Poster 473

Time to CAR T infusion in local versus distant treatment centers

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BACKGROUND

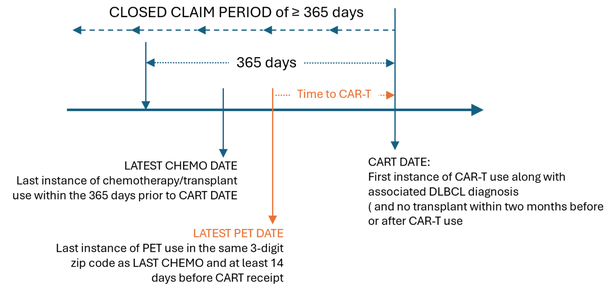
- Accessibility of CAR T (Chimeric Antigen Receptor T-cell) therapy for cancer patients in the United States faces several significant challenges, including logistical complexities, regulatory hurdles, and disparities in healthcare access.[1,2]
- One critical challenge is the limited locations where CAR T therapies are offered.[1]
- Due to adverse effect management concerns, CAR T offerings were historically restricted to specialized centers, although these offerings have grown with more experience with the therapy and advances in safety management.[3]
- Nevertheless, CAR T requires highly specialized facilities and trained personnel, unavailable in all medical centers.

OBJECTIVES

This study aims to determine whether the time between the latest positron emission tomography (PET) scan and receiving CAR T therapy among patients diagnosed with diffuse large B-cell lymphoma (DLBCL) differs if patients access CAR T therapy in different versus the same 3-digit zip-code tabulation areas (ZCTA) as their PET provider.

METHODS

- Komodo Healthcare Map (KHM) research network closed claims across the entire Healthcare Map, representing ~330m patient lives (Jan 2018 - March 2024) in the United States.
- KHM has proprietary partnerships with over 150 key national, private, and government consortiums.
- Date of latest PET use in the same zip code as last chemo/transplant was selected as the index date for estimating delays in CAR T therapy receipt



Define Time to CAR T = CAR T DATE – PET DATE

STATISTICAL ANALYSIS* Categorized as two exposure groups:

1. CONCORDANT GROUP: whose 3-digit ZCTA, associated with facility or billing NPIs, is the same for the PET versus CAR T, and
2. DISCORDANT GROUP: whose 3-digit ZCTA, associated with facility or billing NPIs, is different for the PET versus CAR T visit.

PRIMARY ANALYSIS: Compare the mean duration (days) between the receipt of the last PET and CAR T across the two exposure groups (DISCORDANT – CONCORDANT) after adjusting for baseline demographics (Age at PET DATE, biological sex, year of CAR T infusion, comorbidities, and insurance).

Hypothesis: Significantly differences in time favoring the CONCORDANT GROUP

SECONDARY ANALYSIS: Compare the 25th, 50th, 75th, and 95th percentile of duration (days) between receiving the last PET and CAR T across the two exposure groups (DISCORDANT – CONCORDANT) after adjusting for the same baseline covariates.

Hypothesis: Significant differences in time favoring the CONCORDANT GROUP, especially at the higher percentile of the time distribution (reflecting healthier patients who can wait longer for treatment)

**Results were updated since the abstract to incorporate PET.*

RESULTS

Table 1. Inclusion / Exclusion Criteria Sample Attrition

Criteria	Excluded	Sample Size
Patients ever using CAR T-associated DLBCL diagnosis (through March 2024) (First receipt – CAR T DATE)		7,158
Year of CAR T ≥ 2019	529	6,629
These patients ever belong to any CLOSED enrollment spell	3,278	3,351
CAR T DATE falls within a closed spell of enrollment	1,176	2,175
Fully enrolled during 365+ days before CAR T DATE AND 60+ days after CAR T DATE	550	1,625
No transplant within 2 months before or after CAR T DATE	108	1,517
Ever used Chemotherapy or Transplant	10	1,507
LATEST Chemotherapy/transplant date (CHEMO DATE) before the last 30 & within the last 365 days of CAR T DATE	139	1,368
No Chemo-associated NPI or NPI-specific zip code	80	1,288
No CAR T-associated NPI or NPI-specific zip code	56	1,232
No PET use between CHEMO DATE and (CAR T DATE – 14 days)	289	943
No PET-associated NPI or NPI-specific zip code	4	939
No PET use is same 3-digit zip-code as last CHEMO DATE	168	771
Patient age >= 18 years at INDEX DATE	4	767

- In total, 767 patients met the full study inclusion and exclusion criteria described in **Table 1**, receiving PET in 205 ZCTAs spanning 49 states.
- There were no statistical differences in baseline demographics, 26 Elixhauser comorbidities, insurance statuses, or number of transplants between the last Chemo and CAR T between CONCORDANT (N = 512) and DISCORDANT (N = 255) groups.

Figure 1. Distribution of Time to CAR T (days), by 3-digit ZCTA Concordance

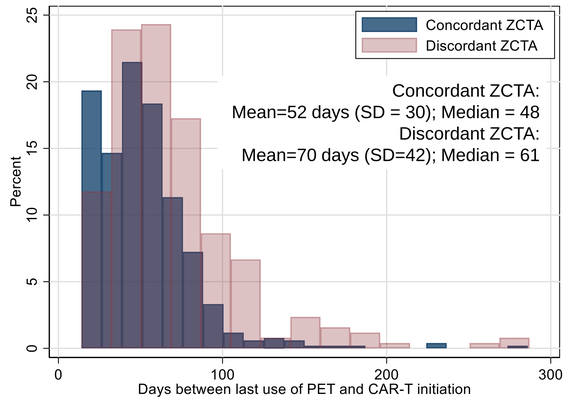


Table 2. Adjusted Estimates of Days to CAR T by Group

Adjusted Effects*	DISCORDANT – CONCORDANT Mean (Std. Error) [95% CI], in days	*p*-value
At Mean	18.2 (3.1)** [12.1, 24.3]	<0.001
At 25th percentile	11.0 (1.7)** [7.7, 14.4]	<0.001
At 50th percentile	11.8 (2.1)** [7.7, 15.8]	<0.001
At 75th percentile	17.7 (3.7)** [10.4, 25]	<0.001
At 95th percentile	47.2 (9.6)** [28.3, 66.1]	<0.001

*Adjusted for Last Therapy is Transplant, Age, Sex, Elixhauser's Comorbidities, Insurance statuses at last therapy, Month and Year Fixed Effects
**Robust standard errors.

- **Figure 1** presents the unadjusted distribution of time (days) to CAR T therapy in each group. Adjusted analyses estimate the mean time to receive CAR T increased by 18 days (std. err 3.1, $p<0.001$) for patients treated in discordant ZIP3 compared with concordant ZIP3.
- The effect grew with the time distribution, with the 95th percentile effect at 47 days (std. err 9.6, $p<0.001$) **(Table 2)**

CONCLUSIONS

- Limited access to advanced therapy such as CAR T remains a pervasive issue in the US healthcare system. This study estimates the extent of delays associated with change in ZCTA geographic location between therapies.
  - For context, the average distance between ZCTAs is 25 miles in the US, with large variations across rural areas.
- Patients with DLBCL who access CAR T therapy in locations distant from where they receive their chemotherapy or PET scans experience significant delays in receiving CAR T therapy.
- Patients with significantly longer delays (upper percentile) are likely healthier and can afford to wait for treatment access.
- These delays could lead to mortality among patients with aggressive disease biology or to suboptimal outcomes among infused patients, as a recent study suggests delays in receiving CAR T are associated with a lower rate of complete response and shorter overall survival.[4]
- Establishing close coordination between referrers and ATCs, expediting referral timing, and early awareness of patient assistance programs may alleviate delays and facilitate prompt access to life-saving treatment and improve care.

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DISCLOSURES

This project was funded by Kite, a Gilead Company. AP, HH, and CL, report employment with Kite and stock ownership in Gilead. AB worked as a consultant through Salutis Consulting LLC. MP reports honoraria from Adicet, Allogene, Allovir, Caribou Biosciences, Celgene, Bristol-Myers Squibb, Equilium, Exevir, ImmPACT Bio, Incyte, Karyopharm, Kite/Gilead, Merck, Miltenyi Biotec, MorphoSys, Nektar Therapeutics, Novartis, Omeros, OrcaBio, Sanofi, Syncopation, VectivBio AG, and Vor Biopharma; MP serves on DSMBs for Cidara Therapeutics and Sellas Life Sciences, and the scientific advisory board of NexImmune; MP has ownership interests in NexImmune, Omeros and OrcaBio, and has received institutional research support for clinical trials from Allogene, Incyte, Kite/Gilead, Miltenyi Biotec, Nektar Therapeutics, and Novartis.