of using donors that are not fully matched on both GVHD incidence and overall survival. Historically there is evidence that an isolated C mismatch may not affect these outcomes but this has been evaluated almost exclusively in adult patients with hematologic malignancies. We collected data on a 146 consecutive pediatric patients (median age 9 years) who received an unrelated donor transplant at Children's Hospital Boston from 1/2004 through 12/2010 for malignant and nonmalignant conditions. 97% received bone marrow as the stem cell source and 97% received fully myeloablative conditioning. 75% underwent HSCT for a hematologic malignancy (leukemia/lymphoma), 11% for immunodeficiency and the remainder for other indications, primarily bone marrow failure syndromes. 70% of patients had a donor fully matched at both A,B,C,DR, DQ loci on high resolution typing, 10% had a single C mismatch and the remaining 20% had a donor with 1 or 2 other mismatches excluding a single C mismatch (none had a DR mismatch and all were at least a 5/6 match on A, B, DR). 45% experienced GVHD: 13% acute only, 51% chronic only and 32% both. There was no statistically significant difference in the proportion of patients who had acute GVHD of any grade and/or limited or extensive chronic GVHD between those having a fully matched, single C mismatch or other mismatched donor ($p = 0.7$). There was also no significant difference in survival between the groups. 100 day and 1 year overall survival were 93%/77% with fully matched donors, 87%/60% for single C mismatched donors ($p = 0.2$) and 96%/76% for other mismatched donors. Thus it appears that in the era of high-resolution HLA typing and improved supportive care HLA mismatched donors can provide outcomes similar to those using fully matched donors in pediatric patients undergoing HSCT for malignant and nonmalignant conditions.

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EPIDEMIOLOGY OF BACTERIAL, FUNGAL AND VIRAL INFECTIONS IN CHILDREN AND ADOLESCENTS AFTER HEMATOPOIETIC STEM CELL TRANSPLANTATION

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The epidemiology of bacterial, fungal and viral infections was retrospectively analyzed in a cohort of 759 children and adolescents who underwent allogeneic hematopoietic stem cell transplantation (HSCT) in a single institution, between 1990-2009, to study the impact of changes in transplantation methodology on the distribution of pathogens and mortality due to infections. There were 243 matched-related, 239 matched-unrelated (MUD) and 176 haploidentical donor transplants. Independent logistic regression was conducted at 0-30 days (A), 30-100 days (B) and >100 days (C) post-transplant. On multivariate analysis, total body irradiation ($p = 0.001$, A; 0.005, C), apheresis product ($p = 0.02$, A; 0.01, B), acute ($p = 0.002$, B) and chronic ($p = 0.03$, C) graft vs host disease (GVHD) were associated with higher risk for bacterial infections at the respective time periods. CMV serostatus ($p = 0.05$, B), presence of acute ($p = 0.001$, B), chronic GVHD ($p<0.001$, C) and age >10 yrs ($p = 0.02$, C) were associated with higher risk for fungal infections. CMV serostatus ($p = 0.0005$, A; 0.03 B; 0.002 C), acute ($p = 0.01$, A) and chronic GVHD ($p = 0.001$, C), were associated with higher risk for viral infections. MUD donor transplants were associated with a higher risk of viral infections ($p = 0.001$). Bacterial ($p = 0.002$) and fungal ($p = 0.0004$) infections in period A, decreased in the 2005-2009 era. There were 321 episodes of bacteremia in 231(30%) patients, of whom 168 episodes (52%) were in period C. *Staphylococcus epidermidis* (33%) and *Escherichia coli* (12%) were the most common causes of bacteremia. Candidemia, mostly *C.albicans*, was detected in 49 (6%) patients, 26 (54%) in period C. There were 45 patients with proven aspergillosis, 20 (44%) in period A. Non-aspergillus molds were detected in 16 (2%) patients. CMV and adenoviremia was detected in 146 (20%) and 68 (9%) patients respectively. Parainfluenza was the most common respiratory viral infection detected in 70 (9%) patients, 35(50%) in period C. This is the largest retrospective study providing a time line of infections in children and adolescents who have undergone allogeneic HSCT.

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CYCLOSPORINE AREA UNDER THE CURVE IN CHILDREN UNDERGOING HAEMATOPOIETIC STEM CELL TRANSPLANTATION: LIMITED SAMPLING STRATEGY AT STEADY-STATE

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Haematopoietic stem cell transplantation (HSCT) outcomes may be optimized by cyclosporine dose adjustment according to systemic exposure (measured by area under the curve (AUC)) rather than trough concentration. We have previously developed and validated a limited sampling strategy (LSS) for estimating cyclosporine AUC after the initial IV dose in children undergoing HSCT. In this study we aim to develop a LSS to estimate AUC at steady-state.

Children undergoing myeloablative HSCT and given cyclosporine q12h as a 2-hour infusion and methotrexate/methylprednisolone for acute graft-versus-host disease (GVHD) prophylaxis were eligible. Cyclosporine AUC was determined once weekly until engraftment using 9 concentration-time points. Steady state was defined as being reached after administration of 4 identical doses.

The association between cyclosporine AUC using all available data points (AUC-all) and the AUC values predicted by each LSS was described using the adjusted coefficient of determination (r^2); values > 0.9 were acceptable. Precision and mean bias < 15% were acceptable.

18 children (0.3-17 years) participated. Mean actual dose infusion time was 123± 4.4 min. Mean AUC-all at steady state was 4894±1386 h*mcg/L. Individual cyclosporine whole blood concentrations drawn at 2, 2.5, 3, and 4 hours after the start of the infusion correlated most highly with AUC-all (Spearman rho coefficient: 0.847, 0.926, 0.942, and 0.903, $p<0.0001$, respectively). Values of AUC predicted by the 3, 4 and 5-point LSS were strongly associated with AUC-all (spearman rho coefficient > 0.998; $p<0.0001$).The 3-point LSS (2, 3 and 4 hours) is likely the method of choice for determining cyclosporine AUC at steady state when given as 2 hour infusion to children undergoing HSCT. Validation of the LSS in a different sample is required before this LSS strategy can be implemented. The relationship between acute GVHD and cyclosporine AUC at different time periods after HSCT merits further study.

Table 1. Association between AUC-all and AUC generated by LSSs

Sample times (hours after start of infusion)	Adjusted r^2	Mean bias (%; range)	Precision (%)
2, 3 and 4	0.9962	0.05 (-5.3 to 4.6)	3.6
2, 3, 4 and 10	0.9981	0.03 (-2.0 to 2.0)	1.2
2, 2.5, 3, 4 and 10	0.9990	0.05 (-2.0 to 3.0)	0.9

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THROUGH THEIR EYES: THE EXPERIENCES OF THE MINOR AND YOUNG ADULT MATCHED SIBLING HEMATOPOIETIC CELL DONORS – A RETROSPECTIVE STUDY FROM A SINGLE REGIONAL INSTITUTION

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Matched sibling donor hematopoietic cell transplantation (HCT) is considered the standard of care for many disorders, yet the donor's emotional and physical needs may be overlooked and the donor viewed as a therapeutic modality in the process of saving the life of an ill sibling. In this IRB-approved study, we explored the meaning of the donor's experiences through his own words and recollections, and the contextual influences and critical events across the transplant trajectory. A semi-structured interview was conducted in private