regimens as well as the nursing care protocols for the patient with severe mucositis.

418 AN EDUCATED PATIENT IS A SAFE PATIENT
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The issues of limited medical literacy and patient anxiety are addressed in Seattle Cancer Care Alliance Patient and Family Education program for bone marrow transplant recipients and caregivers. Academic sophistication cannot be a requirement for patient safety. Instead, the Patient Centered, Patient and Family Caregiver Education Program, utilizes a mix of teaching methods, learning opportunities, information sources, and communication approaches to facilitate caregiver role training and to impart patient knowledge. Each step in the process emphasizes patient safety. Patient, caregiver, and family education begins during the first contact with our Center and continues after departure. Principles of social learning theory informed by a multiple intelligence approach are the basis for creating patient centered education. Orientation information is available in various formats including DVD, VHS, and interactive web programming. Information is also offered in a pre-transplant manual, coloring books, specialty booklet for teens, transplant DVD, handouts, and classes. Formal 1:1 teaching sessions include such topics as clinical orientation, line care, chemotherapy teaching, and discharge/transition planning. Classes are also offered in key topics such as Food Safety, Managing Care at Home, and Departure. Teaching methods include traditional lectures, role playing, reviewing typical clinical scenarios, group discussions, and an examination of critical topics. Participants are quizzed orally or in writing. All elements of the program are routinely evaluated after each class via a feedback section in the Patient Resource Manual, by Patient Advisors, and from patient questionnaires. Class ratings and patient questionnaires are consistently high. The presentation will include samples of the curriculum from the comprehensive program, DVDs, manuals, and teaching content. An overview of the patient education trajectory from first contact to departure will be presented. Program evaluation data and ongoing quality improve initiatives will be shared.

419 MAKING HEART SUCCESS: EDUCATING NURSES ABOUT A HEART FAILURE PROGRAM
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Oncology patients often have co-morbid conditions in addition to their cancer diagnoses which the healthcare team must carefully manage. One such condition is heart failure. A program called Heart Success, an institutional multi-disciplinary program for heart failure patients, is being trialed on an in-patient stem cell transplant/ cellular therapy unit. The Heart Success Program is in place to manage. One such condition is heart failure. A program called Heart Success, an institutional multi-disciplinary program for heart failure patients, is being trialed on an in-patient stem cell transplant/ cellular therapy unit. The Heart Success Program is in place to identify, monitor, and educate patients who have heart failure with the goals of improving clinical outcomes and quality of life as well as decreasing lengths of stay and hospital admissions due to heart failure exacerbation.

A 15-member Heart Success team comprised of selected clinical nurses was created to provide the needed education for other nursing staff and to serve as super-users to whom other nurses can refer for help enrolling and teaching patients in the program. Heart success team members remain visible on the unit to guide other nurses in Heart Success activities.

Specific outcomes of staff nurse teaching and its impact on the effectiveness of the Heart Success Program in a stem cell transplant/ cellular therapy unit will be shared and discussed.

Clinical nurses play a unique and vital role in helping achieve the Heart Success goals of identifying, monitoring, and educating patients who have heart failure.

420 CHARACTERISTICS OF HSCT AND ONCOLOGY PATIENT FALLERS AND THEIR FALLS IN AN AMBULATORY CANCER CENTER
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Patient falls are serious events that can cause death and loss of function. HSCT and oncology patients have unique fall risk factors and are often at high risk for injury when they do fall. Once thought to be primarily an inpatient problem, we know that falls do occur in outpatient centers where patient acuity and complexity of offered therapies are increasing.

At the Seattle Cancer Care Alliance, we have tracked all reported falls within our ambulatory care center since 2003. We have performed an in-depth analysis of the characteristics of the fallers and their falls in order to create and maintain the SCCA Outpatient Fall Prevention Program. Our quarterly fall rates are between 0%-0.7% (#falls/#patient visits), with a total of 65 falls (33 HSCT and 32 oncology patients) studied as of October 1, 2007.

HSCT patients who fell had higher incidence of anemia, thrombocytopenia, chronic steroid use and documented peripheral neuropathy than the oncology patients who fell. Oncology patients who fell had a higher incidence of bone metastases or bony involvement than HSCT patients who fell. HSCT patients were more likely to hit their head with a fall and more likely to sustain some kind of injury than oncology patients. HSCT fallers had higher harm scores (from Patient Safety Net® on-line incident reporting) attached to their falls than oncology patients.

Examining the characteristics of patient fallers and their falls has been an important step in developing an Outpatient Fall Prevention Program that is uniquely suited to our patient population.

421 A RETROSPECTIVE ANALYSIS COMPARING THE DIRECT COSTS ASSOCIATED WITH THE USE OF G-CSF ALONE AND G-CSF AND CHEMOTHERAPY IN STEM CELL MOBILIZATION
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According to the literature (Milone et al., 2003), G-CSF alone is considered an adequate mobilization approach with no evidence of a higher risk of neoplastic contamination and offers the advantage of low cost, low morbidity and fast immune recovery. A retrospective comparison was conducted to confirm research findings of lower costs associated with the use of G-CSF alone versus the use of G-CSF and chemotherapy in stem cell mobilization. The study provided practical evidence of the financial impact of the two types of mobilization methods and provided validation for changes in the standard of care within a large academic medical center’s transplant program.

A descriptive study was performed using a convenience sample of 144 patients mobilized with either G-CSF alone or with G-CSF and chemotherapy. The investigation analyzed the following direct costs: G-CSF, chemotherapy, lab work, blood transfusions, home health care, apheresis procedures, stem cell laboratory processing, central venous catheter (CVC) placement, CVC removal, IVPB antibiotics, outpatient visits, inpatient hospitalizations, and pre-transplant evaluations.

The study concurred with the literature that the use of G-CSF alone offers the advantage of lower direct costs as compared with G-CSF and chemotherapy in stem cell mobilization.

The study revealed an increase number of lymphoma patients who, initially, failed mobilization with G-CSF alone; then, proceeded to collect stem cells successfully with G-CSF and
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EFFICACY OF MOUTH RINSES DURING CYTARABINE INFUSION IN PREVENTING ORAL MUCOSITIS IN THE RECIPIENTS OF ALLOGENIC HEMATOPOIETIC STEM CELL TRANSPLANTATION CONDITIONED BY HIGH-DOSE CYTARABINE AND TOTAL BODY IRRADIATION

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Background: Oral mucositis is one of the serious and frequent conditioning-associated toxicities of allogeneic hematopoietic stem cell transplantation (HSCT). We recently reported that cytarabine is excreted in the saliva and may play a role in causing oral mucositis after HSCT (Anti-Cancer Drugs 2006; 17: 597). The purpose of this study was to determine if the regular use of mouth rinses following cytarabine IV infusion would reduce the incidence of oral mucositis in allogeneic HSCT recipients treated with high-dose cytarabine.

Patients and Methods: Fifteen patients who underwent allogeneic HSCT at Keio University Hospital between November 2006 and June 2007 were included in this study. All patients received TBI and high-dose cytarabine as described below. Following TBI (12 GY), cytarabine at a dose of 3 g/m² was administered intravenously over 2 hours every 12 hours for 4 consecutive days. Stem cells were bone marrow from related (n = 4) or unrelated (n = 11) donors. Patients were instructed to rinse their mouth with cold water every 10 minutes for 2 hours during cytarabine infusion and for an additional 1 hour after completion of cytarabine infusion. The grades of oral mucositis were evaluated using National Cancer Institute Common Toxicity Criteria (NCI-CTC) every day from the day of the first dose of cytarabine to day 28 after HSCT and the maximum grade of each patient was considered as his or her grade. Results: The grades of oral mucositis in 15 patients who performed mouth rinses were Grade 0–1 in 9 patients, and Grade 2 in 6 patients (40%); no patients developed Grade 3 oral mucositis. The grades of oral mucositis in control patients receiving the same conditioning without mouth rinses (n = 15) were Grade 0–1 in 7, Grade 2 in 19 patients (54.3%), and Grade 3 in 9 patients (25.7%). Incidence of Grades 2–3 and Grade 3 oral mucositis were significantly lower in patients who performed mouth rinses as compared to control patients (40% vs. 80%; P = 0.009, 0% vs. 25.7%; P = 0.02, respectively). Conclusion: Our findings suggest that mouth rinses during cytarabine infusion can reduce the incidence of oral mucositis caused by high-dose cytarabine. Although this efficacy of mouth rinses is considered primarily due to the removal of excreted cytarabine in the saliva, systemic or additive effect of oral cryotherapy might contribute to the efficacy since cold water was used for mouth rinses.

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LOWER LEG MUSCLE STRENGTH AND FATIGUE IN PATIENTS RECEIVING HEMATOPOIETIC CELL TRANSPLANTATION UP TO TWO MONTHS AFTER HOSPITAL DISCHARGE

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Purpose: To identify the factors relating to fatigue receiving BMT up to two months after hospital discharge in order to provide nursing care for early recovery. Method: The study was conducted from November 2002 to November 2006. Sixty-six patients were recruited at Research Hospital of The Institute of Medical Science at Tokyo, Japan. Eligibility criteria for participation in the study were: (1) more than 18 years old (2) scheduled for first time transplantation (3) no uncontrolled hypertension, uncontrolled pain, or unstable bone lesion. Approval was obtained from the ethics committees at the hospital and authors’ belonging institution. Participants were measured leg muscle strength (knee extension, ankle plantar flexion, dorsiflexion strengths, and cross-sectional area of the thigh), State-Trait Anxiety Inventory (STAI-S) and Cancer Fatigue Scale for Japanese (CFS). The measurement was performed for 3 times, those were before entering the laminar air flow (LAF) room, before hospital discharge and about two months after discharge. In addition, steps per day was recorded by pedometer and food intake data was collected from medical records. Multiple regression analysis using stepwise regression (SPSS ver.14.0) was conducted for factors relating to fatigue score after discharge. Result: Twenty-five subjects who completed all 3 time-measurements were examined. Twenty-two subjects had received cord blood transplantation and three subjects had received BMT. The average steps per day were 3304.8 (SD 1846.10) at two months after hospital discharge. Post-transplantation days required to intake at least half of meal portions (hereafter referred to as food intake recovery) was 91.1 (SD 42.21) days, and a significant correlation was noted between STAI-S and CFS for all points. Multiple regression analysis demonstrated positive paths from food intake recovery (β = .359; P = .049) and average steps per day after discharge (β = .357; P = .056) and negative path from ankle plantar flexion strength before discharge (β = -.435; P = .020) to fatigue scores at two month after discharge. Steps per day at after discharge was significantly correlated with Cognitive domain in CFS after discharge (r = .566, P = .003, n = 28) Discussion: Results indicated that patients may suffer from weakness during walking due to reduced muscle strength in the ankle joints after transplantation. So preventive resistance training should be started after early stage transplantation.

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PEDIATRIC PHERESIS LEG SPLINT IMMOBILIZATION TO INCREASE EFFICIENCY OF STEM CELL COLLECTION AND CONTROL FEMORAL PHERESIS CATHETER MALFUNCTIONS

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Problem: Femoral pheresis catheter malfunction has been a recurring problem in the infant to three year old population at St. Louis Childrens Hospital. The very young pediatric patient would encounter problems with pheresis due to their inability to maintain leg alignment during the procedure, resulting in kinked and obstructed femoral pheresis lines. The pheresis line malfunctions often require second pheresis line placement, increase cost and length of hospital stay, increase sedation and sometimes result in missing peak collection dates due to the line malfunction. Plan: Prior to pheresis the patient was measured and a soft pheresis leg splint was designed to immobilize the patients leg in which the pheresis catheter would be placed. The pheresis leg splint was placed on the patient in the recovery room and remained in place until the pheresis process was completed. Evaluation: The evaluation of our experience with a active infant who underwent pheresis, while utilizing the pheresis leg splint, was very positive. The patient required three days of pheresis to meet the stem cell goal and the splint remained intact throughout the process. The pheresis leg splint maintained the proper alignment and pheresis was performed without any catheter malfunctions. In the past it has been our experience that three days of pheresis in this age group would involve multiple line complications and those issues made for a frustrating pheresis experience for patient, family and healthcare providers. Future Plans: A research study will be conducted with patients from infant to three years of age using the pheresis leg splint and retrospectively comparing a similar population of patients and their pheresis outcomes. The catheter malfunction rate, cost and length of hospital stay, sedation requirements and pheresis cell count will be analyzed to determine the relevance of the pheresis leg splint in the very young noncompliant pediatric patient population.

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IMPLEMENTATION OF A DEVELOPMENTAL FORM TO IMPROVE COMMUNICATION AND FOSTER CLINICAL DEVELOPMENT FOR THE BLOOD AND MARROW TRANSPLANT NURSE AFTER THE ORIENTATION PERIOD ENDS

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