include associating these findings with an accurate cost analysis of UCBT.

Table 1. Unadjusted Associations of Transplant Characteristics with Days Alive and Out of Hospital

	N	Median (IQR*)	Coefficient (95% CI)	p-value†
Age				0.16
1-19	26	43 (19-57)	0 (reference)	
20-34	20	52 (23-75)	9.1 (-7.7, 25.8)	
35-49	20	67 (36 – 77)	15.2 (-1.5, 31.9)	
50-73	18	72 (15 -86)	18.2 (0.9, 35.4)	
Institution				0.03
UW Medical Center	57	66 (28 – 79)	0	
Seattle Children's Hospital	27	40 (19 – 57)	-14.9 (-28.1, -1.7)	
Sex				0.21
Female	42	61 (28 – 76)	0	
Male	42	53 (12 – 73)	-8.1 (-20.6, 4.4	
Race				0.002
Caucasian	49	66 (38 – 77)	0	
Non-Caucasian	35	38 (14 – 60)	-19.5 (-31.6, -7.4)	
Disease-Risk				0.02
Standard	74	59 (29 – 76)	0	
High	10	15 (0 – 57)	-22.7 (-41.6, -3.8)	
CMV seropositivity				0.05
Neg	31	66 (40 – 77)	0	
Pos	53	46 (14 – 73)	-12.9 (-25.7, -0.1)	
Comorbidity score (in adults)				0.59
0, 1	14	50 (34 – 64)	0	
2	19	73 (38 – 79)	11.8 (-8.8, 32.4)	
3	14	50 (27 – 66)	-1.1 (-23.3, 21.0)	
4 – 8	15	66 (15 – 83)	5.3 (-16.5, 27.0)	
Conditioning regimen				0.34
CY / Flu / TBI	65	59 (20 – 76)	0	
Treo / Flu / TBI	19	46 (14 – 68)	-7.3 (-22.4, 7.7)	
TBI dose (cGy)				0.46
200 – 300	32	59 (21 – 81)	0	
1320	52	54 (20 – 71)	-4.9 (-17.9, 8.0)	
Number of donors				0.39
1	9	38 (14 – 54)	-10.9 (-31.1, 9.4)	
2	71	59 (27 – 77)	0	
3	4	29 (14 – 58)	-14.8 (-44.2, 14.7)	

*IQR = inter-quartile range, 25th to 75th percentiles of distribution
†Test for homogeneity across factor levels

207

BONE MINERAL DENSITY CHANGES IN PATIENTS WITH β-THALASSEMIA MAJOR AFTER HEMATOPOIETIC STEM CELL TRANSPLANTATION

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Introduction: Low bone mineral density (BMD) is an important multifactorial cause of morbidity in patients with β-thalassemia. With recent therapeutic advances such as hematopoietic stem cell transplantation (HSCT), thalassemic patients can live longer but osteoporosis is now a major health concern.
Method: In this study, we evaluated the changes of bone density in 46 patients with β thalassemia major who were candidates for HSCT before and after transplantation. The average age of patients was 13.4 years (range 3-29 years). Twenty four patients (52.2%) were male. All patients underwent HSCT from HLA-identical related donors. Nine patients (19.6%) co-transplanted with mesenchymal cells. Dual-energy X-ray absorptiometry (DXA) was performed on lumbar vertebrae and femoral neck in all patients before starting pre-transplant regimens and repeated at one year after transplantation.
Results: Low BMD was found in 7 patients (15.2%) before transplantation and in 18 patients (39.1%) one year after transplantation. BMD changes in femoral neck and lumbar area were significant at one year after transplant ($p<0.001$) while no significant changes were found in the whole femur ($p = 0.22$). Female gender ($p = 0.005$) and low body mass index ($p = 0.05$) were correlated with low BMD and defined as independent risk factors for low BMD at one year after transplantation. There was no significant difference in BMD changes between patients with and without co-transplantation of mesenchymal cells.
Conclusion: Due to decrease in BMD after HSCT, it is suggested to manage low BMD before transplantation. Longer follow-up will help to better clarify the role of HSCT in BMD changes of thalassemic patients; moreover, further studies are suggested to evaluate the role of co-transplantation of HCT together with mesenchymal cells on BMD improvement of thalassemic patients.

208

MEDICATION ERRORS AMONG PEDIATRIC HEMATOPOIETIC STEM CELL TRANSPLANT RECIPIENTS IN AN OUTPATIENT CLINIC

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As care of hematopoietic stem cell transplant (HSCT) patients is increasingly provided in the ambulatory setting a significant amount of responsibility is also switched to family members. The goal of this project was to identify the incidence and source of medication errors in a complex outpatient population and to develop system changes to increase safety and reliability of home administration of medications.

Between 05/11 and 08/11, a prospective study was conducted on pediatric HSCT recipients managed in a hospital-based outpatient clinic. Patients within one year post-transplant or later if still on immunosuppressive therapy were included. Medication reconciliation was performed by a clinic nurse every visit and verified by one of two advanced nurse practitioners (ANP). The latter compared the information with dictated clinic notes to confirm accuracy of medication administration. For variance the ANP determined the source of error and clinical consequence, if any. The results were conferred with the transplant physician for change of management.

Medications were classified as immunosuppressives (IS), anti-infectives (AI) and others (OT). 300 visits (285 allogeneic HSCT- and 15 autologous HSCT) occurred among 49 patients during the 4-month period. 19 medication errors were identified (6% incidence) among 10 patients. 5 patients experienced multiple episodes of error. All were administration errors. 18 errors (95%) occurred at home and one (5%) in the clinic. 18 errors were found in allogeneic patients, 1 in an autologous patient. 7 errors (37%) involved IS, 7 (37%) involved AI, and 5 (26%) from OT. The median time before an error was detected was 2 (range 1-24) days. The median number of drugs taken by each patient was 6 (range 3-14). The nature of the errors was wrong dose (too high 42%, too low 21%) and omission of a dose (7%). The source of the error was traced to miscommunication in 16 events (verbal 16%, written 68%), prescriber error once (5%), and failure of caregiver to refill medication twice (11%). No patient demonstrated significant clinical side-effects from medication errors. Many medications given post HSCT have a narrow therapeutic window. Family members must take responsibility for many skills quickly post HSCT. Standardized dosing strategies and improved communication between the caregivers and healthcare providers may decrease error rate and improve medication adherence and safety of the care delivered.

209

EFFECT OF BUSULFAN AND TOTAL BODY IRRADIATION ON DENTAL DEVELOPMENT AFTER HEMATOPOIETIC STEM CELL TRANSPLANTATION IN CHILDHOOD

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Children treated with hematopoietic stem cell transplantation (HSCT) are at particular risk to develop disturbances in dental