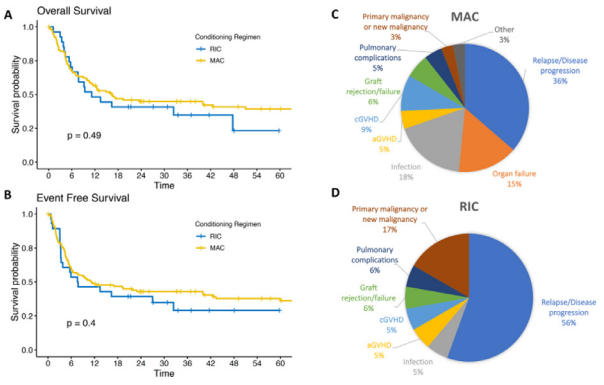
Table 1
Patient characteristics (N=147)

	N (%)
Females	65 (44.2)
Race	
White	105 (71.4)
Black	15 (10.2)
Others	27 (18.4)
Primary Diagnosis	
Heme Malignancy	61 (41.5)
Solid/Brain Tumor	77 (52.4)
Other/Non-Malignant Heme Disorder	15 (10.2)
Diagnosis at HCT	
tMDS	63 (42.9)
tAML	84 (57.1)
Conditioning Intensity	
MAC	115 (78.2)
RIC	29 (19.7)
Unknown	3 (2)
Age at HCT	12.6 (1.2-21) years
Time from tMDS/tAML to HCT	3.7 (.8-61) months
Karnofsky Status >=90	99 (67.3)
Donor Type	
MRD	30 (20.5)
MUD	56 (38.4)
MMRD	20 (13.7)
MMUD	40 (27.4)
Graft Source	
BM	79 (54.5)
PBSC	23 (15.9)
Cord	43 (29.7)

patients after MAC compared to 28% after RIC, however disease relapse was a major cause of death after RIC (Fig C & D). The majority of transplants were performed after 2005 (81.6%) and outcomes seem to be slightly better in contemporary era due to improved supportive care and decreased NRM.

Conclusion: This is one of the largest reported cohorts of pediatric patients receiving allogeneic transplantation for t-MDS/AML. Outcomes are poor relative to de novo MDS/AML due to high rate of NRM with MAC and high rate of disease related death after RIC. Novel strategies that lead to a reduction in transplant-related mortality in these heavily pre-treated patients while providing sufficient disease control are needed to improve survival in t-MDS/AML patients receiving HCT.



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Administration of BPX-501 Cells Following Aβ T and B-Cell-Depleted HLA Haploidentical HSCT (haplo-HSCT) in Children with Acute Leukemias (AL)

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Background: Allogeneic HSCT is a well-established treatment for children with AL. For pts lacking a compatible matched related or unrelated donor, HLA-haplo-HSCT represents an alternative. Promising results were reported with selective depletion of $\alpha\beta$ T and B cells (Locatelli, *Blood* 2017).
PX-501 is an allogeneic product consisting of T cells modified to express the inducible caspase-9 (iC9) safety switch and truncated CD19 to allow monitoring and expansion of BPX-501 following transplant. BPX-501 provides broad virus and tumor-specific immunity; the safety switch provides the unique ability to promptly and durably resolve graft-versus-host disease (GvHD) symptoms following the administration of rimiducid.
Aims: Evaluate the safety and efficacy of BPX-501 in pediatric pts with AL by determining whether BPX-501 infusion can increase efficacy outcomes through an enhanced graft-versus-leukemic (GvL) effect, while maintaining a low risk of GvHD.
Methods: A subset of pts had high-risk ALs. BPX-501 was planned to be infused on day14±4 after the allograft with no post-transplant GvHD prophylaxis allowed. Pts who developed steroid-resistant GvHD could receive ≥1 dose of rimiducid.
Results: As of June 30, 2018, 100 pts with AL (described in Table 1) were efficacy evaluable. Median time for neutrophil and platelet engraftment was 16 and 12 days, respectively. Four pts (4.1%) experienced primary graft failure. Of 96 evaluable pts, 5 (3.1%) developed Grade III-IV aGvHD. Of 82 evaluable pts, 12 developed cGvHD (18.1%), with 3 moderate-severe. Rimiducid was administered to 10 pts. Best overall clinical response (CR/PR) post-rimiducid was 80% (8 pts). Among responding patients, 7 (87.5%) had a CR. Six (6.6%) pts died after transplantation. Efficacy outcomes in AL subsets are in Table 2.

Table 1
Baseline Characteristics

	AL (n = 100)	*AML (n= 46)*	*ALL (n= 54)*
Male; n (%)	56 (56%)	27 (58.7%)	29 (53.7%)
Median age at HSCT (yrs)	8.36	7.94	9.07 (1.11 – 17.94)
Patients in CR1; n (%)	26 (26%)	17 (37%)	9 (16.7%)
Patients in second or subsequent CR; n (%)	74 (74%)	29 (63%)	45 (83.3%)
Conditioning regimen; n (%)			
Total body irradiation (TBI)- based	62 (62%)	20 (43.5%)	42 (77.8%)
Busulfan-based	29 (29%)	19 (41.3%)	10 (18.5%)
Other	8 (8%)	6 (13%)	2 (3.7%)
Donor Source; n (%)			
Parent	88 (88%)	38 (82.6%)	50 (92.6%)
Sibling	12 (12%)	8 (17.3%)	4 (7.4)

$CD3^+$ and $CD3^+CD4^+$ T cells above 500 cells/ml were achieved by 180 and 270 days, respectively. IgA and IgM levels achieved normal values by 180 days.

Conclusion: BPX-501 following $\alpha\beta$-T and B-cell depleted haplo-HSCT represents a highly effective transplantation strategy for pediatric pts with AL. Rimiducid was an effective treatment for pts with steroid-resistant GvHD.

Table 2
AL Efficacy Outcomes

Parameter (median)	*AML n = 46*	*ALL n = 54*
F/u	14.6 mos	13.2 mos
TRM	8.8%	4.8%
CR1	23.5%	12.5%
CR2+	0.0%	10.9%
RFS	84.7%	80.2%
CR1	76.5%	87.5%
CR2+	88.8%	78.5%
OS	91.2%	89.1%
CR1	76.5%	87.5%
CR2+	100.0%	89.1%

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Busulfan/Fludarabine- or Treosulfan/Fludarabine-Based Conditioning Regimen for Patients with Wiskott-Aldrich Syndrome – an EBMT Inborn Errors Working Party and Scetide Study

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Introduction: Excellent survival rates have been reported after allogeneic haematopoietic stem cell transplantation (HSCT) for Wiskott-Aldrich syndrome (WAS) patients. Recipient age >5 years in MUD HSCT as well as MMFD as donor were negative predictors for outcome. However, the vast majority of HSCTs in previously published studies were performed with (oral) busulfan/cyclophosphamide-based conditioning and in the early 2000 years or before.

Objectives: To compare OS and EFS after HSCT with either busulfan/fludarabine (BuFlu) ± thiotepa (TT) or treosulfan/fludarabine (TreoFlu) ± TT as recommended for primary immunodeficiencies since 2005 by the inborn errors working party (IEWP) of EBMT and ESID.

Methods: We performed a retrospective analysis via the EBMT and SCETIDE registries of WAS patients transplanted between 20006 and 2016 with these two regimens. At the time of this interim analysis, 174 patients were included, 92 (53%) with BuFlu±TT and 82 (47%) with TreoFlu±TT conditioning, with a median age of 1.6 years (0.2-30) at HSCT and a median follow-up of 32.9 months (1.5-128.9). Donors were MSD in 30, other MRD in 5, MUD (9/10 or 10/10) in 105, MMUD (<9/10) in 9 and MMFD in 25 (18 with ex-vivo T-cell depletion). Stem cell source was bone marrow in 93, peripheral blood in 62 and cord blood in 18.

Results: Two year overall survival (OS) of the entire cohort was 88.6% (95% c.i. 83.5%-93.6%). There was no significant difference in OS between BuFlu±TT or TreoFlu±TT conditioning (2-year OS 88.1% vs. 89.5%; p=0.7). Patients aged >5 years had a worse OS as compared to those 5 years or younger at HSCT (74.9% vs. 90.8%; p=0.005). The type of donor had no influence on OS: 96.4% for MSD/MFD, 86.8% for MUD/MMUD and 87.7% for MMFD (p=0.4). The rate of complete (≥90%) donor chimerism at last follow-up or before a secondary procedure (if a patient had one) was 41/42 (98%) in the BuFlu±TT group and 21/35 (60%) in the TreoFlu±TT group (p=0.0001). Twenty-six patients required a second procedure: stem cell boost in 4, donor lymphocyte infusion in 9, 2nd HSCT in 15 and splenectomy in 1. The 2-year cumulative incidence (CI) of second procedures was higher at 33.9% in the TreoFlu±TT versus 12.8% in the BuFlu±TT group (p=0.017), and 2-year EFS (events: second procedure or death) was 61.4% in the TreoFlu±TT and 75.0% in the BuFlu±TT group (p=0.2). Grade II-IV acute GVHD had the same incidence in both groups (24.4% vs. 26.3%; p=0.849) and chronic GVHD of any grade was borderline more frequent in the TreoFlu±TT group (17.2% vs 6.7%; p=0.054).

Conclusion: HSCT with either BuFlu±TT or TreoFlu±TT conditioning reliably cures almost 90% of patients with WAS regardless of donor type. Age >5 years at HSCT remains a negative risk factor. More patients were mixed chimeras and required second procedures after TreoFlu±TT than after BuFlu±TT conditioning. These data confirm the feasibility and efficacy of the regimens currently recommended by the IEWP.

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Individual Patient Dose-Escalated Low-Dose Interleukin-2 for Steroid-Refractory Chronic Graft-Vs.-Host Disease in Children and Adults: Safety, Efficacy and Immune Correlates

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