Table 1. Incidence of side effects

Side effects	1ST % (Number)	2ND% (Number)	3RD % (Number)	4TH % (Number)	5TH % (Number)	6TH % (Number)
Number of Patient	16 (100%)	16 (100%)	16 (100%)	16 (100%)	16 (100%)	16 (100%)
Fever & chils	4 (25%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Nausea & vomiting	0 (0%)	0 (0%)	1 (6%)	0 (0%)	0 (0%)	0 (0%)
Rash & pruritis	2 (12%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Angioedema	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Bronchospasm	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Dyspnoea	1 (6%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Tumor pain	2 (12%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Pre-med						
Hydrocortisone	100MG	100MG	100MG	100MG	100MG	100MG
Piriton	10MG	10MG	10MG	10MG	10MG	10MG
Paracetamol	1 GR	1 GR	1 GR	1 GR	1 GR	1 GR
Has infusion rate had to be slowed?	4 (25%)	1 (6%)	1 (6%)	0 (0%)	0 (0%)	0 (0%)
Stopped and d/c?	1 (6%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Dexametasone instead of hydrocortisone	3 (19%)	3 (19%)	3 (19%)	3 (19%)	2 (12%)	1 (6%)
Methyl pred 1 G	1 (6%)	1 (6%)	1 (6%)	1 (6%)	1 (6%)	1 (6%)
Repeat pre med	2 (12%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)

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UNIT-BASED CARE FOR STEM CELL TRANSPLANT (SCT) PATIENTS REQUIRING NON INVASIVE VENTILATOR ASSISTANCE

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Stem cell transplant (SCT) recipients are part of a markedly immunocompromised group of patients receiving myeloablative and intense immunosuppressive therapies. Respiratory complications are observed throughout this process and may lead to mechanical ventilation and transfer to an intensive care unit (ICU). Significant morbidity and mortality is associated with these patients requiring mechanical ventilation (Gruson et al, 1999). A less invasive means of providing respiratory support while maintaining expert care on the unit would appear to be beneficial. Non invasive ventilation can offer effective respiratory support and improved gas exchange for pediatric hematologic patients in respiratory failure (Pisastra et al, 2004). It may also offer prevention of respiratory failure while allowing the patients to receive optimal stem cell transplant care. A multidisciplinary team within a licensed SCT unit took initiative to assess the need and feasibility of maintaining patients requiring non invasive ventilation defined as continuous positive airway pressure (CPAP) or bi-level positive airway pressure (BiPAP). After two months of collaboration with the SCT medical director, clinical manager, pulmonologist, intensivist, respiratory clinical manager and therapists, a policy and procedure was developed as well as a plan for nursing competence. The priorities included reassessment of unit workflow and patient aggregation, clinical indications and criteria for non invasive ventilated assistance on the SCT unit. A nurse CPAP/BiPAP competency checklist was developed. Respiratory care experts shared a CPAP/BiPAP "cheat" sheet and provided ongoing nursing education including in-services and hands-on demonstrations for 41 unit based registered nurses. All necessary CPAP/BiPAP equipment was stocked and is maintained in SCT unit supply area by materials management staff. To date, two patients on BiPAP have been cared for and maintained on the SCT unit. Ongoing reassessment for any changes in CPAP/BiPAP settings or in cardiopulmonary status on noninvasive ventilation is required to determine if ICU care is warranted.

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QUALITY IMPROVEMENT PROCESS FOR ADVANCED PRACTICE PROFESSIONALS AND CREDENTIALED SKILLS

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Purpose: The purpose of this project was to assess the quality of bone marrow aspiration and biopsies performed, possible factors contributing to this quality, and therefore to diagnostic use.

Background: For most patients, bone marrow biopsy is a dreaded procedure, potentially causing both physical pain and anxiety. It is also an essentail tool in the diagnosis and classification of many hematologic and non-hematologic diseases. As more Advanced Practice Professionals routinely perform this procedure, it is essential to determine that their methods yield the highest quality data for interpretation.

Method: Bone marrow aspiration and biopsies (n = 121) from 23 different practitioners were evaluated for patient diagnosis, clinical history, position at the time of sampling, body mass index, timing of sample during treatment plan, and role of staff member. Adequacy of the sample was determined by a Hematopathologist.

Results: 16% of bone marrow aspiration and 19.2% of bone marrow biopsies were considered inadequate, although 100% were interpreted by the Hematopathologist. Inadequate bone marrow aspiration was associated with a higher patient BMI ($p = 0.015$) and lower bone marrow cellularity ($p = 0.0001$). Inadequate bone marrow biopsy was not affected by the patient's BMI ($p = 0.85$), degree of bone marrow cellularity ($p = 0.75$), and there was no correlation ($R2 = 0.02$) between patient's BMI and biopsy core length. Bone marrow biopsy mean/median length was 10mm, with 12% being considered inadequate length (<5mm), 11.7% fragmented and 14.2% having aspiraton artifact. 48% of inadequate bone marrow biopsies were noted to have cortical boone, cartilage and/or bone. No other factors were causative for an inadequate specimen. Overall Advance Practice Professional performance was equal to or better than other levels of practitioner.

Conclusions: Advanced Practice Professionals contribute greatly to the care of patients with cancer, in small part, by the procedures they become skilled at performing. Bone marrow aspiration and biopsy is a significant tool in the arsenal used for assessment of these diseases. It is critical that optimal specimens be provided to aid in critical treatment decisions. A quality improvement process, such as one used in this project, can be utilized for any advanced level procedure to assure that quality specimens are obtained, and ultimately correct decisions are made in patient care.

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USE OF TOPICAL CIDOFOVIR FOR THE TREATMENT OF RESISTANT HERPES SIMPLEX VIRAL INFECTIONS IN POST ALLOGENEIC HEMATOPOIETIC STEM CELL TRANSPLANT PATIENTS: TWO CASE REPORTS

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Post allogeneic hematopoietic stem cell transplant patients are at risk for the development of infections due to their immuncompromised state. The probability of reactivation of herpes simplex infections is more than 70 percent post transplantation [1]. Current standard treatment modalities include the use of intravenous, oral, and topical medications. The current American Society of Bone Marrow Transplantation Society guidelines for managing resistant herpes simplex infections recommend Foscarnet as the treatment of choice with Cidofovir as an alternative [2]. There are times however, when the herpes simplex virus will develop resistance to the current standard therapy and require the initiation of novel treatment

approaches. Two individual case presentations will be presented of patients treated at our institution who developed resistant herpes simplex infections. The clinical course and treatment history will be provided. These cases also necessitated a multidisciplinary approach that included wound care, pain service and infectious disease. In the both cases, the patients were initiated on topical Cidofovir, an institutional compounded formulation. One patient was prescribed a topical cream application and the other a topical oral solution. It was observed that acute renal failure developed within a short time frame after initiation of the topical Cidofovir in both cases. The treatment of herpes simplex infections in the immuncompromised patient can be challenging for the clinical provider especially when resistance has developed. Additionally, it is debilitating and painful to the patient. The efficacy and safety of topical Cidofovir warrants further careful investigation as demonstrated by the clinical course of these two cases.

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COMPLEX DISCHARGE COORDINATION: IMPROVING HOSPITAL FLOW, FAMILY SATISFACTION AND SAFETY

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Purpose: Development of a highly-reliable, efficient discharge process between the inpatient Blood and Marrow Transplant (BMT) program and Home Health Care at Cincinnati Children's Hospital Medical Center.

Aim: That 80% of all patients discharged from the inpatient unit meet the goal of being discharged on or before 1600.

Background: The BMT unit averages 25 discharges per month with the majority utilizing the Home Care department. We identified that the day of discharge for new BMT patients was often chaotic with accruing issues that resulted in delayed discharges.

Method and Design: Beginning in July 2009, discussions began among key members of the team to improve the discharge process for families. Data was collected and evaluated on a monthly basis. Reasons for late discharges were evaluated, utilizing a Pareto Chart, which demonstrated multiple offending factors. A series of small tests of change were performed monthly with multiple revisions using PDSA (Plan/Do/Study/Act) cycles.

Findings: Factors impacting discharge included the need for continuing education, scheduled treatments on day of discharge, transportation issues, incomplete comprehensive discharge summary, and timeliness in filling outpatient oral prescriptions. PDSA cycles implemented included the "Pathway to Discharge" educational tool for families, "Interdisciplinary Pathway to Discharge" tool for staff, discharge family conferences and use of an online prediction tool. Beginning in July 2009, 71% of patients were being discharged by 1600. The latest evaluated data shows that 91% of patients are being discharged by the goal of 1600.

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TRIAGE AT THE SCCA TRANSPLANT CLINIC

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Purpose: Triage is the process of assessing patient's clinical complaints and symptoms and then setting a priority for treatment based on the acuity of their condition. In the BMT population, it is essential to provide 24/7 accessibility of nursing staff on the telephone and in person for patients to ask questions, be assessed and to provide treatment if necessary.

Background: Our clinic is located in a large urban area which is affiliated with an academic teaching hospital and a pediatric hospital. We perform greater than 520 transplants a year which consist of autologous, synergenic, and allogenic (related, unrelated and cord blood) transplants. Daily there is an average acute census of 160 outpatients.

Intervention: In most cases patients can remain on an outpatient basis during transplant conditioning. We infuse stem cell products in the OPD except bone marrow and cord blood. Patients are admitted based on clinical need, and then discharged on very liberal clinical criteria. When hospitalized the length of stay averages 1-3 weeks. By doing this there's a higher level of acuity with outpatients who need immediate access to care at all times. To accommodate these patients we have developed a robust triage process. There is 24/7 access for care, when the OPD closes patients or the caregiver can call the inpatient facility where a nurse is designated to field these calls which will provide the needed support or intervention. If seen in the late evening or early morning the assigned nurse will fax a report to the OPD to explain why the patient was seen, if follow up is needed or if the patient was admitted.

Evaluation: Triage has enhanced our ability to provide immediate patient support and intervention. As a result of this triage process the length of stay in the hospital has been shortened. Additionally, this process has increased the confidence and competence of patients and care givers for outpatient care management following a BMT.

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IMPROVING INSTITUTIONAL TIMELINE FROM FORMAL DONOR SEARCH TO TRANSPLANTATION

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Purpose/Background: The National Marrow Donor Program (NMDP) 2007 Transplant Center Performance report showed that the turnaround time for our Center ranged from 58 to 3303 days from formal search to transplantation. We had no data available to determine the cause of the variability and the large expanse from formal search to transplant. It was determined that strategies needed to be developed to identify and improve the factors that influenced our timeline.

Approach/Method: A performance improvement project to track data on all formal searches was initiated. This data included the date the formal search was initiated, the date of donor identification, and the date of transplantation. The data was also linked to the disease being treated and individual physicians to identify any opportunities for improvement. The Medical Director initiated an intervention with any outlier physicians who had ongoing searches. In addition, beginning in 2009 the reason the patient did not proceed to transplant was tracked. Patients in a remission who had an identified donor were reviewed to see if they were proceeding to transplant. Those not proceeding until a relapse occurred had their searches closed. Finally, the Coordinators were reassigned so that only one Coordinator was responsible for all activities related to NMDP searches. This streamlined the communication with the NMDP and the physicians.

Results: After tracking the data for one year we have shown modest improvement. The March, 2010 NMDP Transplant Center Performance report demonstrated that our days from formal search to transplant had decreased to 33-749 days. From 2007-2009 the number of days from formal search to donor identification remained stable. The number of patients having a donor identified who then proceeded to transplant has increased from 36% to 62%. Mean days from initiation of donor search to transplant has decreased by 36% and from donor identification to transplant has decreased by 66%.

Conclusions: Utilization of a donor tracking spread sheet has helped to identify a patient population whose timing of formal search needs reviewed before implementing. We will continue to maintain one Search Coordinator as communication with the NMDP and physicians is a key factor. There is a plan to continue tracking to ensure that improvement is maintained and to try and identify other areas that could be improved upon.

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SYMPTOM ASSESSMENT AND OPTIMAL MANAGEMENT OF OCULAR GRAFT VERSUS HOST DISEASE

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Ocular graft versus host disease is a common complication following allogeneic hematopoietic stem cell transplantation affecting more than 40-60% of patients with chronic graft versus host disease. Common ocular structures affected include the eyelid, lacrimal gland, conjunctiva and cornea. Infiltration of the lacrimal glands