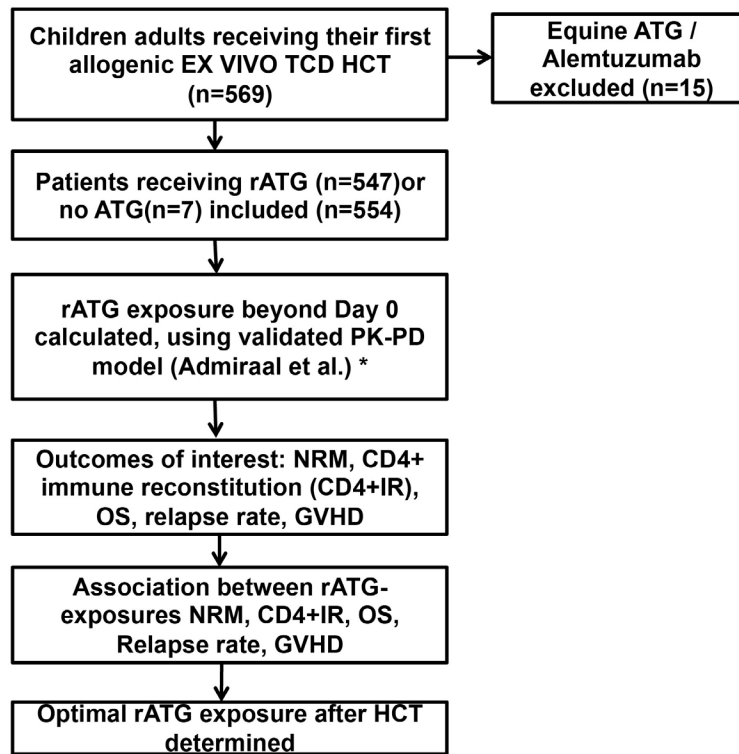


Supplementary Appendix

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Supplementary 1: Flowchart of patients analyzed and outcomes assessed for determination of optimal post hematopoietic cell transplantation (HCT) rabbit anti-thymocyte globulin (rATG) exposure



*Weight, height, age, gender, conditioning regimen, type and date of transplant, 1st day of rATG, Dose of rATG, Duration of rATG infusion, and ALC on the 1st day of ATG were inputted in validated Pharmacokinetic-pharmacodynamic (PK-PD) model, *Admiraal et al. Lancet Hematology 2017*

rATG: rabbit anti-thymocyte globulin

NRM: Non-relapse mortality

CD4+ IR: CD4+ Immune Reconstitution defined as CD4+ levels twice above 50/uL at two consecutive measures within 100 days

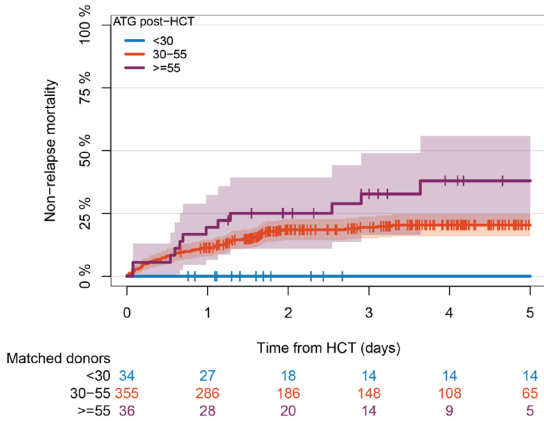
OS: Overall survival

GVHD: Graft versus Host Disease

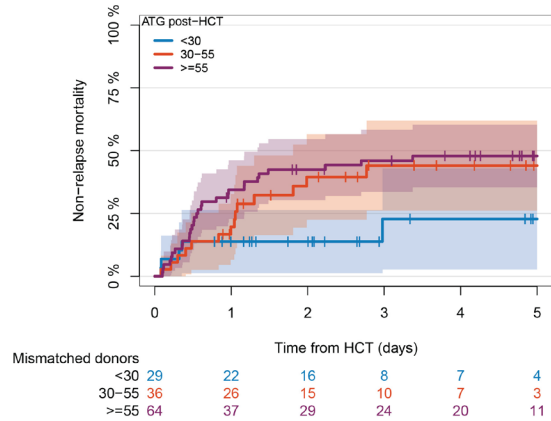
HCT: Hematopoietic cell Transplantation

Supplementary Figure 2. Panel A shows non-relapse mortality (NRM) and different levels of post hematopoietic cell transplantation (HCT) rabbit anti-thymocyte globulin (rATG) exposure in Matched Donor Group (Overall). Panel B shows NRM and different levels of post- HCT rATG exposure in Mismatched Donor group (Overall).

A

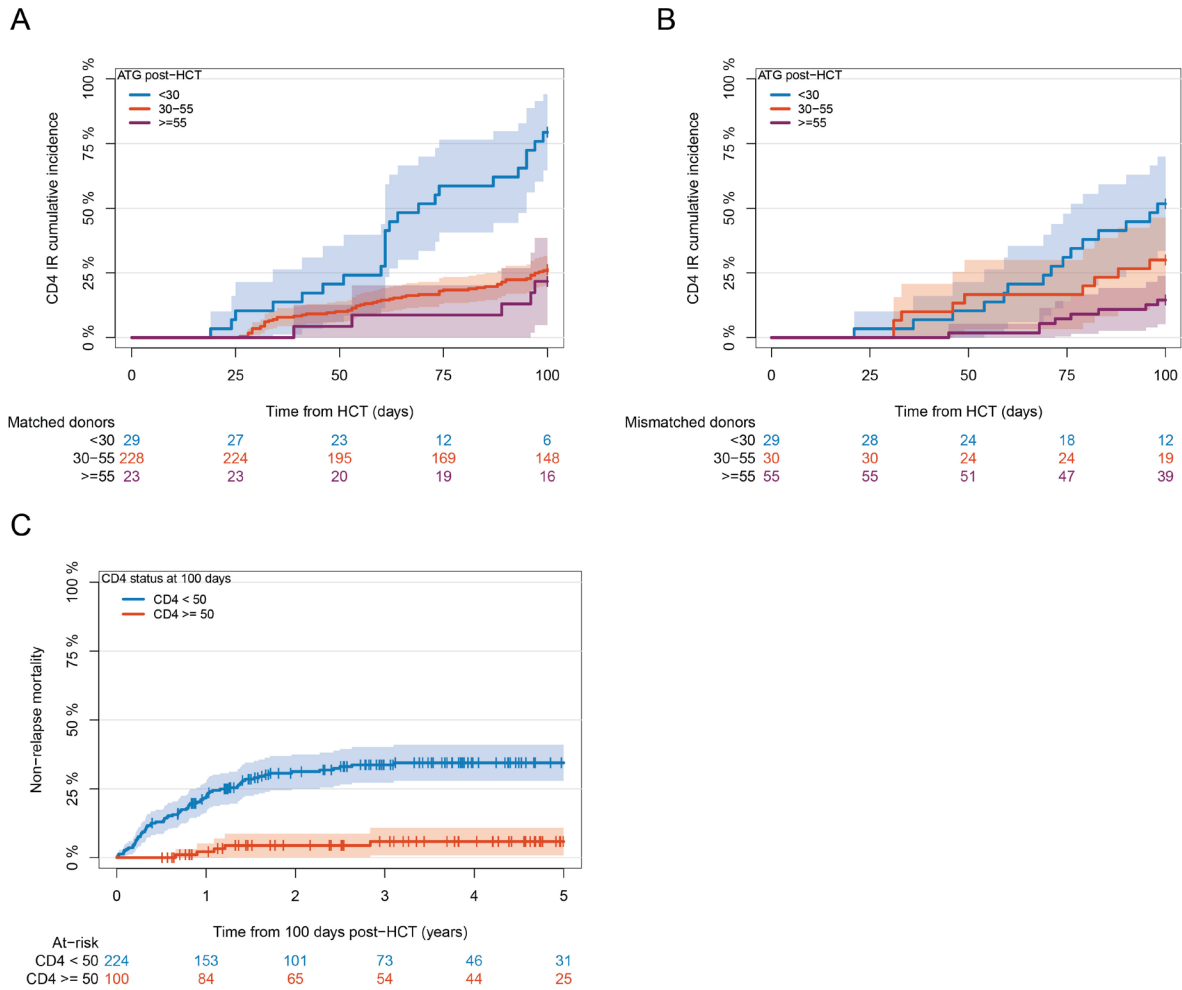


B



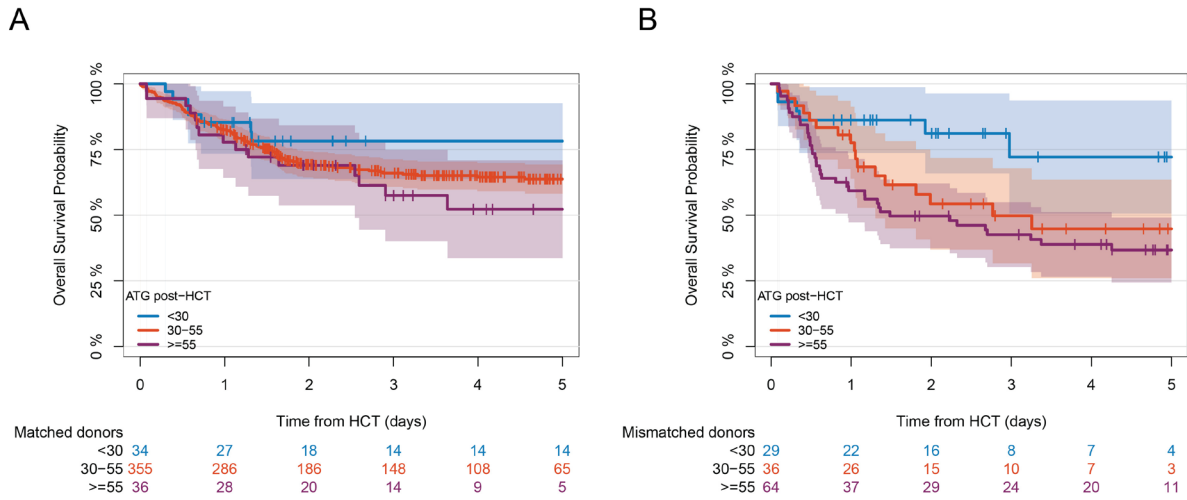
rATG: rabbit anti-thymocyte globulin, NRM: Non-relapse mortality, HCT: Hematopoietic cell Transplantation

Supplementary Figure 3. Panel A shows co-relation between different levels of post hematopoietic cell transplantation (HCT) rabbit anti-thymocyte globulin (rATG) exposure and CD4+Immune Reconstitution (CD4+IR) in Matched Donor group (overall), CD4+IR was defined as CD4+ levels twice above 50/uL at two consecutive measures within 100 days. Panel B shows co-relation between different levels of post-HCT rATG exposure and CD4+IR and in Mismatched Donor group (overall). Panel C shows co-relation between CD4+IR and NRM in patients who underwent HCT for malignant disorders.



NRM: non-relapse mortality, rATG: rabbit anti-thymocyte globulin, CD4+IR: CD4+Immune Reconstitution, HCT: Hematopoietic cell Transplantation

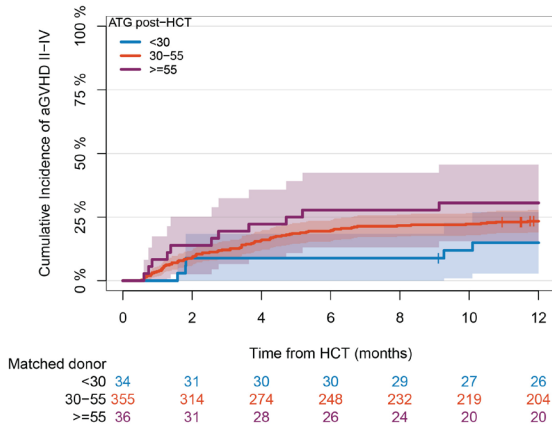
Supplementary Figure 4. Panel A shows co-relation between different levels of post hematopoietic cell transplantation (HCT) rabbit anti-thymocyte globulin (rATG) exposure and Overall Survival (OS) in Matched Donor group (Overall). Panel B shows co-relation between different levels of post-HCT rATG exposure and OS in Mismatched Donor group (Overall)



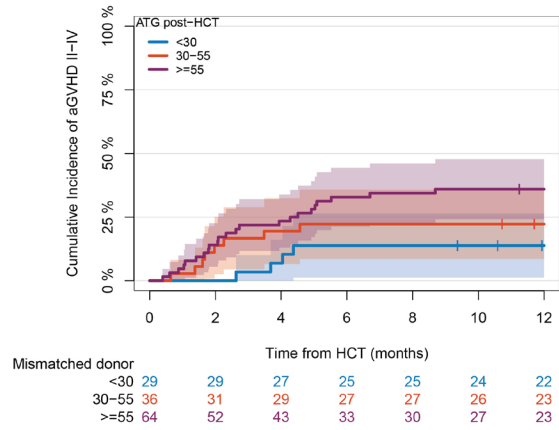
rATG: rabbit anti-thymocyte globulin, OS: Overall survival, HCT: Hematopoietic cell Transplantation

Supplementary Figure 5. Panel A shows co-relation between different levels of post hematopoietic cell transplantation (HCT) rabbit anti-thymocyte globulin (rATG) exposure and acute Graft versus Host Disease (GVHD) in Matched Donor group (Overall). Panel B shows co-relation between different levels of post-HCT rATG exposure and GVHD in Mismatched Donor group (Overall)

A



B



rATG: rabbit anti-thymocyte globulin, GVHD: Graft versus Host Disease, HCT: hematopoietic cell transplantation

Supplementary Table 1: Multivariable model for prognostic analysis of Overall Survival (OS) variables with $p < 0.05$ are kept in the final model (with age as adjustment factor); results of the other variables, at the bottom in italic, are results of the variables added one by one in the final model.

Characteristic	HR ¹	95% CI ¹	p-value
Age (categories)			0.10
<20	Ref.		
[20-40]	0.88	0.43, 1.82	
[40-60]	1.03	0.43, 2.47	
>=60	1.46	0.61, 3.50	
Donor type			<0.001*
MRD	Ref.		
MUD	1.04	0.73, 1.47	
MMD	2.19	1.49, 3.22	
CMV match			0.01*
R-/D-	Ref.		
R-/D+	1.24	0.75, 2.07	
R+/D-	1.26	0.83, 1.92	
R+/D+	1.78	1.24, 2.54	
HCT-CI			<0.001*
0-1	Ref.		
2-3	1.80	1.29, 2.53	
4-10	2.48	1.71, 3.61	
ATG exposure (categories)			0.11
< 30	Ref.		
[30-55]	1.29	0.67, 2.49	
≥55	1.83	0.92, 3.63	
Malignant			0.12
<i>Malignant</i>	Ref.		
<i>Non Malignant</i>	0.53	0.23, 1.23	

¹HR = Hazard Ratio, CI = Confidence Interval

ATG: Rabbit Antithymocyte Globulin, CMV: Cytomegalovirus, R: Recipient, D: Donor, MMD: Mismatched Donor, MRD: Matched Related Donor, MUD: Matched Unrelated Donor, HCT- CI: Hematopoietic Cell Transplantation Co-Morbidity Index

*Indicates significant

Supplementary Table 2: Multivariable model for prognostic analysis of time to relapse in patients with malignant disorders

Characteristic	HR ¹	95% CI ¹	p-value
Age (categories)			<0.001*
<20	Ref.		
[20-40]	0.16	0.04, 0.63	
[40-60]	0.50	0.12, 2.04	
>=60	0.56	0.13, 2.43	
Gender			0.03*
Female	Ref.		
Male	1.61	1.04, 2.50	
TBI based Conditioning Regimen			0.004*
No	Ref.		
Yes	2.16	1.27, 3.65	
DRI			<0.001*
High	Ref.		
Intermediate	0.28	0.17, 0.45	
Low	0.25	0.11, 0.57	

¹HR = Hazard Ratio, CI = Confidence Interval

TBI: Total Body Irradiation, DRI: Disease Related Index

*Indicates significant