Insurance Status, Neurotoxicity, and Clinical Outcomes After CAR-T Therapy in a Highly Socially Vulnerable Cohort

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INTRODUCTION

- Chimeric antigen receptor T-cell (CAR-T) therapy has transformed outcomes in relapsed or refractory hematologic malignancies.
- Despite these advances, disparities in outcomes remain a concern among socioeconomically disadvantaged populations.
- Data evaluating the impact of socioeconomic factors on **post-infusion outcomes** in socially vulnerable CAR-T populations remain limited.
- We evaluated a diverse cohort of CAR-T recipients treated at a large urban academic cancer center.

AIM

- To evaluate associations between **socioeconomic characteristics** and key clinical outcomes among patients receiving commercial CAR-T therapy.
- Outcomes of interest included **CRS, ICANS, ICU admission, treatment response, overall survival, and time from referral to infusion**.

METHODS

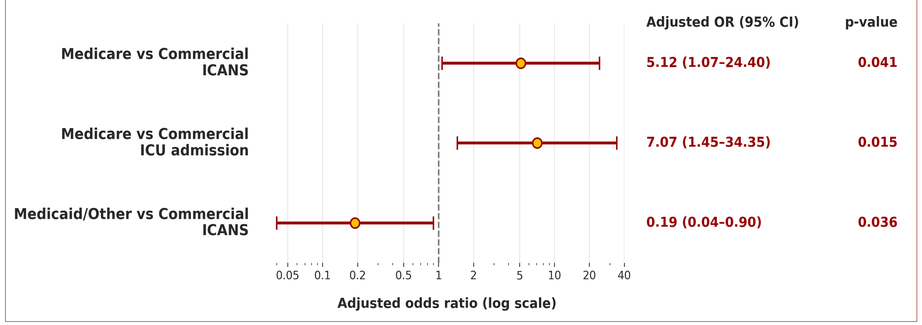
- Retrospective cohort study of **101 patients** who received commercial CAR-T therapy at **USC Norris Comprehensive Cancer Center from 2022–2025**.
- CAR-T products included **axi-cel, brexu-cel, and cilta-cel**.
- Socioeconomic variables included **race/ethnicity, insurance status, Social Vulnerability Index (SVI), primary language, and distance from the transplant center**.
- Clinical outcomes included **CRS, ICANS, ICU admission, treatment response, overall survival, and time to infusion**.
- Logistic regression was used for binary outcomes, ordinal logistic regression for toxicity grades, and Cox proportional hazards models for survival and time-to-infusion outcomes.
- Each socioeconomic variable was evaluated in a **separate multivariable model** to minimize multicollinearity.
- Models were adjusted for **age, sex, and diagnosis subtype**; statistical significance was defined as **$p < 0.05$**.

RESULTS

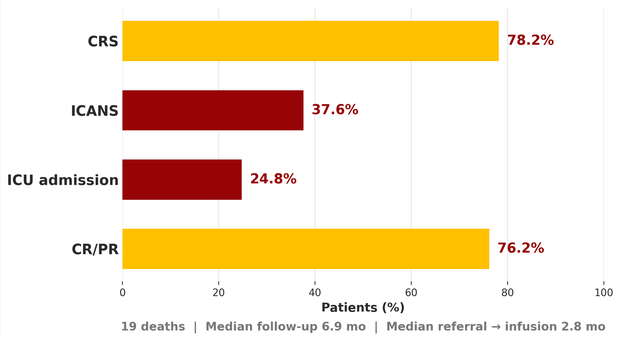
Selected Cohort Characteristics

CHARACTERISTIC	OVERALL COHORT (N = 101)
Age, median (IQR)	62 (49–70) yr
Male	64 (63.4%)
Hispanic	55 (54.5%)
Non-English primary language	43 (42.6%)
Commercial insurance	50 (49.5%)
Overall SVI, median (IQR)	93 (74–96)
Highest SVI quartile	73 (72.3%)
Distance to center, median (IQR)	22.4 (10.3–113) mi
DLBCL	44 (43.6%)
ALL	21 (20.8%)
Multiple myeloma	22 (21.8%)

Insurance Status and CAR-T Toxicity



Clinical Outcomes After CAR-T Infusion



Adjusted Socioeconomic Associations Across Outcomes

	CRS	ICANS	ICU	Response	Survival	Time to infusion
Race	NS	NS	NS	NS	NS	NS
Ethnicity	NS	NS	NS	NS	NS	NS
Insurance	NS	SIGNIFICANT	SIGNIFICANT	NS	NS	NS
Overall SVI	NS	NS	NS	NS	NS	NS
SVI Q4	NS	NS	NS	NS	NS	NS
Distance	NS	NS	NS	NS	NS	NS
Language	NS	NS	NS	NS	NS	NS

Models adjusted for age, sex, and diagnosis subtype

CONCLUSION

- In this highly socially vulnerable, predominantly Hispanic cohort of CAR-T recipients, socioeconomic factors were **not significantly associated with treatment response, overall survival, or time to infusion** after adjustment.
- **Insurance status was associated with select toxicity outcomes:** Medicare was associated with higher odds of **ICANS and ICU admission**, while Medicaid/Other insurance was associated with lower odds of ICANS compared with commercial insurance.
- Findings should be considered **hypothesis-generating** given the limited sample size, short follow-up, wide confidence intervals, and potential residual confounding.

Future Considerations

- Future studies should evaluate disparities across the **entire CAR-T care pathway—including referral, insurance authorization, leukapheresis, and infusion—to identify potential barriers that may occur before patients receive therapy.**

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