

QUALITY IMPROVEMENT

Evaluating the Use of Recommended Screening and Preventive Practices for Adult Allogeneic Transplant Patient Survivors Performed by Advanced Practice Providers

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Authors' disclosures of conflicts of interest are found at the end of this article.

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Abstract

Purpose: The purpose of this quality improvement project was to evaluate the use of a posttransplant screening care guidelines template performed by advanced practice providers (APPs) that included standards of care and published recommendations from the American Society for Transplantation and Cellular Therapy (ASTCT) for adult allogeneic transplant patient survivors. **Methods:** The theoretical framework used for this project was the Model for Improvement with the Plan-Do-Study-Act (PDSA) cycle process. A screening template was built to include institutional standards of care and recommendations from the ASTCT's guidelines within the electronic medical record system for APP use. Weekly chart reviews were performed for data extraction and assessment for APP documentation and completion of day +30 and day +100 posttransplant recommended screenings/testing. Data were documented and tracked utilizing Excel securely over a 3-month period. **Results:** The APPs performed and documented the recommended screenings for 64% of patients at day +30 and for 80% of patients at day +100. Opportunities for unit and system improvements were identified to increase performance, expand utilization, allow clinicians to recognize complications earlier, and potentially improve patient outcomes. **Conclusion:** This project addresses implications for APP care delivery and patient outcomes. Future project cycles' success will be ensured by utilizing the APP role at the maximum scope of practice.

Follow-up care is essential to ensure that adult allogeneic hematopoietic cell transplant (HCT) patients have a successful survivorship experience. Allogeneic HCT is a transplant procedure where a recipient receives healthy blood-forming cells (stem cells) from a donor to replace their own stem cells that have been destroyed by treatment with radiation or high doses of chemotherapy (National Cancer Institute [NCI], n.d.).

For over 50 years, allogeneic HCT has been utilized to treat hematologic malignant and non-malignant diseases. The number of HCT-treated patients has significantly risen over the past two decades, with estimates of 45,000 to 50,000 procedures performed each year worldwide (Liso et al., 2017). The projection for long-term survival for those who survive the first 2 years is 80% to 90%, although life expectancy remains lower than in the general population (Giaccone et al., 2020). Preussler et al. (2021) stated survivors face considerable risk for long-term physical and psychosocial effects, such as cardiovascular disease, pulmonary disease, and anxiety. These risks could also include secondary malignancies, graft-vs.-host disease (GVHD), health-related anxiety, and/or post-traumatic stress disorder (PTSD). These effects can cause substantial morbidity, impair quality of life, and contribute to late mortality (Preussler et al., 2021). With the number of HCT survivors expected to increase, survivorship care planning and education is increasingly important (Preussler et al., 2021).

In the cancer setting, survivorship focuses on the health and well-being of a person with cancer from the time of diagnosis until the end of life (NCI, n.d.). The survivorship experience includes issues related to follow-up care, late effects of treatment, cancer recurrence, secondary malignancies, and quality of life (NCI, n.d.). Having an established survivorship care process is highly encouraged by cell therapy accreditation organizations for transplant programs to achieve, but there are identified barriers that contribute to the inconsistent quality of survivorship care in this patient population. Transplant providers identified both a lack of knowledge of the risks of late complications and awareness of guidelines as barriers to providing adequate preventive care (Majhail et al.,

2019). Also, capacity limitations at transplant centers may impede the provision and coordination of preventive care for HCT survivors (Majhail et al., 2019). As patient acuities and volumes increase, the concern of insufficient space and resources for transplant programs continues to be a prominent concern. As therapies for complications such as acute graft-vs.-host-disease (aGVHD), organ toxicities, and infectious issues have improved, we now face new challenges in managing these long-term survivors (Hashmi et al., 2018).

REVIEW OF LITERATURE

Survivorship care plans (SCPs) have been proven to be effective in facilitating the long-term care for cancer survivors. Recent clinical trial studies have been performed in assessing the effectiveness of SCPs for this patient population. Majhail et al. (2019) performed a randomized controlled trial to evaluate the impact of individualized SCPs on patient-reported outcomes among adult HCT survivors ($n = 495$) who were 1 to 5 years post-transplant, English speaking, and without relapse or secondary malignancy. The SCPs were created based on their risk factors and treatment exposures from patient data submitted to the Center for International Blood and Marrow Transplant Research (CIBMTR) and published transplant survivors' follow-up care guidelines. Phone surveys were performed to assess patient-reported outcomes at baseline and at 6 months.

The SCPs were proven to show “desirable outcomes, including lower treatment-related distress and improved mental health domain of health-related quality of life” (Majhail et al., 2019, p. 1089). Evidence of their efficacy in impacting patients' outcomes is mixed, and SCPs have not been universally adopted due to other barriers, such as the lack of standardized templates, the need for extensive resources and time for their generation, and the lack of reimbursement for their implementation (Majhail et al., 2019). The continued development and evaluation of the efficacy of SCPs will improve the adoption of SCPs and increase the autonomy of patients' roles in their survivorship care.

After further review of the literature, piloting SCP programs driven by advanced practice providers (APPs, including nurse practitioners [NPs] and physician assistants [PAs]) has been a

prominent focus. McGrath et al. (2019) stated their SCP integration project “began as a multidisciplinary task force that evolved into an APRN-led program” (p. 467). Research suggests that NP-led survivorship clinics have been successful in providing quality survivorship care in accordance with the Institute of Medicine’s (IOM) recommendations and demonstrate improvement in patient satisfaction, quality of life, and process efficiency (Spears et al., 2017). McGrath et al. (2019) stated a common finding in their study “was that the patient follow-up was being scheduled with a physician and not necessarily the NP who was responsible for the SCP” (p. 466). This evidence supports the need for health-care settings to utilize their APPs at their maximum scope of practice and integrate the APP and medical doctor (MD) follow-up care processes.

The American Society for Transplantation and Cellular Therapy (ASTCT) published preventive and screening guidelines in 2006 with the consensus panel, stating their goal “to provide an overview of the late complications faced by transplant recipients, and provide reasonable recommendations for care” (Rizzo et al., 2006, p. 249). To update these previous guidelines, the international workgroup was reconvened in 2011 to review the prevailing literature on late effects of transplant and to suggest revised guidelines, if applicable (Majhail et al., 2012). The ASTCT has performed surveys on transplant programs to assess the presence of a survivorship clinic and barriers in establishment for those programs without; however, the care models varied. The centers that identified not having a survivorship clinic provided key obstacles to establishing one, such as clinical expertise, infrastructure, and expense. The ASTCT hopes that policymakers, HCT providers, and institutions will benefit from the results of this survey and recommends that delivering guideline-driven screening and expert management of late effects is the goal of first-rate HCT survivorship care (Hashmi et al., 2018).

Guidelines for the follow-up care of HCT patients have been published, and there is ongoing research to identify guideline utilization and underutilization. Qualitative studies have been performed by international transplant centers to assess such guideline effectiveness and patient

understanding of follow-up care. Preussler et al. (2021) evaluated how patients perceived and used the CIBMTR posttransplant care guides for 6 months and 1 year posttransplant. Researchers stated, “This study provided positive evidence of posttransplantation survivorship care education longitudinally” (Preussler et al., 2021, p. 266.e5). More than 90% of patients agreed that the care guides helped them understand the importance of posttransplantation care, recommended tests for follow-up, and the potential need for other specialists, which could possibly empower patients directly or indirectly to communicate with their health-care providers to encourage shared decision-making and knowledge of posttransplantation survivorship care (Preussler et al., 2021). However, more than 60% of patients did not share their care guides with their physician or health-care provider at any time point (Preussler et al., 2021). These results support the argument for the increased need to incorporate such recommended care guidelines within providers’ follow-up care process to enhance shared decision-making and patient-centered care.

The awareness, presence, and proven effectiveness of guideline-driven survivorship clinics for HCT adult patients continues to be an international challenge for transplant programs. A common theme in literature was the need for further research. No articles were identified that evaluated the effectiveness of care guidelines in parallel with a survivorship clinic. Evaluating the use of both concurrently could provide transplant centers the guidance on how best to implement.

Amid the COVID-19 pandemic, there were very few articles on the assessment of online survivorship programs. Yi et al. (2020) trialed an internet and social media-based randomized controlled trial to address health-care and psychosocial needs of HCT survivors. The study had adequate enrollment, with 41% of eligible survivors enrolled, although it was noted that African Americans were underrepresented, with a 6% total enrollment. Yi et al. (2020) found that additional strategies are needed to improve enrollment in many populations, including survivors who are male, young adults, African American, and those who received an autologous transplant. They state the use of online survivorship resources in these underrepresented

populations could potentially improve survivorship outcomes. Further studies and research performed could potentially lead to the establishment and adoption of standardized interventions for survivorship care for HCT patients.

PURPOSE/OBJECTIVE

This quality improvement project objective was to evaluate the use of recommended screening and preventive guidelines template performed by APPs for adult allogeneic transplant patient survivors.

Clinical Question

Will following an APP-driven follow-up recommended screenings and preventive practices template for adult allogeneic HCT patients increase the use of recommended guidelines in 3 months?

Theoretical Framework

The quality improvement framework used for this project was the Model for Improvement with the Plan-Do-Study-Act (PDSA) cycle. The PDSA method originates from industry and the articulation of iterative processes by Walter Shewhart and Edward Deming, which eventually became known as the four stages of PDSA (Deming, 1986). The PDSA cycle is shorthand for testing a change by developing a plan to test the change, carrying out the test, observing and learning from the consequences, and determining what modifications should be made to the test (Institute for Healthcare Improvement, 2023).

METHODS

Design

This quality improvement project evaluated the use of a recommended screening and preventive practice guidelines template performed by APPs for survivors after allogeneic HCT. The note template created by the APPs included institutional standards of care for day +30 and day +100 and ASTCT guidelines recommendations (Table 1). Before this APP-driven initiative, a template was not used in the follow-up care provider workflows. The ASTCT guidelines consist of which screening and/or practice should be performed at specific posttransplant time frames beginning at 6 months; recommendations would be performed sooner depending on patient situation. For the first PDSA

cycle, data were collected on post day +30 and day +100 screenings.

The following is an overview of the first PDSA cycle for this quality improvement project. Process (first cycle): This project sought to ensure the APPs follow and perform the recommended guidelines/screenings with the use of the screening note template.

Plan: The APPs agree to use the screening note template to perform and document the day +30 and day +100 recommended screenings and preventive interventions.

Do: The APPs will ensure the note template is present in adult allogeneic HCT patients' charts upon discharge from the inpatient transplant unit to allow for the first recommended screening visit for day +30 posttransplant screening guidelines. At the aforementioned timelines, the APPs will perform and document the screening/testing results and interventions. Patient lists will be reviewed weekly at the hematology patient discharge meeting and the allogeneic patient review meeting to capture data and ensure all patients are tracked.

Study: Weekly chart reviews will be performed with findings documented in an Excel spreadsheet stored in a hospital-secured share drive to analyze the presence of the screening note template, presence of completion of recommended guidelines, and testing results.

Act: Based on the success of the project by standardizing the APP follow-up practice and utilizing published guidelines, next steps are: (1) standardize the APPs' and attending physicians' notes to incorporate the template within their follow-up care process; (2) Expand the use of recommended guidelines for autologous transplant, chimeric antigen receptor (CAR) T-cell therapy, and pediatric patient populations; and (3) explore establishing an online survivorship clinic for this patient population to decrease onsite visits.

Setting

The project was conducted in an oncology hospital cancer center setting in the Northeast US. The project focused on the inpatient and ambulatory hematology oncology units where the adult allogeneic posttransplant patient population received their follow-up care primarily by the APPs.

Table 1. EPIC EMR System-Recommended Screening and Preventative Practices for Survivors After HCT for Adults: Note Template for APP Use

	Day +30	Day +100	Day +180	1 year
Heme/immune				
T cell subsets/IgG		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Chimerism/bone marrow or PET/imaging	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pulmonary				
PFTs		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cardiology				
Echo		<input type="checkbox"/> (Only if cardiac risk factors)	<input type="checkbox"/>	<input type="checkbox"/>
EKG			<input type="checkbox"/>	<input type="checkbox"/>
Endocrine				
TSH/TFTs			<input type="checkbox"/>	<input type="checkbox"/>
Fasting lipids				<input type="checkbox"/>
Glucose/A1C				<input type="checkbox"/>
Vitamin D/calcium				<input type="checkbox"/>
Bone density (women and those on steroids)				<input type="checkbox"/>
Reproductive endocrine				
FSH/LH/testosterone (both men & women)				<input type="checkbox"/>
Liver				
Ferritin				<input type="checkbox"/>
MRI T2 quant (if ferritin abnormal)				<input type="checkbox"/>
Ophthalmology				
Sicca/cataracts			<input type="checkbox"/>	<input type="checkbox"/>
Dermatology/musculo-skeletal				
GVHD (skin & ROM)			<input type="checkbox"/>	<input type="checkbox"/>
Cancer screening (derm referral)			<input type="checkbox"/>	<input type="checkbox"/>
Dental				
GVHD			<input type="checkbox"/>	<input type="checkbox"/>
Routine care			<input type="checkbox"/>	<input type="checkbox"/>

Note. IgG = immunoglobulin G; PFTs = pulmonary function tests; echo = echocardiogram; EKG = electrocardiogram; TSH = thyroid-stimulating hormone; TFTs = thyroid function tests; A1C = hemoglobin A1C; Vit D = vitamin D; FSH = follicle-stimulating hormone; LH = luteinizing hormone; T2 quant = T2-weighted quantification; GVHD = graft-vs.-host disease; ROM = range of motion; derm = dermatology. Adapted from Majhail et al. (2012).

Participants

The clinical staff directly involved with the project were the seven APPs within the stem cell transplant program at the cancer center. The participating APPs used the involved template only on adult post-allogeneic stem cell transplant patients 18 years of age or older upon discharge of receiving their transplant.

Ethical Considerations

A letter of intent and scholarly project application was submitted to the hospital's nursing scientific review committee and received approval. The University of Connecticut's Institutional Review Board (IRB) committee reviewed the project's proposal and concluded that this quality improvement initiative did not meet the federal definition of research according to 45CFR46.102(I) and did

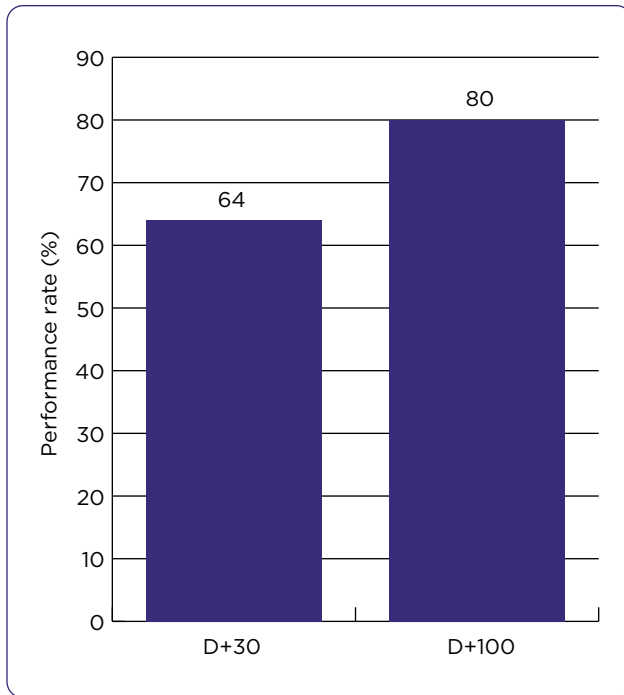


Figure 1. Recommended follow-up screening performance rate (%).

not need further investigation or oversight (Project # NHR22-0072).

Procedures

A note template was built using the ASTCT guidelines and current practices for recommended preventive screenings for posttransplant 30-day and posttransplant 100-day timeframes outlined in the electronic medical record (EMR). The patients were educated on the nine topics of the posttransplant follow-up care process. The APPs performed the screenings/tests and used the note template to document and track that recommended screenings were performed.

Measures

The completion percentages of the note template and recommended interventions by the APPs were the outcomes of focus. Chart reviews were performed weekly to review (1) the APPs' completion in adding the screening note template to applicable patients once identified by the first follow-up appointment, and (2) the APPs' status of performing and documenting the completion of day +30 and day +100 recommended screenings.

DATA ANALYSIS

The data were extracted from the patients' EMR charts. The data was documented using Excel and stored in a secured hospital-controlled share drive on a locked hospital-owned computer. In reviewing, there were 31 adult patients who received an allogeneic stem cell transplant during the 6-month data collection period. For day +30, 25 out of 31 patients' charts had reached the recommended screening timeframe at the time of data collection closure. The recommended screenings were performed and documented for 16 out of 25 (64%) patients by the APPs (Figure 1). Nine of the 25 (36%) patients did not receive screenings and/or screenings were not documented for the following reasons: one patient's chart did not have the screening note template added although screenings were performed, five patients' screening note templates did not have the interventions performed checked off, and three patients were still inpatient (Figure 2).

In reviewing day +100 performance, 10 out of the 31 patients tracked had reached the recommended screening timeframe. Eight out of the 10 (80%) patients had the recommended 10 screenings performed and documented (Figure 1). Two of the 10 (20%) patients did not receive screenings and/or screenings were not documented for the following reasons: one patient's screening note template was not documented although screenings were performed, and one patient was inpatient for complications (Figure 2). Four patients died prior to their day +100 mark. Seventeen patients were not due for their day +100 screenings at the time of data collection conclusion.

FINDINGS/IMPLICATIONS

These findings demonstrate higher results for APPs performing day +30 screenings compared to day +100. Risks for complications are higher for day +100, increasing the chances for hospitalizations, readmissions, and/or deaths. Several opportunities to enhance utilization were identified as a result of this quality improvement project. Establishing a workflow to ensure screening recommendations can be performed in the inpatient setting based on the patient situation will allow for continued follow-up care to be performed. Standardizing the APPs' and attending

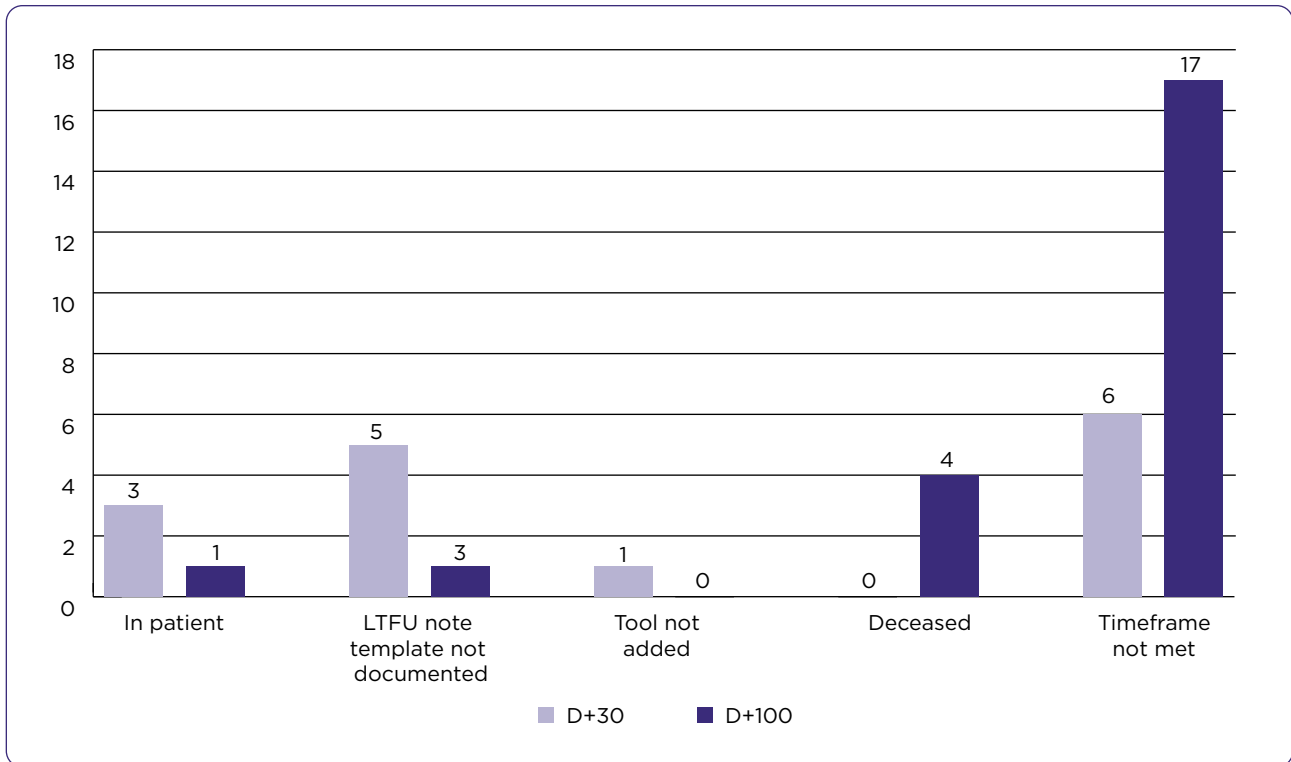


Figure 2. Identified occurrences for unperformed screenings of adult post-allogeneic stem cell transplant patients. LTFU = long-term follow-up.

physicians' follow-up care workflow would lead to increased usage, as it was discovered that one attending physician preferred to see their patients primarily rather than the APP. One practice change identified in reviewing unperformed occurrences was that patients were being admitted to non-hematology oncology units. The most common reason noted was that these patients required telemetry monitoring. The current inpatient hematology oncology unit is a non-telemetry unit. By continuing to perform future PDSA cycles, these outcomes may assist in justifying the need to convert the hematology inpatient unit to a telemetry unit to increase complication prevention and management. This would also decrease misutilization of critical care unit beds for non-critical needs.

Opportunities for system improvement include expanding the use of the screening note template through future PDSA cycles. These cycles will include implementing the screening note template for the attending physicians' use to standardize with the APP workflow, continu-

ing the use of the screening tool to gather data for day +180, 1 year, and annually thereafter to evaluate the effectiveness of screenings on patient outcomes, and implementing recommended screenings for all cell therapy patient populations, including autologous transplant, CAR T-cell therapy, and pediatric populations.

To enhance the use of the screening note template, exploring Epic alerts or advisories to remind clinicians to document before signing notes would be beneficial. Sustaining this performance will support the ability to provide an online survivorship program to decrease onsite visits for patients. This will allow clinicians to continue to strive to identify complications earlier and prolong patient survivorship. Implications for APPs and patient outcomes will be positively addressed by this project and future cycles' successes by utilizing the APP role at the maximum scope of practice. ●

Disclosure

The authors have no conflicts of interest to disclose.

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