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A MULTIDISCIPLINARY INITIATIVE TO REDUCE VANCOMYCIN-RESISTANT ENTEROCOCCUS (VRE) INCIDENCE ON A PEDIATRIC HEMATOPOIETIC STEM CELL TRANSPLANT UNIT

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Hematopoetic stem cell transplant (HSCT) patients are at risk for bacteremia caused by resistant organisms, such as vancomycin-resistant enterococcus (VRE), due to repeated courses of antimicrobial therapy and neutropenia. Early VRE bacteremia during HSCT has been associated with high morbidity and mortality. Thus, implementation and monitoring of recommended infection prevention measures is critical. Recommendations include: judicious use of antibiotics, health care worker education, hand hygiene compliance, Standard and Contact precautions adherence, and surveillance for VRE, which in our unit includes active surveillance cultures (ASC). In the spring of 2008, an increase in VRE incidence prompted the formation of a multidisciplinary team comprised of HSCT, Infection Control, and Environmental Services (ESD) personnel. Microbiology records for our 13-bed pediatric HSCT unit revealed that the incidence of VRE had increased from 1.8/1000 patient days in 2007 to 3.8/1000 patient days during the first 6 months of 2008. Our investigation revealed gaps in our ASC protocol. Admission ASC was often overlooked, making it difficult to determine whether the VRE was acquired on our unit. To improve case finding, we emphasized collecting ASC on admission with Infection Control performing random audits to assess compliance. Our hospital protocol for discontinuing Contact precautions for patients with VRE is based on serial rescreening. However, our investigation revealed that the protocol may not be applicable in HSCT patients prior to engraftment. Therefore, HSCT patients with VRE must now be at least 100 days post transplant before evaluation to discontinue Contact precautions can be initiated. To address the potential role of the environment in VRE transmission, we reviewed existing daily and discharge procedures and enhanced the cleaning procedures of all patient rooms and common areas. In lieu of restricting the use of common areas by families, education on the importance of hand hygiene when entering and leaving their child's room was emphasized. As an added measure, our unit requires HSCT patients to remain in their rooms for the first 7 days of their admission to the unit. The use of preemptive Contact precautions pending ASC results has been implemented as an additional prevention strategy. During the 3rd quarter of 2008, VRE incidence decreased to 1.9/1000 patient days and improvement in compliance with our ASC protocol was realized.

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LOW-DOSE AZACITIDINE (AZA) AS MAINTENENCE THERAPY AFTER ALLOGENEIC HEMATOPOIETIC STEM TRANSPLANTATION (HSCT) IN RELAPSED AML OR MDS: A NURSING PERSPECTIVE

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Supportive care for allogeneic HSCT in patients with AML or MDS has improved significantly over time which has resulted in a decrease in the rate of non relapse mortality. However, the incidence of relapse has not been greatly impacted. Disease status at the time of transplant is the most valid predictor for relapse, and recurrence remains a major cause of treatment failure in this patient population. Modification of treatment preparative regimens has not proven to be beneficial. Despite the investigation of multiple chemotherapy/radiation therapy combinations, reduction in the risk of relapse without an increase of non relapse mortality has not been achieved for patients transplanted with relapsed and or refractory disease. Azacitidine (AZA) is approved by the FDA for the treatment of MDS at doses that are unlikely to be tolerated post HSCT due to mylesuppression. In patients with relapsed AML or MDS at the time of transplant, maintenance therapy with low dose AZA after HSCT may provide adjuvant support for the allogeneic graft versus leukemia affect, potentially decreasing recurrence rates. There is limited experience with administration of chemotherapy and/or the use of AZA in this setting. A dose and schedule finding study for the use of AZA as maintenance therapy is being performed at MD Anderson Cancer Center. AZA is given for four cycles in a doses ranging from 8–32 mg/m^2 starting on day + 42 subcutaneously daily for 5 days every 28 days for a total of 4 cycles. Conditioning regimen included gemtuzumab ozogamicin 2 mg/m^2, fludarabine 120 mg/m^2, and melphalan140 mg/m^2. Graft versus host disease (GVHD) prophylaxis was tacrolimus/mini-methotraxate, with rabbit anti-thymocyte globulin (rATG) in unrelated donor HSCT. Criteria for patients to receive AZA include complete remission on day + 30 after transplant with donor chimerism, no grade III/IV GVHD, platelets greater than 10,000 and ANC > 500/ mm^3. In all, 88 cycles were delivered at 8 (n = 7), 16 (n = 5), 24 (n = 21) and 32mg/m^2 (n = 9). AZA possible associated toxicities include grade I/II or III thrombocytopenia, grade I nausea, grade II fatigue, grade III transaminase elevation, conjunctival erythema, pruritus, confusion, retinal hemorrhage, grade II creatinine elevation, oral ulcers, papilledema and pulmonary hemorrhage, and infections. Nursing issues related to drug administration and monitoring will be discussed in further detail.

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PROPHYLACTIC CIPROFLOXACIN IN BK VIRUS POSITIVE ALLOGENEIC STEM CELL TRANSPLANT RECIPIENTS AT KOSAIR CHILDREN'S HOSPITAL

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Polyoma BK virus (BKV) is associated with hemorrhagic cystitis (HC) in allogenenic stem cell transplants. This virus was first reported in 1971, but testing for it has been available only for approximately the past 5 years. It is very prevalent in human subjects (up to 80% of adults are infected), but only causes clinical issues in immunocompromised patients possibly leading to hepatitis, retinitis, pneumonitis and encephalopathy. Recent reports have suggested that Ciprofloxacin (Cipro) can decrease urinary BKV reactivation after HSCT. Therefore, this institution began utilizing prophylactic Cipro to attempt to reduce viral load and therefore, also the incidence of HC. In this institution, Cipro was given prophylactically to 4 BKV positive patients, of whom, 3 diagnoses were acute myeloid leukemia and 1 diagnosis was acute lymphocytic leukemia. Two patients had BKV detected by PCR in their urine and no symptoms of HC and 2 who were positive had moderate to severe clinical symptoms of HC. Standard preparative regimes were utilized with diverse donor graft sources. All patients started with intravenous dosing of Cipro, 1 with high dose due to severe HC and 3 with prophylaxis dose. They were all switched to oral dosing when tolerated. All patients tolerated Cipro well and there were no side effects due to this medication. Quantitative BKV PCR's were done on urine at least weekly and on serum if the patient became febrile. Urinalyses were done frequently throughout the treatment period. Only 1 patient had positive serum PCR's, which were noted prior to institution of Cipro. The PCR continued to rise even with institution of Cipro and never became negative. This patient succumbed to multiple infections and GVHD (+145) after being on Cipro for 7 weeks. The other patients (+50, +124 and +153) remain alive, 2 free of clinical symptoms and off Cipro (given +7-50 and +30–50), and 1 remains in the hospital on Cipro (+50) and negative for clinical symptoms. After initiation of Cipro, the BKV urinary viral loads decreased in 2 patients and increased in 2 patients. Two patients had HC before starting Cipro (1 continued to increase viral load while the other decreased) and 2 did not have HC (1 continued to increase viral load while the other did not). In conclusion, 50% of the patients in our institution remained symptom free and a larger study should be done to determine if Cipro is effective in decreasing BK urinary viral loads and HC in stem cell transplant patients.

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A MULTIDISCIPLINARY CLINICAL PROCESS TO ADDRESS THE STEM CELL TRANSPLANTATATION PATIENT WITH SPECIAL NEEDS

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Background: Undergoing a Stem Cell Transplantation (SCT) can be a very complex process for patients, their caregivers, and healthcare workers. When additional factors are included: a history

of drug, alcohol, or tobacco use; caregiver concerns; psychiatric diagnosis; a patient history of no-compliance; the stress of this intense treatment option becomes escalated for all involved. Such factors can lead to complications during the transplant course including longer hospital stays, increased stress to the patient, caregiver, and healthcare team, increase ethical issues, and subsequent poorer outcomes. Early identification of such factors permits development of a plan of care to facilitate optimal treatment courses. The SCT Nurse plays an important role in identifying and addressing these issues.

Intervention: A quality improvement process was developed to help identify confounding factors and address them prior to treatment. An algorithm, including a multidisciplinary care conference (CC), provides a process flow for the healthcare team to follow. When an issue is identified by any member of the outpatient healthcare team, a CC is requested. Participants of CC include Physician, APN, Social Worker, Clinical Ethicist, Advocacy, and Clinic and Inpatient Nurse; with optional members including Adolescent Young Adult, Psychiatry and Chaplaincy. The goal of the CC is to discuss concerns with the patient, answer patient/caregivers questions, and promote communication across the care continuum.

Results: The result of this process is the development of an individualized plan of care that may include postponement of transplant, substance abuse program participation, care contracts, and/or formal ethics consult. A case study will be presented that highlights how the use of this process has lead to improved patient outcomes. Recommendations The implementation of this or a similar process in any SCT program will help facilitate the proactive identification of concerns and promote patients safely going forward with treatment.

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BLOOD AND MARROW TRANSPLANT TELEPHONE TRIAGE: DEVELOPMENT OF A DOCUMENTATION TOOL TO ASSIST WITH CONCISE INFORMATION GATHERING

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Purpose/Background: Blood and marrow transplant patients present complicated issues throughout the transplant process. Post allograft patients can have complications long after the initial transplant period. Out-patient transplant recipients often present acute issues that may require admission to an in-patient setting. Registered nurses are presented with the challenge of assessment and triage of these complicated patients by telephone communication. The need for a concise communication and documentation tool was identified to assist with both information gathering and formulating a medically directed plan.

Intervention: This center has a designated telephone line for patient "sick calls". Patients or caregivers are directed to utilize this line for any medical issues. We have developed a tool specific to blood and marrow transplant issues and complications. The tool helps the registered nurse concisely collect and document information provided by the patient or caregiver. This tool is then utilized to communicate these issues to the medical staff for a medical plan that is documented on the tool. The tool is currently being utilized within a pilot period for six months.

Evaluation: The tool will be evaluated at the end of six months. Additions or deletions will then be made to the tool. Continued evaluation of the tool will then be made on a yearly basis.

Discussion: Utilization of a regimented documentation tool will assist with prompting the nurse in phone assessment and triage and will allow for more concise reporting to the medical staff and ultimately better plans of care.

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ASSOCIATION OF HEMATOPOIETIC STEM CELL PRODUCT CULTURE AND CLINICAL INFECTION IN PATIENTS RECEIVING MYELOABLATIVE CHEMOTHERAPY WITH AUTOLOGOUS HEMATOPOIETIC STEM CELL REINFUSION

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Purpose: The purpose of this descriptive retrospective QA project is to examine the association between hematopoietic progenitor cell (HPC) product cultures at the time of reinfusion and the subsequent development of infection.

Methods: Using a descriptive, retrospective design, data were collected from the records of 68 patients who received autologous peripheral blood HPC reinfusions after undergoing myeloablative chemotherapy at a single institution. Consistent with the oncology service QA program, all of the products were tested for microbial contamination at the time of stem cell processing. At the time of reinfusion, a sample from each thawed product was sent to the microbiology lab. Following the HPC reinfusion, blood cultures were sent on patients at the time of their first fever and at least once daily until they were afebrile and cultures were negative. Blood cultures were sent from each lumen of the central venous catheter. Peripheral blood cultures were not routinely drawn.

Results: Between March 2002 and September 2008, 68 patients received 148 HPC reinfusions. All of the reinfused HPC products were negative for bacterial contamination at the time of processing. Nineteen of the reinfused HPC cultures, which were reinfused into 13 patients, were positive. Two of these patients developed positive blood cultures. Patient #1 had HPC product culture positive for Bacillus species and Staphhylococcus epidermis. Blood cultures were positive only for S. epidermis on day +15. Patient #2 had HPC product cultures positive for Streptococcus oralis. Blood cultures were positive for Streptococcus mitis on day +4 and S. epidermis on day +6.

Conclusions: There does not appear to be a strong correlation between positive product cultures and the subsequent development of positve blood cultures. Microbial testing at the time of HPC reinfusion may not be necessary.

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PNEUMOCYSTIS CARINII PNEUMONIA (PCP) PROPHYLAXIS PROTOCOL AFTER AUTOLOGOUS TRANSPLANTS: A RETROSPECTIVE REVIEW AT A REGIONAL TRANSPLANT CENTER

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Autologous hematopoeitic stem cell transplantion is an effective treatment option for many hematological diseases. The morbidity associated with this treatment, however, is often related to the increased risk of infection following transplant due to an immunocompromised host. Prophylactic care designed to prevent infection varies widely among institutions. In this retrospective analysis, we reviewed the prophylactic protocol for *Pneumocystis carinii* pneumonia (PCP) at Cancer Centers of the Carolinas (CCC), a regional transplant center. All autologous hematopoietic stem cell transplants completed for hematologic disorders between 2002 and 2007 (n = 150) were reviewed with regard to prophylactic Bactrim administration. The standard operating procedure at CCC utilized Bactrim at a dose of one double strength tab BID on Saturday and Sunday each week. Protocol guidelines suggest prophylactic Bactrim initiation fourteen days post transplant, continuing minimally through day +200. At day 200, the peripheral blood CD4 count was assessed. A CD4 count of >200 cells/μliter prompted Bactrim discontinuation. Per protocol, values lower than this threshold necessitated CD4 count reassessment at 100-day intervals until the threshold was achieved. Results revealed 69% of patients were tested to threshold while 28% of patients were not tested to threshold. Of patients who reached threshold, 76% had done so by d+260. The median 200 day post-transplant CD4 count assessed was 232 cells/μliter. The number of days to reach threshold was not significantly different when considering gender, race, or primary disease. However, patients with multiple myeloma requiring tandem transplantion resulted in significant delays in reaching threshold with non-tandem patients reaching threshold in a median time of 200 days and tandem patients reaching threshold in a median time of 282 days. These results verify that, per protocol, d+200 is a valid point to initiate assessment of CD4 count recovery following single autologous transplantion. Patients having reached the threshold at this time can discontinue Bactrim prophylaxis, and thus eliminate any potential for Bactrim-associated side effects. Patients with CD4 counts below threshold at initial testing remain at risk for PCP