(PB4003) THE IMPACT OF ATG/ALC RATIO ON OUTCOME IN ADULT PATIENTS UNDERWENT ALLOGENEIC STEM CELL TRANSPLANT FOR HEMATOLOGICAL MALIGNANCIES: A RETROSPECTIVE SINGLE CENTER ANALYSIS.

Topic: 23. Stem cell transplantation - Clinical

Giuseppe Sapienza[1], Corinne Spoto*[1], Roberto Bono[1], Cristina Rotolo[1], Luca Castagna[1]

[1]*Centro Trapianto di Midollo - A.O. Ospedali Riuniti Villa Sofia Cervello, PALERMO, Italy;*

Background

Rabbit anti-thymocyte globulin (ATG) is widely used for graft-versus-host disease (GVHD) prophylaxis in matched related and unrelated donor allogeneic hematopoietic stem cell transplantation (allo-HSCT), with randomized trials showing reduced acute and chronic GVHD. However, in vivo exposure to ATG is variable, and optimal dosing remains difficult to define due to marked interpatient pharmacokinetic variability. Based on pediatric data linking ATG exposure to immune reconstitution and survival, pharmacokinetic models were extended to adults to enable exposure-adjusted dosing. In these models, baseline absolute lymphocyte count (ALC) is a key determinant of ATG clearance, supporting ALC-guided strategies. The concordance between weight-based dosing and model-suggested dosing in adult matched donor allo-HSCT remains largely unexplored

Aims

We aimed to assess the concordance between administered weight-based ATG dosing and model-suggested ALC-adjusted dosing in adult matched donor allo-HSCT, and to descriptively evaluate clinical outcomes in patients classified as underdosed according to the model.

Methods

We retrospectively analysed 120 adult patients who underwent allogeneic HSCT between 2010 and 2025 from matched unrelated (MUD) or matched related donors (MRD) receiving ATG-based GVHD prophylaxis. ATG dose was 5 mg/kg (day -2 and -1) for all patients. The median follow-up was 41 months (range, 2–189). For each patient, we calculated the model-suggested cumulative ATG dose based on baseline ALC and derived an ATG ratio defined as the administered cumulative dose divided by the theoretical ALC-based dose. Patients were classified according to ATG ratio (<1 vs ≥1).

Results

Main patient characteristics are reported in the Table. The median ATG ratio was 0.77 (range, 0.32–1.42). Overall, 98 patients (82%) were classified as underdosed (ratio <1). The median administered cumulative dose was 398 mg compared with a model-suggested dose of 449 mg, corresponding to a median difference of –103.5 mg (range, –857 to +176).
In the overall cohort, OS was 66% at 1 year, with corresponding 100-day and 1y NRM of 17% and 23%, and relapse incidence of 6% and 21%. The CI of grade II–IV aGVHD was 15% at day 100, while 2y-cGVHD incidence was 15%. The CI of first viral infection was 10% at day 30, 20% at day 100, and 23% at day 180.
Among underdosed patients, grade II–IV aGVHD occurred in 14% at day 100, cGVHD in 11% and 14% at 1 and 2 years, respectively, and first viral infection in 11%, 21%, and 23% at day 30, day 100, and day 180.

Copyright Information: (Online) ISSN: 2572-9241
©2026 The Author(s). HemaSphere is published by John Wiley & Sons Ltd on behalf of European Hematology Association. This is an open access Abstract Book distributed under the Attribution-NonCommercial-NoDerivs (CC BY-NC-ND), which allows third parties to download the articles and share them with others as long as they credit the author and the Abstract Book, but they cannot change the content in any way or use them commercially.
Abstract Book Citations: Authors, Title, HemaSphere, 2026;10:(S1):pages. The abstract book DOIs can be found on the "Author Information" page.
Disclaimer: Articles published in the journal HemaSphere exclusively reflect the opinions of the authors. The authors are responsible for all content in their abstracts including accuracy of the facts, statements, citing resources, etc.

Summary/Conclusion

In this real-world matched donor allo-HSCT cohort, conventional weight-based ATG dosing showed a marked discrepancy compared with model-suggested ALC-adjusted dosing, with over 80% of patients classified as underdosed. Descriptive outcomes in the underdosed subgroup did not reveal substantial differences. Pharmacokinetic studies indicate that achieving optimal ATG exposure is critical for transplant outcomes and that ALC-based dosing improves target attainment. Given the immunomodulatory effect of ATG, CMV reactivation should be, partially, interpreted within the context of pre-letermovir practice. Larger multicentre prospective studies are required to validate ALC-guided dosing and better define the therapeutic window balancing GVHD, relapse, and infectious risk in matched donor allo-HSCT.

TABLE 1	
Patient age	54 (15-74)
Diagnosis AML ALL MDS Others	 78 (66%) 20 (16) 20 (16) 2 (2%)
Disease status CR1 CR2 CR3 Active	 73 (61) 24 (20) 1 (1) 22 (18)
Donor MRD MUD	 27 (22%) 93 (78%)
Source HSC BM	 111 (92%) 9 (8%)
Conditioning MAC RIC	 110 (92%) 10 (8%)
TCI Low Int high	 11 (10%) 64 (53%) 45 (37%)
Median ALC at first day of ATG	140 (0-3020)
Median Actual ATG dose	398 (200-900)
Median Calculated ATG dose/Kg	449 (400-1457)

Copyright Information: (Online) ISSN: 2572-9241
©2026 The Author(s). HemaSphere is published by John Wiley & Sons Ltd on behalf of European Hematology Association. This is an open access Abstract Book distributed under the Attribution-NonCommercial-NoDerivs (CC BY-NC-ND), which allows third parties to download the articles and share them with others as long as they credit the author and the Abstract Book, but they cannot change the content in any way or use them commercially.
Abstract Book Citations: Authors, Title, HemaSphere, 2026;10:(S1):pages. The abstract book DOIs can be found on the "Author Information" page.
Disclaimer: Articles published in the journal HemaSphere exclusively reflect the opinions of the authors. The authors are responsible for all content in their abstracts including accuracy of the facts, statements, citing resources, etc.