Poster ALL - 221

Healthcare Resource Use and Economic Burden of B-cell Acute Lymphoblastic Leukaemia for Patients in the US

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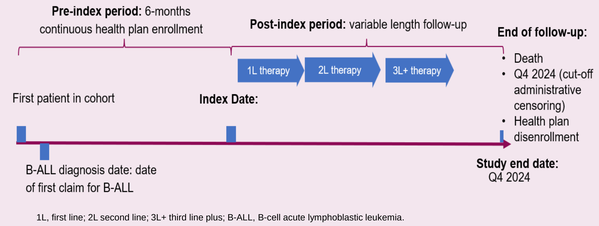
Introduction

- In 2026, an estimated 6,250 new cases of acute lymphoblastic leukemia (ALL) and 1,600 associated deaths are expected in the United States (US).[1]
- ALL of B-cell lineage (B-ALL) represents 75% of ALL cases, and is an aggressive hematologic malignancy characterized by the overproduction of immature B-lymphocytes in the bone marrow, peripheral blood, and extramedullary sites. B-ALL presents a significant economic burden on patients and payer, especially in relapsed or refractory cases requiring advanced therapies.[2,3]
- Advanced therapies (blinatumomab and chimeric antigen receptor T-cell therapy [CAR-T]) carry high acquisition/administration costs requiring intensive care.[4]
- Prior studies are limited by paediatric-focus, pre-CAR-T, and/or non-US data.[5-8]
- This study quantifies all-cause and B-ALL–attributed healthcare resource utilization (HCRU) and costs by therapy class from a U.S. payer perspective.

Methods

- This is an observational, retrospective study using IQVIA PharMetrics Plus with mortality linked ambulatory electronic medical records.
- Adults ≥18 years with B-ALL and ≥1 claim for a National Comprehensive Cancer Network recommended first-line (1L) therapy between 01Jan2015 and 31Dec 2024 were included in this study. (Figure 1)
- The index date was the earliest claim date for 1L B-ALL treatment; continuous health insurance enrolment ≥6 months (with ≤30day allowed gap) pre-index (defined as the baseline period) was required.
- Follow-up continued until death, disenrollment, or 31Dec2024.
- Outcomes included all-cause and B-ALL–attributed HCRU and costs, measured per patient per month (PPPM) overall and by therapy class, with PPPM estimates calculated on treatment, treatment periods defined as 30-day intervals from each treatment claim date, and costs adjusted for inflation to 2024 US dollars.

Figure 1. Study design



1L, first line; 2L second line; 3L+ third line plus; B-ALL, B-cell acute lymphoblastic leukemia.

Objective

- This study quantifies all-cause and B-ALL–attributed healthcare resource utilization (HCRU) and costs by therapy class from a U.S. payer perspective.

Conclusions

- Adult US-based patients with B-ALL experience substantial and sustained economic burden following treatment initiation, with higher HCRU and costs driven primarily by medication, particularly advanced targeted therapies.
- Quantified, medication-driven costs following initiation give payers and providers actionable inputs for budget forecasting, and establish benchmarks to support value assessments for advanced therapies.
- Future research should stratify by treatment line and clinical risk, incorporate episode-based cost attribution, and include outcomes adjusted evaluations to inform value.

Plain language summary

Why did we perform this research?
We performed this research to better understand healthcare use and costs for adults with B-ALL after treatment initiation, and to compare these outcomes across therapy classes from a U.S. payer perspective.

How did we perform this research?
We analyzed medical and pharmacy claims data from the IQVIA PharMetrics database. The study included 1,324 adults with B-ALL. We examined all-cause and B-ALL-attributed healthcare resource utilization and costs before and after treatment initiation and compared results across treatment classes.

What were the findings of this research?
Adults with B-ALL had greater healthcare utilization and costs after treatment initiation compared with baseline. The largest increases were observed in outpatient care and medication use. Medication costs were the primary contributor to total costs, particularly for advanced targeted therapies such as blinatumomab and inotuzumab.

What are the implications of this research?
These findings may help payers and providers with budget planning, provide benchmarks for value assessment, and support decision-making about the use of advanced therapies in B-ALL.

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Results

- A total of **1,324 adults with B-ALL** were included in this study: Mean age **46.5 years old**, **55.2% male**, 90.4% were commercially insured. Median follow-up: 17.9 months (IQR 7.0-35.9) (Table 1).
- **Chemotherapy/rituximab** was used by **88.1%**, TKIs by 35.2%, blinatumomab by 18.0%, inotuzumab by 4.6%, and CAR-T by 0.23% of patients. **Blinatumomab increased from 6.0%** in the period 2015-2018 to **20.6%** usage in the period **2023-2024**.
- Median (IQR) **all-cause HCRU rose from baseline to follow-up**: inpatient admissions 0.17 to 0.21 PPPM, outpatient visits 1.00 to 3.53 PPPM, medication claims 1.66 to 5.73 PPPM. Median **total all-cause costs increased from $5,658 to $9,384. (Table 2)**
- **Median total treatment costs median PPPM** ranged from **$1,186 for CAR-T**, (N=3) to **$83,864 for blinatumomab** (N=238). Medication costs were the primary driver: median PPPM $442 for CAR-T and $56,041 for blinatumomab (Table 4).
- **B-ALL-attributed HCRU and costs** showed similar patterns to all-cause HCRU: **Median PPPM $1,058 for CAR-T** and **$83,475 for blinatumomab** (Tables 5 and 6).

Table 1. Patient Demographic and Clinical Characteristics at Index

Variable		Value
Overall, N	B-ALL Patients	**1,324**
Sex, n (%)	Male	731 (55.21)
Age, years	Mean (SD)	**46.54** (17.01)
Age groups, n (%)	18-39	479 (36.18)
	40-64	664 (50.15)
	65+	181 (13.67)
Region, n (%)	South	**438 (33.08)**
	Midwest	408 (30.82)
	West	260 (19.64)
	Northeast	208 (15.71)
	Unknown/missing	10 (0.76)
Payer, n (%)	Commercial	**1,197 (90.41)**
	Medicare	117 (8.84)
	Others	8 (0.60)
	Unknown/missing	2 (0.15)
CCI	Median (IQR)	2 (2-4)
Months of patient follow up	Median (IQR)	**17.91 (7-35.93)**

B-ALL, B-cell acute lymphoblastic leukemia; CCI, Charlson Comorbidity Index; IQR, interquartile range; SD, standard deviation.

Table 2. All-cause HCRU[1] and Health Care Costs[2]

HCRU	Baseline	Follow up
Months, mean (SD)	6 (0.04)	24.96 (23.16)
Inpatient visits		
Median (IQR)	0.17 (0.17-0.33)	0.21 (0.06-0.52)
Outpatient visits		
Median (IQR)	1 (0.50-2.01)	3.53 (2.05-5.44)
Medication claims[3]		
Median (IQR)	1.66 (0.50-3.47)	5.73 (2.72-9.94)
Health Care Costs		
Total costs		
Median (IQR)	5,658.38 (0-22,521.92)	9,383.56 (179.37-32,353.06)

[1]HCRU: health care resource utilization; shown here as per patient per month.
[2]Health care costs are shown here as per patient per month and adjusted for inflation to the 2024 US dollar.
[3]Medication claims include claims for all medications, regardless of the location for where it was dispensed.
IQR, interquartile range; HCRU, healthcare resource utilization; SD, standard deviation.

Table 3. All-cause HCRU[1] by Therapy During Follow up

Variable	Blinatumomab	Chemo/ rituximab	TKIs	Inotuzumab	CAR-T
N	238	1166	466	61	3
Months on treatment, Mean (SD)	3.53 (2.45)	8.36 (9.53)	13.15 (14.38)	2.09 (1.18)	0.99 (0)
Inpatient visits					
Median (IQR)	0.49 (0.14-0.78)	0.48 (0.11-1.01)	0.34 (0.08-0.81)	0.53 (0-0.90)	0
Outpatient visits					
Median (IQR)	5.45 (3.67-7.61)	5.37 (3.36-7.61)	3.79 (2.26-5.45)	6.09 (4.26-7.40)	14.20 (12.18-16.23)
ED visits					
Median (IQR)	0 (0-0)	0 (0-0)	0 (0-0.05)	0 (0-0)	0
Medication claims[2]					
Median (IQR)	9.24 (5.81-14.33)	8.18 (4.53-12.25)	9.15 (5.54-12.36)	9.08 (4.45-12.35)	6.09 (4.06-19.78)

[1]HCRU: health care resource utilization; shown here as per patient per month on treatment. Treatment periods are 30-day intervals from each treatment claim date.
[2]Medication claims include claims for all medications, regardless of the location for where it was dispensed.
B-ALL, B-cell acute lymphoblastic leukemia; CAR-T, chimeric antigen receptor T-cell; ED, emergency department; IQR, interquartile range; HCRU, healthcare resource utilization; N, number of patients; SD, standard deviation.

Table 4. All-cause Health Care Costs[1] by Therapy During Follow up

Variable	Blinatumomab	Chemo/ rituximab	TKIs	Inotuzumab	CAR-T
N	238	1166	466	61	3
Inpatient visits					
Median (IQR)	1,373 (0-25,695)	748 (0-18,101)	1,002 (0-15,192)	0 (0-21,973)	0
Outpatient visits					
Median (IQR)	3,642 (175-9,968)	3,101 (0-9,883)	1,135 (0-4,918)	1,971 (0-12,806)	744 (372-12,559)
ED visits					
Median (IQR)	0 (0-0)	0 (0-0)	0 (0-10)	0 (0-0)	0
Medication claims[2]					
Median (IQR)	56,041 (1,292-99,790)	1,812 (0-13,806)	4,813 (0-19,383)	17,663 (0-54,700)	442 (221-1,750,810)
Total costs					
Median (IQR)	83,864 (4,178-145,786)	15,317 (0-52,408)	18,222 (268-45,113)	39,575 (10-130,656)	1,186 (593-1,763,369)

[1]Health care costs are shown here as per patient per month on treatment and adjusted for inflation to the 2024 US dollar. Treatment periods are 30-day intervals from each treatment claim date.
[2]Medication claims include claims for all medications, regardless of the location for where it was dispensed.
B-ALL, B-cell acute lymphoblastic leukemia; CAR-T, chimeric antigen receptor T-cell; ED, emergency department; IQR, interquartile range; N, number of patients; SD, standard deviation.

Table 5. B-ALL Related[1] HCRU[2] by Type of Therapy During Follow up

Variable	Blinatumomab	Chemo/ rituximab	TKIs	Inotuzumab	CAR-T
N	238	1166	466	61	3
Months on treatment, Mean (SD)	3.53 (2.45)	8.36 (9.53)	13.15 (14.38)	2.09 (1.18)	0.99 (0)
Inpatient visits					
Median (IQR)	0.45 (0.14-0.75)	0.39 (0-0.91)	0.31 (0.03-0.76)	0.53 (0-0.86)	0
Outpatient visits					
Median (IQR)	4.64 (3.29-6.17)	4.05 (2.03-6.30)	2.52 (1.01-4.17)	5.07 (3.94-7.02)	14.20 (11.16-15.73)
ED visits					
Median (IQR)	0 (0-0)	0 (0-0)	0 (0-0)	0 (0-0)	0
Medication claims[3]					
Median (IQR)	4.24 (2.92-6.18)	2.92 (1.90-4.35)	2.03 (1.40-3.18)	2.95 (2.08-3.54)	1.01 (1.01-4.57)

[1]A medical service claim is considered B-ALL-related if it is linked to a diagnosis of B-ALL in any position. Pharmacy and medication claims are B-ALL related if they are B-ALL specific drugs as outlined in the NCCN guideline.
[2]HCRU: health care resource utilization; shown here as per patient per month on treatment. Treatment periods are 30-day intervals from each treatment claim date.
[3]Medication claims include claims for all medications, regardless of the location for where it was dispensed.
B-ALL, B-cell acute lymphoblastic leukemia; CAR-T, chimeric antigen receptor T-cell; ED, emergency department; HCRU, healthcare resource utilization; IQR, interquartile range; N, number of patients; SD, standard deviation.

Table 6. B-ALL Related[1] Health Care Costs[2] by Type of Therapy During Follow up

Variable	Blinatumomab	Chemo/ rituximab	TKIs	Inotuzumab	CAR-T
N	238	1166	466	61	3
Inpatient visits					
Median (IQR)	1,373 (0-25,083)	158 (0-15,157)	479 (0-14,934)	0 (0-21,973)	0
Outpatient visits					
Median (IQR)	3,143 (15-8,807)	1,780 (0-8,351)	576 (0-4,014)	1,971 (0-10,057)	744 (372-12,541)
ED visits					
Median (IQR)	0 (0-0)	0 (0-0)	0 (0-0)	0 (0-0)	0
Medication claims[3]					
Median (IQR)	56,007 (115-97,868)	138 (0-9,037)	2,093 (0-16,589)	16,910 (0-54,336)	314 (157-1,750,673)
Total costs					
Median (IQR)	83,475 (4,047-144,660)	10,860 (0-45,386)	14,952 (0-39,548)	38,822 (0-111,759)	1,058 (529-1,763,214)

[1]A medical service claim is considered B-ALL-related if it is linked to a diagnosis of B-ALL in any position. Pharmacy and medication claims are B-ALL related if they are B-ALL specific drugs as outlined in the NCCN guideline.
[2]Health care costs are shown here as per patient per month on treatment and adjusted for inflation to the 2024 US dollar. Treatment periods are 30-day intervals from each treatment claim date.
[3]Medication claims include claims for all medications, regardless of the location for where it was dispensed.
B-ALL, B-cell acute lymphoblastic leukemia; CAR-T, chimeric antigen receptor T-cell; ED, emergency department; IQR, interquartile range; N, number of patients; SD, standard deviation.

Key Takeaways

- Adult patients with B-ALL experience substantially higher HCRU and costs after treatment initiation versus baseline, with the largest increases coming from outpatient care and medication spending; inpatient use remains common across therapies, while ED use is relatively low and tends to decline.
- Targeted immunotherapies, especially blinatumomab and inotuzumab, are associated with the highest on-treatment PPPM costs, driven mainly by drug payments plus considerable inpatient and outpatient resource use; CAR-T is associated with high and variable costs; however, these findings should be interpreted with caution due to the small sample size.
- Chemo/rituximab and TKIs have lower PPPM costs than targeted immunotherapies. Over time, blinatumomab use increased, consistent with evolving practice patterns, while hematopoietic cell transplantation use remained relatively stable at low annual levels.

Study Limitations

- Attribution of costs and utilization to specific therapies or disease episodes is imperfect; coding variability, limited clinical detail, payer mix, and small sample sizes, especially for CAR-T, limit generalizability. The follow up period could be considered short given the long-term treatment timings for B-ALL.
- Results are descriptive and not adjusted for line of therapy, disease risk, or confounding.

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