Total IM-TMI Dose	Timing of IM-TMI conditioning regimen (Flu 30mg/m2 daily from day -7 to -3; mel 140mg/m2 on day -2) plus
6Gy	1.5Gy twice daily on day -7 and -6
9Gy	1.5Gy twice daily on day -7, -6, and -5
12Gy	1.5Gy twice daily on day -7, -6, -5, and -4

Supplemental Table 1. Timing of IM-TMI conditioning regimen for each dose level.

	Day 30	Day 100	Day 180	Day 365
Median absolute number (range) of donor cells				
CD19+ (/uL)	5.2 (0.6-29.3)	36.2 (2.5-267.5)	33.2 (0-354.9)	224.5 (9.6-570.5)
CD3+ (/uL)	399.6 (17.8-1090.6)	747.6 (275.4-3670.3)	787 (130-2954.2)	1058.5 (355.1-1926)
IgG (mg/dL)	471 (283-1498)	379 (220-1051)	405 (112-1206)	510 (347-1497)
Chimerism % (range)				
Unfractionated donor chimerism	100 (75-100)	100 (96-100)	100 (96-100)	100
CD3+ donor chimerism	100 (86-100)	100 (96-100)	100	100

Supplemental Table 2. Immune reconstitution after transplantation. Chimerism in the bone marrow, along with monitoring for B cell, T cell, and immunoglobulin reconstitution, was analyzed at days 30, 100, 180, and 365 post-transplantation. Two patients who had graft failure were excluded.

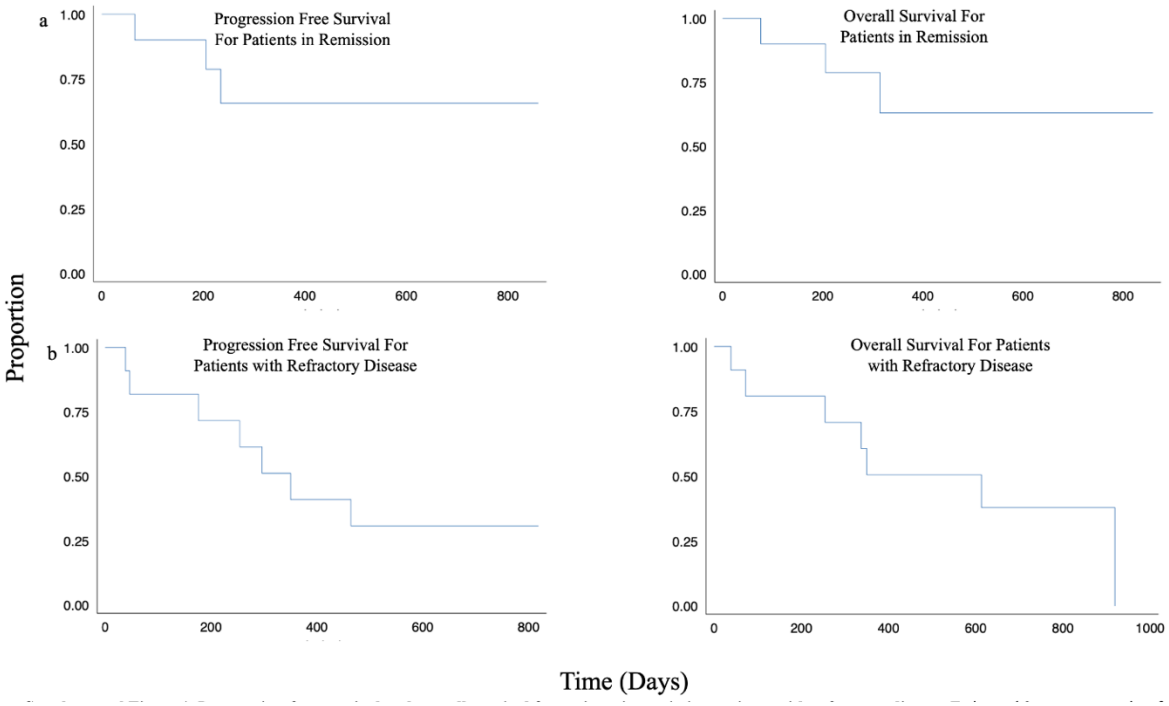
	Median PFS, in days (range)	Median OS, in days (range)
All Patients (n=21)	350 (38-859)	608 (38-919)
Patients with persistent disease (n=11)	296 (38-818)	573 (38-919)
Patients in remission (n=10)	Not reached (65-859)	Not reached (76-859)

Supplemental Table 3. Progression-Free Survival and Overall Survival. Median PFS and OS among patients in remission compared to patients with persistent disease.

Study	Number of Patients	Disease and Number of Patients	Donor for 2nd SCT	Median Age (years)	Conditioning Regimen	Median Time to Follow-up	2-year OS	2-year PFS	2-year Cumulative Incidence of Relapse (95% CI)	2-year NRM (95% CI)
Current Study	21	AML (n=18) MDS/MPN (n=2) ALL (n=1)	MRD (n=7) MUD (n=13) 7/8 MUD (n=1)	56 (22-72)	Flu/mel + TMI RIC (n=5, 24%) MAC (16, 76%)	11 months	50%	48%	35% (13-58%)	17% (95% CI, 4-39%)
Choi et al, Clin Transplant, 2021	80	AML (n=62) ALL (n=18)	MRD (n=4) MUD (n=30) Familial haploidentical (n=46)	38 (17-70)	MAC (n=13, 16.2%) RIC (n=67, 83.8%)	45 months	21%	17.7%	60.2%	18.7%
Fan et al, Exp Hematol Onc, 2019	65	AML (n=47) MDS (n=5) Lymphoma (n=6) CML (n=2) Other leukemia (n=5)	MRD (n=33) MUD (n=21) Haplo-cord (n=11)	45 (11-73)	MAC (n=44, 67.7%) RIC (n=21, 32.3%)	23 months	22.6%	17.5%	36.9% (at 1 year)	33.8% (at 1 year)
Shimoni et al, Blood Cancer J, 2019	556	AML (n=556)	Same donor (n=163)	46 (20-73)	MAC (45%) RIC (55%)	52 months	36.4%	23.5%	32%	25.1% (95% CI, 18.6-32%)
			Different matched donor (n=305)	48 (20-69)	MAC (39%) RIC (61%)	30.5 months	28.7%	23.7%	44%	26.9% (95% CI, 21.8-32.3%)
			Haplo-identical (n=88)	45 (20-71)	MAC (40%) RIC (60%)	33 months	23.3%	21.8%	13%	33.9% (95% CI, 23.7-44.4%)
Yalniz et al, Transplant Cell Ther, 2021	91	AML (n=91)	MRD (n=37) MUD (n=34)	44 (18-73)	RIC (n=71, 78%)	66 months	36%	27%	42% (95% CI 32-54%)	18% (95% CI, 18-37%)

			Haploidentical (n=19) Cord blood (n=1)							

Supplemental Table 4. Comparison of Outcomes after 2nd HCT in Recent Literature.



Supplemental Figure 1. Progression-free survival and overall survival for patients in remission patients with refractory disease. Estimated 2-year progression-free survival (PFS) and overall survival (OS) was 66% and 63%, respectively, for patients in remission (a). Estimated 2-year PFS and OS were 31% and 38%, respectively, for patients with refractory disease (b).