracked and trended as part of the performance improvement activities for the case management department (see Figure 3).

Midlevel Staff

The midlevel staff is comprised of a team of 20 advanced practice professionals (i.e., NPs and PAs) who support five teams of physicians and rotate between the inpatient and outpatient settings. For the current project, participating NPs and PAs attended two education sessions outlining teaching content and behaviors. The NPs and PAs also instituted a day 10 check-in on inpatients with a case manager and social worker. In addition, they created a standard of practice (i.e., an internal template regarding discharge teaching expectations) that is distributed to new hires as part of the staff orientation and reviewed yearly. Outcomes regarding teaching episodes (uninterrupted scheduled teaching period between midlevel staff and patient and caregivers) were collected each week for three months. Team statistics indicated 11 general teaching episodes, with eight episodes being less than 30 minutes in length and three being more than 30 minutes in length (per NP/PA). Of the seven discharge teaching episodes, five were less than 30 minutes in length and two were more than 30 minutes in length (see Figure 2).

or when patients transition back to their primary oncologist or referring provider (see Figure 1).
outpatient setting while maintaining safety and quality of care were identified. The evaluation and implementation process was led by a multidisciplinary team using lean methodology, which is employed by organizations to improve efficiency by eliminating non-value-added processes (Koninklijke Philips Electronics N.V., 2011). The outcome of this work was the creation of a day hospital where outpatient autologous transplantations could be performed. To ensure competency of staff in caring for the patient population, a core curriculum was developed and involved competency training of outpatient day hospital, urgent care, home health, and clinic staff. The day hospital and physician staff established medical and clinical inclusion and exclusion criteria for this patient population. Psychological, psychosocial, case management, and financial counseling are provided to patients and caregivers before admission to the day hospital to ensure that potential barriers of care are addressed (see Figure 5). The day hospital outcomes were positive. Cost savings from inpatient days saved exceeded expectations, allowing for increased inpatient capacity. In addition, patient satisfaction consistently surpassed targets.

Discussion

Caring for patients undergoing HCT requires oncology nurses, regardless of their specific role across the trajectory, to be knowledgeable about the need for standardized educational approaches. Using Donabedian’s structure-process-outcome framework, a performance improvement project was developed to address the gaps in care and patient education during transitions in care settings. Evidence from the literature demonstrated the impact of education on outcomes at transitions in care. An emphasis on education of patients and caregivers contributed to a patient-centered approach, which is a core component of quality health care (Institute of Medicine, 2001). Studies consistently indicate that patient centeredness increases coordination and collaboration, and is critical for patient safety and improved outcomes.

After the implementation of this performance improvement initiative, the current authors noted several outcomes of interest. Inpatient capacity as a result of successful transitions of candidates for autologous transplantation to the outpatient setting resulted in 357 fewer days of inpatient bed occupancy. Increasing inpatient capacity may decrease the waiting time for transplantations that must be done as inpatient procedures; it may also provide capacity for additional patients who would benefit from the expertise of the medical center.

Improving patient satisfaction is critical for healthcare providers to the extent that the federal government has mandated the reporting of patient satisfaction and has also tied reimbursement to these metrics (U.S. Department of Health and Human Services, 2012). In addition, the Affordable Care Act includes legislation specific to readmission reduction and requires the Centers for Medicare and Medicaid Services to reduce reimbursement to hospitals with excessive readmissions. Inpatient satisfaction scores steadily improved from an overall mean score of about 89 (93%) in the third quarter (July to September) of 2013 to 90 (96%) as of June 2015. Since July 2013, 30-day readmission rates for patients undergoing autologous transplantation have remained at or below the target rate of 9% for 17 of 18 months, and 12 of 18 months have had zero readmissions.

Lessons learned from this project include the need to consider what is necessary to sustain these changes, particularly in the inpatient area. Applying Lewin’s Theory of Planned Change, performance improvement projects are successful when effective leadership and sponsorship exist (Shirey, 2013). Unfortunately, this project lacked strong sponsorship in the inpatient setting. This was because of a number of competing initiatives surrounding the implementation of the electronic medical record. The implementation processes can be guided toward success using Lewin’s Theory of Planned Change, whereas the people side of change can be used to better understand what is necessary to lead and manage sustainable change efforts. This demonstrates the importance of achieving and sustaining support of nursing at all levels when implementing a performance improvement project.

After implementation of this project, patient satisfaction improved. In addition, inpatient bed capacity increased, and length of stay and readmissions decreased. These results may be attributed to the collaborative and coordinated efforts of NCs, midlevel staff, case managers, inpatient nurses, and day hospital nurses to ensure that patient education at the time of transitions is standardized to achieve positive outcomes.

Conclusion

Some hospitalwide changes (e.g., decreased length of stay, increased inpatient capacity, improvement in patient satisfaction scores, lower readmission rates) can be attributed to the performance improvement project described in the current article. Structured patient education with a linked trajectory approach for patients undergoing transplantation may affect patient outcomes. Regardless of setting, RNs play a significant role, particularly regarding patient education and coordination of care during vulnerable transitions, that is critical to maintaining a patient-centered approach and quality outcomes. This coordinated approach involving multiple nursing roles requires sustainment from top nursing leadership, as well as coordination across departments. The goal of an effective teaching strategy to improve transitions of care must remain the primary objective to maintain momentum in the face of other competing priorities.

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<th>Implications for Practice</th>
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<tr>
<td>▶ Strive to decrease the burden of cancer care for patients and caregivers.</td>
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<tr>
<td>▶ Help to ease patient and caregiver anxiety at the time of transition from various care levels and locations by providing education.</td>
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<tr>
<td>▶ Understand that standardized education for nurses clarifies the needs of patients undergoing hematopoietic stem cell transplantation as they move from one care level or location to another, leading to improved transitions.</td>
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References


