Healthcare Resource Utilization and Costs in Patients with AML Treated with Post-Transplant Maintenance Therapy

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Rachel Kneitel, PharmD, MS[1]; Kyueun Lee, PhD[1]; Noemi Kreif, PhD[1]
1. University of Washington School of Pharmacy, CHOICE Institute

UNIVERSITY of WASHINGTON
THE CHOICE INSTITUTE
School of Pharmacy

Introduction

- Acute myeloid leukemia (AML) is the most common type of acute leukemia in adults in the US, with a 5-year relative survival of 33.4%[1]
- Nearly 20-30% of patients with AML will relapse within the first one to two years after allogeneic hematopoietic cell transplantation (allo-HCT) with a 1-year survival rate of <20%[2,3]
- Multiple randomized controlled trials and meta-analyses have shown that maintenance therapies can reduce relapse rates and improve relapse-free and overall survival in patients who harbor certain mutations[4]
- Limited published data on post-transplant healthcare resource utilization (HCRU) and costs, particularly for patients initiating maintenance therapy

Objective

- To describe HCRU and costs among commercially insured patients, Medicaid enrollees from participating US states, and Medicare-eligible beneficiaries with employer-sponsored supplemental coverage who received maintenance therapy after allo-HCT compared to those receiving allo-HCT alone.

Methods

Data source

- This is a Retrospective cohort study using the Merative MarketScan® database

Study design and cohort selection

- The study period was from October 1, 2015, to March 31, 2024
- Patients were required to have either ≥ 1 inpatient claim or ≥ 2 outpatient claims > 30 days apart with a diagnosis of AML in any position and underwent allo-HCT between May 1, 2016 to March 30, 2023, ≥ 18 years old, continuous enrollment for ≥ 6 months before allo-HCT, and 12 months after procedure

Statistical Analysis

- Inverse probability of treatment weighting (IPTW) was utilized to adjust for baseline differences between the maintenance therapy and allo-HCT only cohorts

Outcomes and measures

- All-cause HCRU and costs were captured during the follow-up period, starting from the index date until 12 months of follow-up
- HCRU was analyzed using Poisson or Negative Binomial regression models with bootstrapped 95% confidence intervals (CIs)
- Mean per patient per month (PPPM), IPTW weighted mean monthly, and cumulative costs were calculated for each cohort
- All costs were adjusted to 2024 US dollars

Results

- 373 patients were included in the study, 43 received maintenance therapy following allo-HCT and 330 only underwent allo-HCT
- Baseline characteristics are summarized in Table 1; maintenance therapy patients were numerically younger than allo-HCT only patients (median, 49.0 vs 53.0 years) and lower median weighted CCI score (2.0 vs 3.0)

Table 1: Baseline Characteristics (Unweighted)

	Allo-HCT Only (N=330)	Maintenance Therapy (N=43)
Demographics		
Age in years at index, Median (IQR)	53.0 (43.0 – 61.0)	49.0 (39.5 – 56.0)
Sex, n (%)		
Female	147 (44.5%)	18 (41.9%)
Male	183 (55.5%)	25 (58.1%)
Insurance Plan, n (%)		
Commercial	211 (63.9%)	31 (72.1%)
Medicaid	97 (29.4%)	11 (25.6%)
Medicare supplemental	22 (6.7%)	*
Clinical Characteristics		
Myelodysplastic Syndrome, n (%)	24 (7.3%)	7 (16.3%)
Days to Transplant from Diagnosis Median (IQR)	120.5 (78.2 – 171.2)	105.0 (76.0 – 157.0)
Weighted CCI Median (IQR)	3.0 (2.0 – 4.0)	2.0 (2.0 – 3.0)
Treatment Characteristics		
Days to Maintenance Therapy Median (IQR)	–	244.0 (108.0 – 343.0)

* Denotes patient counts of <5; CCI: Charlson Comorbidity Index, IQR: Interquartile Range

Maintenance Therapy Utilization

- Median time from allo-HCT to first maintenance therapy fill was 244 days (IQR: 108 - 343 days)
- Median treatment duration from first to last fill was 59 days (IQR: 0 - 259 days)
- Venetoclax was the most prescribed agent (n = 24, 55.8%) followed by sorafenib (n = 9, 20.9%), gilteritinib (n = 6, 14.0%)

All-Cause HCRU

- Weighted mean length of stay was significantly longer in the allo-HCT only cohort compared to the maintenance therapy group (26.53 [SE 1.29] vs. 21.40 [SE 1.21] days, respectively), with a mean difference of -5.13 days (95% CI: -8.60, -1.65; p = 0.004)
- Maintenance therapy cohort had significantly higher rate of office (IRR = 3.23, p = 0.004) and outpatient visits (IRR = 4.26, p < 0.001)

Table 2: Poisson and Negative Binomial Regression Model

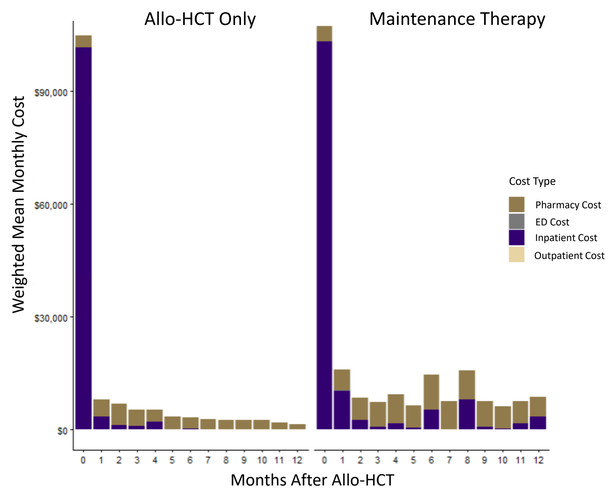
Type of HCRU	Incident Rate Ratio (IRR)	P-value
IP Admission	1.34	0.034
Outpatient	4.26	< 0.001
Specialist Visit	3.03	0.060
Office	3.23	0.004
ED	1.51	0.483

ED: emergency department; Reference group for treatment is Allo-HCT only

All-Cause Costs

- Pharmacy costs make up the largest portion of monthly healthcare expenditures in both cohorts
- In the transplant month, inpatient (IP) costs accounted for 97% and 96% of total costs in allo-HCT only and maintenance therapy cohorts, respectively
- From first month after allo-HCT onward, pharmacy costs comprise 57 - 99% and 34 - 98% of total monthly costs in allo-HCT and maintenance therapy groups, respectively

Figure 1: Weighted Mean Monthly Health Care Costs



PPPM Costs

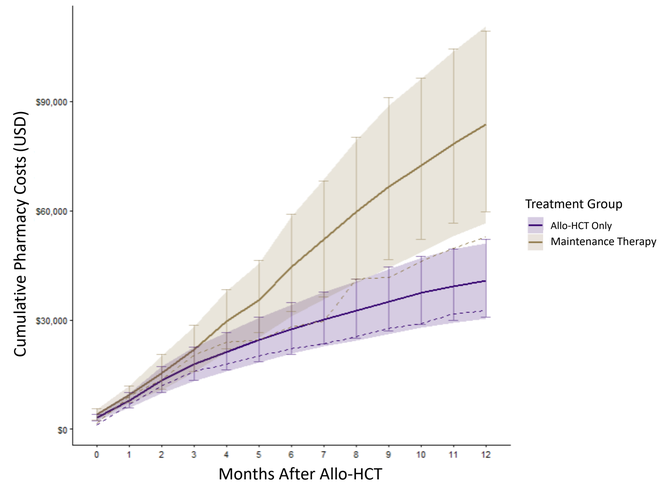
- Weighted mean PPPM pharmacy costs were higher in maintenance therapy cohort ($6,433.81 vs $3,132.51, p = 0.002)
- Maintenance therapy group also had higher total healthcare PPPM costs ($17,137.09 vs $11,613.85, p = 0.054), though differences did not reach statistical significance

Table 3. Weighted PPPM Costs

Cost Type	Allo-HCT Only (n = 330) Mean (SE)	Maintenance Therapy (n = 43) Mean (SE)	Δ Mean Difference	95% Confidence Interval	P-value
Pharmacy	3,132.51 (406.14)	6,433.81 (1,049.17)	3,301.30	(1,451.18, 5,875.89)	0.002
Inpatient	8,471.14 (1,288.75)	10,687.84 (1,982.93)	2,216.70	(-2,188.67, 7,560.15)	0.394
Outpatient	8.07 (4.83)	13.81 (7.62)	5.75	(-14.47, 22.04)	0.542
ED	3.10 (1.10)	9.11 (4.93)	6.01	(-1.76, 17.20)	0.222
Total	11,613.85 (1,421.29)	17,137.09 (2,577.27)	5,523.24	(188.00, 11,603.69)	0.054

ED: emergency department; SE: standard error

Figure 2: Cumulative Pharmacy Costs



Solid lines represent weighted mean cumulative costs; dashed lines represent weighted median cumulative costs
Shaded regions indicate bootstrapped 95% CIs

Key Takeaways:

- Higher HCRU across multiple service types, including outpatient visits and inpatient admission, among maintenance therapy cohort
- Maintenance therapy cohort experienced significantly higher weighted mean PPPM pharmacy costs
- Mean length of stay was significantly shorter in maintenance therapy cohort, suggesting hospitalizations may have been less resource-intensive
- Increased care needs may not translate into proportionally higher overall economic burden

Limitations

- Unable to capture key clinical indicators that may influence decision to initiate maintenance therapy
- 12-month follow-up period limits ability to capture full extend of HCRU and costs associated with maintenance therapy

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