Outcomes After Standardization of Conditioning Regimens & Graft-Versus Host Disease Prophylaxis in MRD & MUD Allogeneic Stem Cell Transplants

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Introduction

- MAC improves disease control but ↑ TRM, while RIC ↓ TRM but raises relapse risk.
- PtCy helps prevent GVHD in haplo-HSCT, but its role in MRD/MUD allo-HSCTs remains unknown.
- This review evaluates TRM and GVHD at 100- and 365-days post-transplant after the 2022 standardization of RIC and PtCy for MRD/MUD allo-HSCTs at University Hospitals.

Methods

Study Design:
- Single-health system, retrospective cohort between January 2019 to December 2024
- Propensity score matching was performed using KPS, resulting in 15 patients per group.

Population:
- Pre-standardization (01/01/2019-11/20/22)
- Post-standardization (11/21/22-12/31/24)

Table 1. Patient Inclusion/Exclusion Criteria

Inclusion	Exclusion
• ≥ 18 years of age • Initial allo-HSCT with MRD or MUD • Diagnosis of AML or MDS	• Did not undergo allo-HSCT • CD34 selected graft • Did not receive standard conditioning regimen and GVHD prophylaxis from 11/21/22 onward based on UH SOP

Endpoints:

Primary
- Incidence of acute/and or chronic GVHD within the first 100- and 365- days post-transplant
- Incidence of TRM within the first 100- and 365- days post-transplant

Secondary
- Time to neutrophil engraftment (ANC >500 three consecutive days)
- Incidence of infection (requiring admission)
- Incidence of disease relapse

Figure 1: Patient Screening & Enrollment

Results

Table 2. Baseline Characteristics

Baseline Characteristics	Pre-Standardization (n=15)	Post-Standardization (n=15)
Age, years	55 (43 - 63)	66 (54 - 70)
Sex:		
Female	8 (53.3)	4 (26.7)
Male	7 (46.7)	11 (73.3)
Disease:		
AML	9 (60.0)	11 (73.3)
MDS	6 (40.0)	4 (26.7)
Disease Origin:		
De-novo	10 (66.7)	13 (86.7)
Secondary	5 (33.3)	2 (13.3)
Donor Type:		
MRD	5 (33.3)	5 (33.3)
MUD	10 (66.7)	10 (66.7)
KPS	80 (80 - 90)	80 (80 - 90)

Data are represented in median (IQR) or number (%)
Patients were matched by KPS score between study epochs

Table 3. Treatment Characteristics

Treatment Characteristics	Pre-Standardization (n=15)	Post-Standardization (n=15)
Conditioning Regimen*:		
Fludarabine	14.0 (93.3)	15.0 (100.0)
Melphalan	7.0 (46.7)	15.0 (100.0)
TBI	1.0 (6.6)	11.0 (73.3)
Busulfan	7.0 (46.7)	0.0 (0.0)
Cytarabine	1.0 (6.6)	0.0 (0.0)
GVHD Prophylaxis*:		
PtCy	0.0 (0)	15.0 (100.0)
Tacrolimus	15.0 (100.0)	15.0 (100.0)
Mycophenolate	0.0 (0)	15.0 (100.0)
Methotrexate	15.0 (100.0)	0.0 (0.0)
ATG	10.0 (66.7)	0.0 (0.0)

Data are represented by number (%)
Patients were matched by KPS score between study epochs
*Not mutually exclusive

Primary Endpoints

Figure 2: Incidence of Acute/and or Chronic GVHD Within The First 100- & 365- Days Post-Transplant

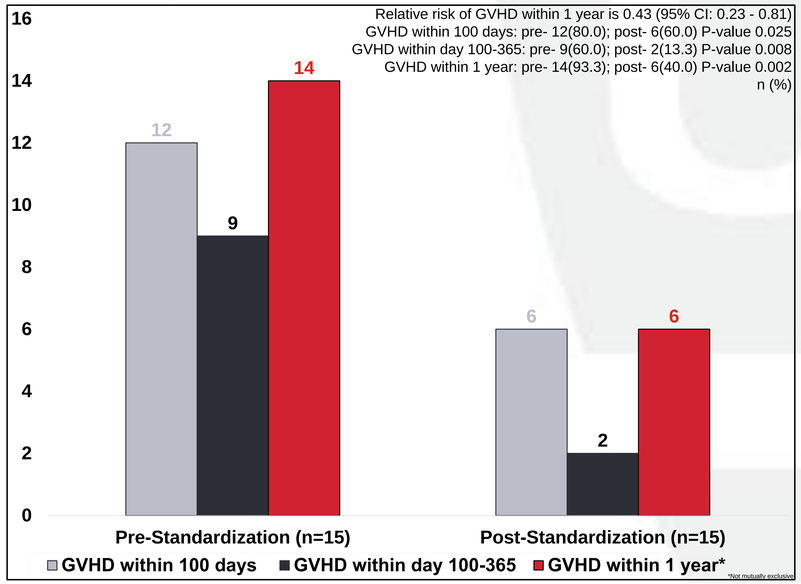
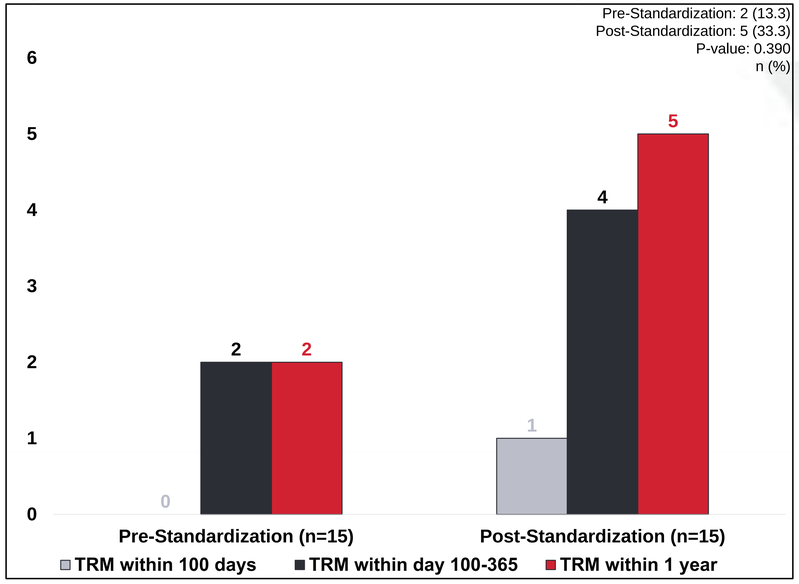


Figure 3: Incidence of TRM Within The First 100- & 365- Days Post-Transplant



Secondary Endpoints

Figure 4: Time to Neutrophil Engraftment

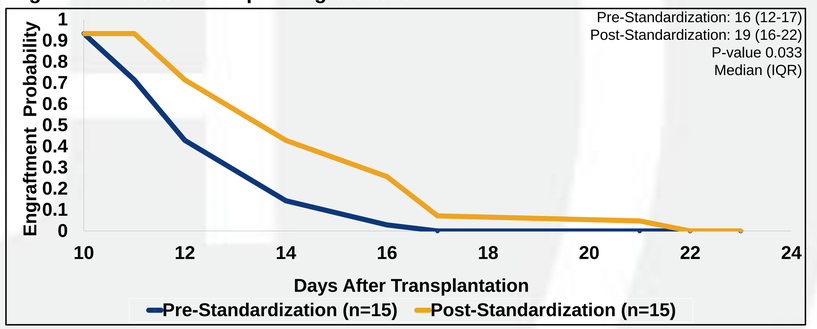


Figure 5: Incidence of Infection

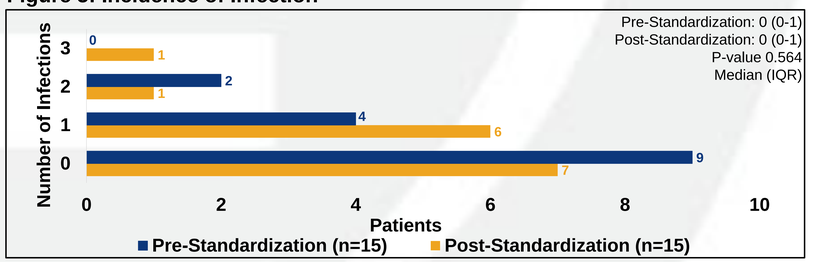
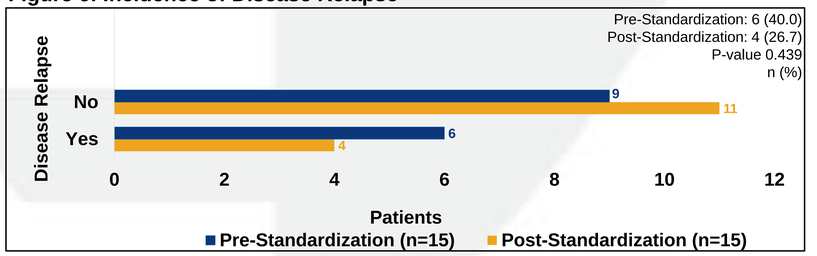


Figure 6: Incidence of Disease Relapse



Conclusion & Future Opportunities

- The post-group had significantly lower GVHD rates but higher, non-significant mortality.
- Neutrophil engraftment was prolonged in the post-group, potentially leading to increased infection rate and a higher incidence of TRM.
- Future directions could evaluate whether decreasing the PtCy dose shortens engraftment time, reduces infections, and preserves GVHD reduction.

Disclosure & References

Authors of this presentation have nothing to disclose concerning possible financial or personal relationships with commercial entities that may have a direct or indirect interest in the subject matter of this presentation.

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MAC: Myeloablative conditioning, TRM: Transplant-related mortality, RIC: Reduced intensity conditioning, PTCy: Post-transplant cyclophosphamide, allo-HSCT: Allogeneic hematopoietic stem cell transplant, GVHD: Graft-versus host disease, MRD: Match related donor, MUD: Match unrelated donor, KPS: Karnofsky performance score, AML: Acute myeloid leukemia, MDS: Myelodysplastic syndrome, SOP: Standard operating procedure, ANC: Absolute neutrophil count, TBI: Total body irradiation, ATG: Antithymocyte globulin