

Real-World Treatment Patterns of Large B-Cell Lymphoma Patients Over Time in a Post-CAR T Approval Era

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BACKGROUND

Since 2017, chimeric antigen receptor T-cell (CAR T) therapy has been a standard of care therapy for patients with large B-cell lymphoma (LBCL) who relapsed after 2 or more lines of therapy based on pivotal single-arm trials. In 2022, the CAR T indication was expanded to patients relapsing within 12 months of first-line (1L) therapy based on phase 3 randomized trials.^{1,2} Though CAR T has a category 1 recommendation in the NCCN guidelines,³ uptake has been slower than anticipated.

OBJECTIVE

To examine real-world treatment patterns for patients with LBCL in the US after anti-CD19 CAR T approval.

METHODS

- **Study design:** retrospective observational study
- **Data source:** the Flatiron Health deidentified database ^{4,5*}
- **Patient eligibility:** We analyzed data in 2 cohorts based on the dates of FDA indication approvals for CAR T
- Cohort 1: second-line (2L) treatments were assessed for patients eligible for 2L CAR T therapy if they received 1L chemotherapy+anti-CD-20 treatment and an NCCN guideline-concordant 2L therapy within 12 months of 1L between January 2022 and April 2024
- Cohort 2: third-line (3L) treatments were assessed for patients eligible for 3L CAR T therapy between January 2018 and December 2021, before 2L approval
- Patients who received 2L or 3L bridging therapy lasting <60 days followed by CAR T therapy were included in cohort 1 and cohort 2, respectively
- Within both cohorts, patients were stratified into CAR T fitness categories based on age and Eastern Cooperative Oncology Group (ECOG) score:
- Clearly fit: ≤82 & ECOG 0/1 or ≤65 & ECOG 2
- Borderline fit: 65-82 & ECOG 2
- Unfit: >82 & ECOG 2 or any age & ECOG>2
- **Characteristics:** age at eligibility, race, ECOG status at eligibility, socioeconomic status (SES) index, practice type, disease characteristics
- **Statistical analyses:** descriptive statistics (frequencies and percentages)

DISCLOSURES

This study was funded by Kite, a Gilead Company, Santa Monica, CA, USA.

*US-based, longitudinal, electronic health record-derived database comprised of patient-level data originated from ~280 US cancer clinics (~800 sites of care; primarily community oncology settings) and curated via technology-enabled abstraction.

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RESULTS

- 205 patients with LBCL met eligibility criteria for 2L CAR T therapy (**Table 1**) - 128 (62.4%) were deemed clearly fit for CAR T therapy, with ECOG 0 in 43 (34%), ECOG 1 in 78 (64%) and ECOG 2 in 7 (5.5%)
- Numerically lower proportions of Black patients (vs. non-Black) and patients with a stage IV (vs. stage I-III) diagnosis met CAR T fitness criteria
- 304 patients with LBCL met eligibility criteria for 3L CAR T therapy - 182 (59.9%) were clearly fit for CAR T with ECOG 0 in 83 (46%), ECOG 1 in 88 (48%), and ECOG 2 in 11 (6.0%)

Table 1. Demographic and Clinical Characteristics of Patients by Treatment Line and Fitness for CAR T Therapy

	2L CAR T Eligible (1/2022-4/2024) N = 205				3L CAR T Eligible (1/2018-12/2021) N = 304			
Characteristic	Clearly Fit for CAR T, N = 128	Borderline Fit for CAR T, N = 15	ECOG Missing, N = 59	Unfit for CAR T, N = 3	Clearly Fit for CAR T, N = 182	Borderline Fit for CAR T, N = 16	ECOG Missing, N = 103	Unfit for CAR T, N = 3
Age at Eligibility (continuous) (median, IQR)	61 (53-70)	75 (72-80)	67 (60-75)	85 (84-85)	65 (56-74)	73 (70-80)	63 (53-71)	83 (83-84)
Age at Eligibility (categorical), n (%)								
≤49 years	27 (21)	0 (0)	7 (12)	≤5	21 (12)	0 (0)	18 (17)	≤5
50-64 years	48 (38)	0 (0)	16 (27)	≤5	68 (37)	0 (0)	35 (34)	≤5
65-74 years	35 (27)	6 (40)	21 (36)	≤5	49 (27)	10 (63)	36 (35)	≤5
75+ years	18 (14)	9 (60)	15 (26)	≤5	44 (24)	6 (38)	14 (14)	≤5
Race, n (%)								
White	86 (67)	9 (60)	39 (66)	≤5	133 (73)	12 (75)	75 (73)	≤5
Black or African American	7 (5)	≤5	6 (10)	≤5	17 (9)	≤5	12 (12)	≤5
Asian	5 (4)	≤5	≤5	≤5	≤5	≤5	≤5	≤5
Other	13 (10)	≤5	≤5	≤5	14 (8)	≤5	≤5	≤5
Unknown/not documented	17 (13)	≤5	8 (14)	≤5	15 (8)	≤5	10 (10)	≤5
SES Index ^a , n (%)								
1 - Lowest SES	15 (12)	≤5	≤10	≤5	18 (9.9)	≤5	14 (14)	≤5
2	22 (17)	≤5	12 (20)	≤5	28 (15)	≤5	17 (17)	≤5
3	22 (17)	≤5	10 (17)	≤5	29 (16)	≤5	21 (20)	≤5
4	37 (29)	≤5	17 (29)	≤5	49 (27)	≤5	23 (22)	≤5
5 - Highest SES	25 (20)	≤5	10 (17)	≤5	40 (22)	≤5	18 (17)	≤5
Unknown	7 (6)	0 (0)	≤5	≤5	18 (10)	≤5	10 (10)	≤5
Practice Type, n (%)								
Academic	43 (34)	≤5	29 (49)	≤5	46 (25)	≤5	53 (51)	≤5
Academic and Community	10 (8)	≤5	0 (0)	≤5	18 (10)	≤5	5 (4.9)	≤5
Community	75 (59)	6 (40)	30 (51)	≤5	118 (65)	13 (81)	45 (44)	≤5
Stage at Diagnosis, n (%)								
Ι	8 (6)	1 (7)	1 (2)	0 (0)	6 (3)	0 (0)	4 (4)	2 (67)
II	21 (16)	0 (0)	7 (12)	0 (0)	13 (7)	1 (6)	12 (12)	0 (0)
	23 (18)	2 (13)	6 (10)	0 (0)	44 (24)	7 (44)	16 (16)	1 (33)
IV	43 (34)	7 (47)	27 (46)	2 (67)	83 (46)	5 (31)	39 (38)	0 (0)
Unknown/not documented	33 (26)	5 (33)	18 (31)	1 (33)	36 (20)	3 (19)	32 (31)	0 (0)
Double- or Triple-Hit Status, n (%)								
Triple-hit ^b	4 (3)	0 (0)	3 (5)	0 (0)	5 (3)	1 (6)	3 (3)	1 (33)
Double-hit ^c	11 (9)	1 (7)	8 (14)	0 (0)	14 (8)	1 (6)	10 (10)	0 (0)

Note: values of ≤ 5 have been masked to preserve patient privacy. ^aSES index quintile for a patient's residential block group based on 2015-2019 Census data.

^bMYC rearrangement with both BCL2 and BCL6.

^cMYC rearrangement with BCL2 or BCL6.

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CONCLUSIONS

- curative intent treatments

- community setting systems to address the current gap in CAR T access

LIMITATIONS

- included, which may also under capture CAR T-eligible patients

Figure 1. Treatment Patterns for 2L CAR T-Eligible Patients (1/2022-4/2024)

,	 Treatment patterns for 2L CAR T eligible patients stratified by CAR T fitness are shown in Figure 1 1 in 4 patients clearly fit for 2L CAR T received CAR T in the 2L setting Novel therapies (n = 31; 25.0%) received by patients included polatuzumab, loncastuximab, tafasitimab, or bispecific antibody-based therapies
	 Conventional 2L salvage therapy with R-ICE/R-DHAP was used in only 9.4% (n=12) of clearly fit patients

	 Treatment patterns for 3L CAR T eligible patients
ару	stratified by CAR T fitness are shown in Figure 2
	 Among patients clearly fit for 3L CAR T,
	treatment patterns in the 3L setting were similar
	to the patterns observed in the 2L setting, with
	35% (n=65) receiving CAR T
	 Nearly a third of all 3L patients were missing
	ECOG scores, with median age and CAR T
	uptake among these patients more similar to
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• Despite the NCCN category 1 recommendation for CAR T therapy use in 2L, a large proportion of potentially eligible and otherwise fit patients are not receiving CAR T, and are instead receiving non-

 Only a minority of 3L patients who were clearly fit to receive CAR T actually received CAR T • This study highlights a lack of uptake of CAR T among a cohort predominantly treated in the

• Further efforts are needed to improve earlier patient identification, logistical support, and referral

• The 2L CAR T-eligible cohort may be under captured as patients who initiated 1L on/after 2/2023 did not meet criteria for study inclusion; however, overall treatment rate was not a study objective • Patients referred outside of the Flatiron Health network without supporting documentation were also not