Fludarabine/Melphalan vs Fludarabine/Busulfan Conditioning in AML Undergoing Allogeneic HCT

AML-1080

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INTRODUCTION

Allogeneic HCT offers the best chance of durable disease control for many adults with AML, and the conditioning regimen is central to balancing anti-leukemic intensity against regimen-related toxicity.

Fludarabine/melphalan (FluMel) and fludarabine/busulfan (FluBu) are two of the most widely used reduced-toxicity platforms. FluMel is generally regarded as more intense and disease-controlling, whereas FluBu is often chosen for tolerability. Head-to-head data are limited, and their relative impact on **survival versus relapse** is not well defined.

AIM

- **Primary:** compare overall survival (OS) between FluMel and FluBu conditioning in adults with AML undergoing first allogeneic HCT.
- **Secondary:** compare relapse risk between the two regimens.
- **Hypothesis:** differences in conditioning intensity may translate into differences in relapse, and potentially survival.

METHOD

- **Design & data source:** retrospective analysis of the CIBMTR LK1601 registry dataset.
- **Population:** adults with AML undergoing first allogeneic HCT, grouped by conditioning regimen (FluMel vs FluBu).
- **Outcomes:** overall survival (primary); relapse (secondary).
- **Statistical analysis:** OS by Kaplan–Meier; regimen effects by multivariable Cox models adjusted for age group, disease status at transplant, cytogenetic risk, and donor type. HRs with 95% CIs. All analyses were performed using Stata (StataCorp).

CONCLUSIONS

- **Key finding:** FluBu and FluMel gave **similar overall survival**, but FluBu carried **substantially higher relapse risk**.
- **Interpretation:** equivalent survival despite more relapse suggests competing risks (e.g., nonrelapse mortality) may offset FluMel's disease-control edge.
- **Limitations:** registry-based, retrospective; residual confounding; baseline imbalance; relapse-time data missing for a subset.
- **Clinical implication:** individualize regimen choice (FluMel when relapse control is paramount, FluBu when tolerability matters) without expecting a survival difference.

RESULTS

Cohort & baseline: 1,413 patients (FluMel 622; FluBu 791). Groups were not identical: the FluBu arm included more patients aged ≥70 years and more transplanted beyond first remission, features generally linked to higher-risk disease.

Overall survival: after adjustment, OS did not differ between regimens (FluBu vs FluMel HR 1.01; 95% CI 0.89–1.14; P=0.917).

Relapse: among 1,372 patients with relapse-time data, FluBu was associated with significantly higher relapse risk than FluMel (HR 1.58; 95% CI 1.34–1.86; P<0.001).

1,413
patients
622 FluMel / 791 FluBu

HR 1.01
overall survival
no difference (P=0.917)

HR 1.58
relapse with FluBu
P<0.001

Figure 2. Key results: cohort size and adjusted hazard ratios for overall survival and relapse.

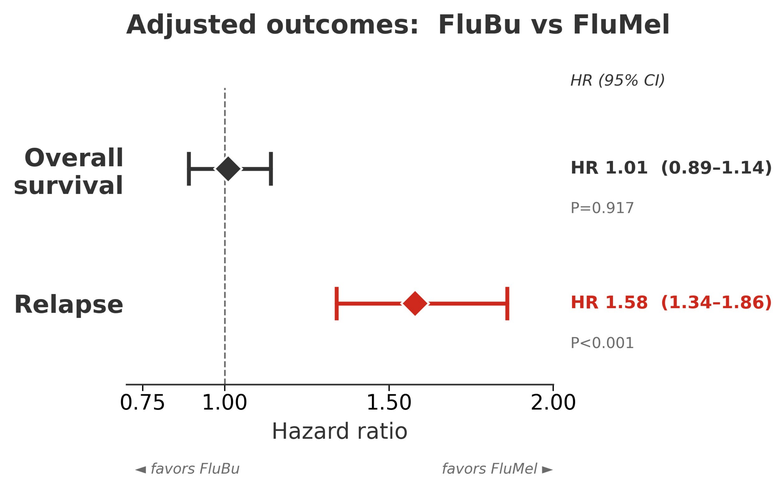
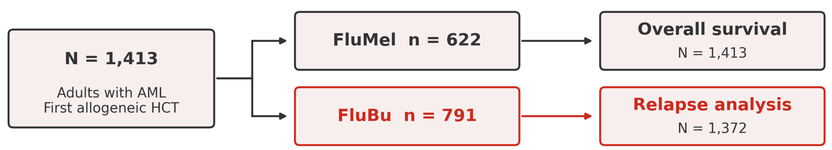


Figure 1. Cohort flow (CIBMTR LK1601)



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KEYWORDS & ABBREVIATIONS

Keywords: AML, acute myeloid leukemia, conditioning regimen, allogeneic transplantation, fludarabine/melphalan, fludarabine/busulfan, relapse.

Abbreviations: CI, confidence interval; HR, hazard ratio; OS, overall survival; HCT, hematopoietic cell transplantation.