Neutropenia-associated bacteremia has been reported to occur in 20-60% of patients following myeloablative HSCT. Mortality up to 40% may occur with gram negative organisms. To address these concerns, in 1998 our program revised supportive care guidelines to include bacterial prophylaxis with meropenem for patients undergoing myeloablative HSCT. Meropenem was started when the WBC fell below 1000/mcl and continued until the ANC was ≥ 500/mcl. This report analyzes outcomes for patients treated with this strategy.

Between 9/1/1998 and 9/1/2008, 370 transplants were performed. Of these, 134 who underwent outpatient autologous HSCT received different infection prophylaxis and were excluded from this analysis. An additional 24 patients were excluded for other reasons (active bacterial infection prior to leukopenia = 15; never received meropenem = 9). Thus, 212 transplants in 201 patients were evaluable for this retrospective analysis (auto = 67 HSCT/65 patients; allo = 145 HSCT/136 patients). Evaluable patients had a median of 19 days of ANC < 500/mcl (range, 3 – 79 days) between the start of myeloablation and subsequent myeloid engraftment. The study group experienced 4409 total days of neutropenic risk for bacteremia.

The outlined strategy was successful in preventing a first bacteremic episode in 88% of evaluable transplants (94%, auto; 86%, allo). Conversely, prophylaxis failed to prevent an initial neutropenic bacteremia in 12% of transplants (n = 25) overall (6%, auto; 14%, allo). Meropenem was started at a median of Day -2 (range, Day -16 to Day +9) and continued for a median of 21 days (range, 1 – 81 days). Initial positive blood cultures occurred at a median of Day +6 post-HSCT after a median of 10 days of meropenem. Prophylaxis failures were primarily with organisms innately resistant to meropenem (Coag Negative *Staphylococci* = 16; *Enterococcus* = 2; *Stenotrophomonas* = 3; other = 4). No instances of meropenem-induced resistant organisms were identified in failures of primary prophylaxis. Initial bacteremias contributed to the deaths of 3 patients, all post allogeneic HSCT. Thus, neutropenic bacteremias were the cause of death in 1.4% of all transplants (3/212); none in autologous HSCT (0/67), 2% in allogeneic HSCT (3/145).

In summary, these results suggest that prophylactic use of meropenem may be an effective strategy for reducing the risk of bacteremia and septic death in children, adolescents and young adults undergoing myeloablative autologous or allogeneic HSCT.

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PERFORMANCE CHARACTERISTICS OF GALACTOMANNAN ENZYME IMMUNOASSAY IN PEDIATRIC ALLOGENEIC HSCT RECIPIENTS

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Invasive fungal infections (IFI) are a major cause of morbidity and mortality in allogeneic hematopoietic stem cell transplant (HSCT) recipients. Galactomannan enzyme immunoassay (EIA) surveillance testing offers the potential for earlier diagnosis and initiation of therapy. The majority of data regarding galactomannan EIA testing after HSCT is reported in adult patients. Approval was obtained from the Institutional Review Board at our institution for a retrospective chart review of allogeneic HSCT patients from July 1, 2007 July 30, 2009. Galactomannan EIA testing was obtained 314 times among the 27 patients for an average of 11.6 tests per patient. IFI was defined as either proven or probable disease based on the European Organization for Research and Treatment of Cancer/Mycosis Study Group guidelines. Among the 27 patients, there were no cases of proven disease, 1 case of probable disease, and 8 cases of possible disease. There were 5 positive isolated tests without evidence of disease in 4 different patients. The galactomannan EIA had a sensitivity of 1.00, specificity of 0.5, positive predictive value (PPV) of 0.07, and negative predictive value (NPV) of 1. Of the 8 patients with possible IFI, 4 had chronic GVHD. The galactomannan EIA values among the possible IFI cases ranged from 0.59-7.69. The one probable IFI case also had chronic GVHD and galactomannan EIA values ranged from 0.5-1.12. Among the 4 patients with positive tests without evidence of disease, the galactomannan EIA values ranged from 0.56- 8.57. None of these patients had identified risk factors for false-positive tests such as administration of beta-lactam antibiotics or gastrointestinal GVHD. Among our patients, the incidence of IFI was 3.7%, well under the typically reported incidence of 7-10% in allogeneic HSCT recipients. A decreased incidence and consequently decreased prevalence of IFI in our patients likely explains the decreased PPV but preserved NPV of galactomannan EIA screening in our pediatric allogeneic HSCT patients. HSCT centers should be aware of the impact of their local incidence of IFI on the performance characteristics of galactomannan EIA.

Table 1. Diagnostic Validity of Galactomannan EIA testing

	Positive IFI	Negative IFI
Positive Galactomannan EIA	1	13
Negative Galactomannan EIA	0	13

Sensitivity = 1/1 = 1.0 Specificity = 13/26 = 0.5 Positive Predictive Value = 1/14 = 0.07 Negative Predictive Value = 13/13 = 1.0

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EVALUATION OF THE CLINICAL OUTCOMES OF PEDIATRIC PATIENTS WITH PERIPHERAL EOSINOPHILIA FOLLOWING HEMATOPOIETIC STEM CELL TRANSPLANTATION

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Eosinophilia has been proposed to have prognostic significance for survival and for the development of graft-versus-host disease (GVHD) in adult patients following hematopoietic stem cell transplantation (HSCT). However, the prognostic significance of post-transplant eosinophilia in regards to GVHD and overall survival has not been well-studied in the pediatric population. We performed a retrospective analysis of the clinical impact of eosinophilia in 84 pediatric patients following allogeneic HSCT performed for malignant and non-malignant diseases. The clinical outcomes of patients with eosinophilia were compared to patients transplanted during the same time period that did not have eosinophilia. Eosinophilia was defined as either an absolute number of greater than 0.5 × 10^9/L or an eosinophil percentage greater than 4 in the peripheral blood on at least two consecutive measurements. Seventy-one patients developed eosinophilia at a median 155 days from transplant. Forty-two percent of patients had absolute eosinophilia and eighty-three percent of patients had an elevated eosinophil percentage. The overall survival of all patients was sixty-nine percent. Thirty-six percent of patients developed chronic GVHD and thirty percent developed acute GVHD. Eosinophilia was not significantly associated with increased mortality (odds ratio 2.7, 95% confidence interval 0.8-8.5); acute GVHD (OR 2.6, CI 0.5-12.5), or chronic GVHD (OR 2.1, CI 0.4-10.2). In this pediatric population, post-HSCT eosinophilia does not have prognostic significance for mortality or the presence or development of GVHD. Larger pediatric studies are needed to further evaluate the impact of eosinophilia in children.

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HEMATOPOIETIC STEM CELL TRANSPLANTATION IN PATIENTS WITH FANCONI ANEMIA: WHAT ARE THE NUTRITIONAL CONSENQUENCES?

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Introduction: Fanconi Anemia (FA) is a rare disease characterized by bone marrow failure, congenital abnormalities and a predisposition to cancer. Patients (pts) with FA usually have low birth weight, short stature and fatigue. Hematopoietic stem cell transplantation (HSCT) is the treatment of choice for pts that develop hematological abnormalities but it increases energy expenditure due to complications related to this procedure and decreases oral ingestion by the presence of gastrointestinal symptoms.

Objective: Evaluate the changes in nutritional status, in food intake, in bone mineral density (BMD) and in vitamin D serum levels in