Chimeric Antigen Receptor T-Cell Therapy Treatment Patterns: A Retrospective Cohort Analysis of Relapsed or Refractory Diffuse Large B-Cell Lymphoma Patients in the US

¹Anlitiks Inc., Dover, MA; ²Kite, A Gilead Company, Santa Monica, CA; ³Wade Outcomes Research and Consulting, Salt Lake City, UT; ⁴Division of Hematology and Oncology, Thomas Jefferson University Hospital, Philadelphia, PA

BACKGROUND

- Patients with relapsed or refractory diffuse large-B-cell lymphoma (RR DLBCL) have historically had limited treatment options.
- The approval of chimeric antigen receptor T-cell (CAR T) therapy in 2017 offered a significant survival benefit for adult patients with RR large B-cell lymphoma (including DLBCL not otherwise specified, primary mediastinal large B-cell lymphoma, high grade B-cell lymphoma, DLBCL arising from follicular lymphoma) after two or more lines of systemic therapy.
- Given the adverse event (AE) profile of CAR T therapies and the need to monitor patients in the short term after CAR T infusion, these therapies have been primarily administered in the inpatient setting until recently.¹
- As clinicians are gaining increasing experience with CAR T treatment options and potential consequences of their use, anecdotal evidence suggests increased interest in outpatient CAR T therapy infusion in the future.

OBJECTIVE

• To evaluate CAR T treatment patterns, AEs, and healthcare resource utilization (HRU) by setting of CAR T infusion among RR DLBCL patients in the US using real-world data.

METHODS

• Study Design and Data Source

- A retrospective analysis of the Anlitiks All-Payor Claims (AAPC) data for services rendered from April 2017 to December 2020 was conducted.

• The database includes fully adjudicated pharmacy and medical claims of patients who are insured through Medicare, Medicaid, or commercial plans covering over 80% of the US healthcare system.

Study Population

- RR DLBCL patients (ICD-9/10-CMs 200.x, 202.8x; C83.3x, C84.6x, C84.7x, C85.2x) with a first claim (index date) for CAR T therapy (axicabtagene ciloleucel [axi-cel], tisagenlecleucel [tisa-cel], or unspecified CAR T agent) from October 2017 to September 2020, with \geq 180 days of pre-index and \geq 90 days of post-index follow-up were identified.

• Exclusion Criteria

- Patients enrolled in a clinical trial (ICD-9/10-CMs V70.7, Z00.6) \geq 45 days prior to their CAR T infusion date or \geq 15 days following their CAR T infusion date

• Study Measures and Outcomes

- Patient demographics, clinical characteristics, comorbidities, and treatment patterns including setting of CAR T infusion (inpatient/outpatient Authorized Treatment Centers), and time from leukapheresis to CAR T infusion
- Incidence of potentially CAR T-associated AEs as determined by claims data, assessed according to components of the American Society for Transplantation and Cellular Therapy (ASTCT) cytokine release syndrome (CRS) and immune effector cell associated neurotoxicity syndrome (ICANS) consensus grading scales²
- HRU (inpatient hospitalizations, emergency department [ED] visits, outpatient services, and medications for AE management) following the date of CAR T infusion

• Statistical Analysis

- Descriptive statistics were reported as frequencies and percentages for categorical variables; mean, median, and range for continuous variables (Table 1). Chi-square tests (categorical measures), t-tests, and Wilcoxon-Rank Sum tests (continuous measures) were used to assess group differences, where appropriate.
- Logistic regressions were used to identify predictors of setting of CAR T infusion. Cox proportional hazards models were used to analyze time from leukapheresis to CAR T infusion and time to potentially CAR T-associated AEs.
- Statistical analyses were performed using R and analyzed using Rapid Analyzer™ comparing the following subgroups:
- Patients receiving CAR T therapy in inpatient versus outpatient settings
- Patients with at least 1 observed AE-related claim versus those without an observed AE in the follow-up period

Roxanna Seyedin, PhD¹, Julia Thornton Snider, PhD², Krithika Rajagopalan, PhD¹, Sally West Wade, MPH³, Usama Gergis, MD MBA⁴

RESULTS

- Of the 1,175 patients with RR DLBCL treated with CAR T therapy, 82.9% were infused inpatient.
- Outpatient CAR T infusion increased slightly from 15.9% in 2017 to 18.3% in 2018, then dropped to 17.2% in 2019 and 16.1% in 2020.
- Overall, 61.5% (n=722) of patients were male, the mean age was 60.3 (±12.3) years, 46.5% (n=546) were commercially insured, 6.5% (n=77) had Medicare, 1.4% (n=16) had Medicaid, 44% (n=517) and 1.6% (n=19) had unknown and other insurance types (self-pay, other federal/non-federal programs, Title V, Veteran Affairs plans), respectively.
- While median time from leukapheresis to CAR T infusion was similar for inpatient (28 days) and outpatient (31 days) settings, it was 24 days for axi-cel (N=93) and 41 days for tisa-cel (N=53; p<0.001; tisa-cel versus axi-cel HR: 2.04, 95% CI: 1.54-2.70).

Table 1. Baseline Characteristics of DLBCL Users of CAR T Therapy,

By Observed AEs* & Setting of CAR T Infusion Inpatient CAR T Dutpatient CAR T ACART (n=974; 82.9%) (n=201; 17.1%) (N= 1,175) Observed AE No Observed AE Observed AE No Observed AE Observed AE No Observed A (n=723) (n=119)(n=333) (n=842)Age, years 60.39 (12.5) 62.69 (12.0) 60.34 (12.1) Mean (SD) 59.96 (12.1) 59.46 (13.5) 60.16 (12.7) Age, n (%) 28 (11.2%) 91 (10.8%) 18-44 82 (11.3%) 9 (7.6%) 11 (13.4%) 39 (11.7%) 17 (14.3%) 45-54 113 (13.4%) 96 (13.3%) 13 (15.9%) 37 (11.1%) 24 (9.6%) 55-64 245 (33.9%) 90 (35.9%) 27 (22.7%) 21 (25.6%) 272 (32.3%) 111 (33.3%) 65-74 246 (34.0%) 296 (35.2%) 128 (38.4%) 97 (38.6%) 50 (42.0%) 31 (37.8%) 54 (7.5%) 12 (4.8%) 16 (13.4%) 6 (7.3%) 70 (8.3%) 18 (5.4%) ≥ 75 Sex, n (%) 448 (62.0%) 157 (62.5%) 72 (60.5%) 45 (54.9%) 520 (61.8%) 202 (60.7%) Male nsurance Type, n (%) 49 (41.2%) 412 (48.9%) 134 (40.2%) 363 (50.2%) 85 (33.9%) 49 (59.8%) Commercial 22 (3.0%) 17 (6.8%) 32 (26.9%) 6 (7.3%) 54 (6.4%) Medicare[†] 23 (6.9%) 11 (1.3%) 9 (1.2%) 5 (2.0%) 2 (1.7%) 5 (1.5%) Medicaid 3 (2.5%) 33 (27.7%) Other[‡] 12 (1.7%) 1 (1.2%) 15 (1.8%) 4 (1.2%) 3 (1.2%) 350 (41.6%) Unknown 317 (43.8%) 141 (56.2%) 26 (31.7%) 167 (50.2%) Setting of CAR T-cell Infusion, n (%) 723 (85.9%) 251 (75.4%) 723 (100%) 251 (100%) . Dutpatient 119 (100%) 82 (100%) 119 (14.1%) 82 (24.6%) Number of Elixhauser Comorbidities[§], n (%) *Includes inpatient admission (ICU stay & non-ICU), ED visits, outpatient services (procedures/diagnostics, office visits, outpatient 1.73 (2.03) Mean (SD) 1.75 (2.06) 1.97 (2.32) 1.59 (1.84) 1.96 (2.59) 1.97 (2.38) pharmacy) and medication use (tocilizumab, corticosteroids); [†]For a select list of observed events related to CRS, occurring from Fime to CAR T-cell Infusion from Leukapheresis Date, days the day of CAR T infusion to day 3; ‡Includes patients not admitted; §LOS per patient reported in days, truncated on day 3; 31.14 (9.99) 32.93 (11.21) Mean (SD) 31.40 (9.99) 30.79 (9.20) 29.44 (9.95) 38.14 (13.83) ¶For a select list of observed events related to CRS, occurring from the day of CAR T infusion to day 30; ⁺⁺LOS per patient reported Median (IQR) 28 (12) 26 (14.5) 28 (12) 30 (15) 29 (11) 42 (24) in days, truncated on day 30

*For a select list of observed events related to CRS, neurological events (NEs), and infections only, occurring from the day of CAR T infusion to day 90; [†]Fee-for-service beneficiaries; [‡]Other includes self-pay, other federal/non-federal programs, Title V, Veteran Affairs plans; §Calculated with the exclusion of lymphoma, metastatic cancer, and solid tumor without metastasis DLBCL diffuse large b-cell lymphoma, AE(s) adverse event(s), CAR T chimeric antigen receptor t-cell, SD standard deviation, IQR interquartile range, CRS cytokine release syndrome

• Among infused patients, 66% (n=775) had an observed AE within 30 days following CAR T therapy. By day 30, ninety-one hospitalized patients with an observed AE (12%) required admission to the ICU (Table 2).

Table 2. Post CAR T Infusion HRU* within 30 Days Post-Index.

by Timing of Observed AE & Setting of CAR T Infusion						Inpatient CAR T Outpatient CAR T AII CAR T (n=974) (n=201) (N= 1,175)			ART ,175)				
	Inpatient CAR T		Outpatient CAR T		ALCART		AE Status in 0-3 Days Post-CAR T Infusion						
	(n=	974) AE Status i	n 0-3 Days Post-CAR T	201) Infusion	(N= [·]	1,175)	HRU in Days 0-3 Post-CAR T Infusion	Observed NE ⁺ (n=92)	No Observed NE (n=882)	Observed N E ⁺ (n=10)	No Observed NE (n=191)	Observed NE [†] (n=102)	No Observed NE (n=1,073)
HRU	Observed A E [†]	No Observed AF	Observed A E [†]	No Observed AF	Observed AE [†]	No Observed AF	Inpatient Hospitalization, n (%)	92 (100%)	882 (100%)	8 (80%)	74 (39%)	100 (98%)	956 (89%)
in Days 0-3 Post-CAR T Infusion	(n=305)	(n=669)	(n=31)	(n=170)	(n=336)	(n=839)	Mean LOS Among All ^{‡,§}	3.4	2.0	3.0	0.9	3.4	1.8
Inpatient Hospitalization, n (%)	305 (100%)	669 (100%)	28 (90%)	54 (32%)	333 (99%)	723 (86%)	Mean LOS Among Those Admitted [§]	3.4 9 (10%)	2.0 50 (6%)	3.8	2.4 5 (3%)	3.5 11 (11%)	2.0 55 (5%)
Mean LOS Among All ^{‡,§} Mean LOS Among Those Admitted [§]	3.6 3.6	1.4 1.4	3.1 3.5	0.7 2.1	3.6 3.6	1.3 1.5	Mean LOS [§] Non-ICU, n (%)	3.9 83 (90%)	3.8 832 (94%)	3.0 6 (60%)	3.8 69 (36%)	3.7 89 (87%)	3.8 901 (84%)
KU, n (%)	34 (11%)	25 (4%)	5 (16%)	2 (1%)	39 (12%)	27 (3%)	ED visit, n (%)	9 (10%)	20 (2%)	2 (20%)	2 (1%)	11 (11%)	22 (2%)
Non-ICU, n (%)	271 (89%)	644 (96%)	23 (74%)	52 (31%)	294 (88%)	696 (83%)	Outpatient Services, n (%)	67 (73%)	304 (34%)	10 (100%)	191 (100%)	77 (75%)	495 (46%)
ED visit, n (%)	18 (6%)	11 (2%)	3 (10%)	1 (1%)	21 (6%)	12 (1%)	Medications, n (%)						
Outpatient Services, n (%)	213 (70%)	158 (24%)	31 (100%)	170 (100%)	244 (73%)	328 (39%)	l ocilizumab Corticosteroids	32 (35%) 59 (64%)	165 (19%) 288 (33%)	4 (40%) 7 (70%)	31 (16%) 60 (31%)	36 (35%) 66 (65%)	196 (18%) 348 (32%)
Medications, n (%) Tocilizumab	102 (33%)	95 (14%)	13 (42%)	22 (13%)	115 (34%)	117 (14%)	AE Status in 0-30 Days Post-CAR T Infusion						
Corticosteroids	181 (59%)	166 (25%)	22 (71%)	45 (26%)	203 (60%)	211 (25%)	HRU in Davs 0-30 Post-CAR T Infusion	Observed NE ¹ (n=226)	No Observed NE (n=748)	Observed NE ¹ (n=36)	No Observed NE (n=165)	Observed NE ¹ (n=262)	No Observed NE (n=913)
AE Status in 0-30 Days Post-CAR T Infusion					Inpatient Hospitalization, n (%)	226 (100%)	748 (100%)	25 (69%)	110 (67%)	251 (96%)	858 (94%)		
HRU in Days 0-30 Post-CAR T Infusion	Observed AE ¹¹ (n=671)	No Observed AE (n=303)	Observed A E ¹ (n=104)	No Observed AE (n=97)	Observed AE ¹ (n=775)	No Observed AE (n=400)	Mean LOS Among All ^{‡,††} Mean LOS Among Those Admitted ^{††}	12.9 12.9	13.5 13.5	9.1 13.1	6.8 10.2	12.4 12.9	12.3 13.1
Inpatient Hospitalization, n (%)	671 (100%)	303 (100%)	76 (73%)	59 (61%)	747 (96%)	362 (91%)	ICU, n (%)	30 (13%)	77 (10%)	6 (17%)	14 (8%)	36 (14%)	91 (10%)
Mean LOS Among All ^{‡,††}	13.0	14.1	9.0	5.3	12.5	12.0	Non-ICU, n (%)	196 (87%)	671 (90%)	19 (53%)	96 (58%)	215 (82%)	767 (84%)
Mean LOS Among Those Admitted	76 (11%)	14.1 31 (10%)	12.3	8.8 5 (5%)	91 (12%)	36 (9%)	ED visit, n (%)	28 (12%)	49 (7%)	3 (8%)	10 (6%)	31 (12%)	59 (6%)
Mean LOS ^{\dagger†}	12.9	15.5	13.9	10.6	13.1	14.8	Outpatient Services, n (%)	200 (88%)	652 (87%)	36 (100%)	165 (100%)	236 (90%)	817 (89%)
TNOTHCU, 11(70)	575 (07%)	212 (70%)	01 (37%)	54 (50%)	000 (00%)	320 (02%)	Medications, n (%)						
ED visit, n (%)	62 (9%)	15 (5%)	8 (8%)	5 (5%)	70 (9%)	20 (5%)	Tocilizumab Corticoptomick	80 (35%) 150 (66%)	250 (33%)	11 (31%) 10 (52%)	43 (26%)	91 (35%) 169 (65%)	293 (32%) 556 (61%)
Outpatient Services, n (%)	586 (87%)	266 (88%)	104 (100%)	97 (100%)	690 (89%)	363 (91%)		130 (00%)	473 (04%)	17 (33%)	01 (47%)	107 (0370)	550 (01 /0)
Medications, n (%) Tocilizumab Corticosteroids	234 (35%) 430 (64%)	96 (32%) 195 (64%)	30 (29%) 52 (50%)	24 (25%) 48 (49%)	264 (34%) 482 (62%)	120 (30%) 243 (61%)	*Includes inpatient admission pharmacy) and medication u CART infusion to day 3; ‡Incl	n (ICU stay & no se (tocilizumab, udes patients no	n-ICU), ED visits, o corticosteroids); ⁺ F ot admitted;§LOS p	utpatient service or a select list of per patient report	es (procedures/dia f observed NEs, o rted in days, trunc	gnostics, office v ccurring from the ated on day 3; ¶	isits, outpatient e day of For a select list

*Includes inpatient admission (ICU stay & non-ICU), ED visits, outpatient services (procedures/diagnostics, office visits, outpatient pharmacy) and medication use (tocilizumab, corticosteroids); †For a select list of observed events related to CRS, NEs, and infections only, occurring from the day of CAR T infusion to day 3; ‡Includes patients not admitted; §LOS per patient reported in days, truncated on day 3; ¶For a select list of observed events related to CRS, NEs, and infections only, occurring from the day of CAR T infusion to day 30; ††LOS per patient reported in days, truncated on day 30

CAR T chimeric antigen receptor t-cell, HRU healthcare resource utilization, AE adverse event, ICU intensive care unit, LOS length of stay, ED emergency department, CRS cytokine release syndrome, NEs neurological events

RESULTS (cont.)

• Among 201 outpatient-infused CAR T patients, 25 (12%) experienced CRS within 0-3 days; 22 of these 25 patients were hospitalized in this period. Among 974 inpatient-infused CAR T patients, 224 (23%) experienced CRS within 0-3 days; all of these patients were already hospitalized (Table 3).

Table 3. Post CAR T Infusion HRU* within 30 Days Post-Index, by Timing of Observed CRS & Setting of CAR T Infusion

	Inpatier (n=1	nt CAR T 974)	Outpatie (n=2	nt CAR T 201)	AL CAR T (N= 1,175)		
AE Status in 0-3 Days Post-CAR T Infusion							
HRU in Days 0-3 Post-CAR T Infusion	Observed CRS ⁺ (n=224)	No Observed CRS (n=750)	Observed CRS ⁺ (n=25)	No Observed CRS (n=176)	Observed CRS ⁺ (n=249)	No Observed CRS (n=926)	
Inpatient Hospitalization, n (%)	224 (100%)	750 (100%)	22 (88%)	60 (34%)	246 (99%)	810 (87%)	
Mean LOS Among All ^{‡,§} Mean LOS Among Those Admitted [§] ICU, n (%) Mean LOS [§] Non-ICU, n (%)	3.6 3.6 27 (12%) 3.9 197 (88%)	1.6 1.6 32 (4%) 3.7 718 (96%)	2.9 3.3 4 (16%) 3.5 18 (72%)	0.8 2.3 3 (2%) 3.7 57 (32%)	3.6 3.6 31 (12%) 3.8 215 (86%)	1.5 1.7 35 (4%) 3.7 775 (84%)	
ED visit, n (%)	12 (5%)	17 (2%)	3 (12%)	1 (1%)	15 (6%)	18 (2%)	
Outpatient Services, n (%)	158 (71%)	213 (28%)	25 (100%)	176 (100%)	183 (73%)	389 (42%)	
Medications, n (%) Tocilizumab Corticosteroids	76 (34%) 138 (62%)	121 (16%) 209 (28%)	10 (40%) 17 (68%)	25 (14%) 50 (28%)	86 (35%) 155 (62%)	146 (16%) 259 (28%)	
AE Status in 0-30 Days Post-CAR T Infusion							
HRU in Days 0-30 Post-CAR T Infusion	Observed CRS ¹ (n=503)	No Observed CRS (n=471)	Observed CRS ¹ (n=84)	No Observed CRS (n=117)	Observed CRS ¹ (n=587)	No Observed CRS (n=588)	
Inpatient Hospitalization, n (%)	503 (100%)	471 (100%)	57 (68%)	78 (67%)	560 (95%)	549 (93%)	
Mean LOS Among All ^{‡,††} Mean LOS Among Those Admitted ^{††} ICU, n (%) Mean LOS ^{††} Non-ICU, n (%)	13.2 13.2 61 (12%) 13.0 442 (88%)	13.5 13.5 46 (10%) 14.5 425 (90%)	8.6 12.6 11 (13%) 15.5 46 (55%)	6.3 9.4 9 (8%) 10.2 69 (59%)	12.5 13.1 72 (12%) 13.4 488 (83%)	12.1 12.9 55 (9%) 13.8 494 (84%)	
ED visit, n (%)	45 (9%)	32 (7%)	8 (10%)	5 (4%)	53 (9%)	37 (6%)	
Outpatient Services, n (%)	445 (88%)	407 (86%)	84 (100%)	117 (100%)	529 (90%)	524 (89%)	
Medications, n (%) Tocilizumab Corticosteroids	177 (35%) 319 (63%)	153 (32%) 306 (65%)	22 (26%) 40 (48%)	32 (27%) 60 (51%)	199 (34%) 359 (61%)	185 (31%) 366 (62%)	

CAR T chimeric antigen receptor t-cell, HRU healthcare resource utilization, CRS cytokine release syndrome, ICU intensive care unit LOS length of stay, ED emergency department

• Ten outpatient-infused CAR T patients (5%) experienced NE within 0-3 days post-infusion, 8 were hospitalized. This rate was lower than the 9% observed in the inpatient-infused patients (n=92) (Table 4).

Table 4. Post CAR T Infusion HRU* within 30 Days Post-Index, by Timing of Observed NE & Setting of CAR T Infusion

of observed NEs, occurring from the day of CAR 1 infusion to day 30; "LOS per patient reported in days, truncated on day 30 CAR T chimeric antigen receptor t-cell, HRU healthcare resource utilization, NEs neurological events, ICU intensive care unit, LOS length of stay, ED emergency department

• Medicare patients had a significantly lower likelihood of undergoing CAR T infusion in the inpatient setting (OR: 0.23, 95% CI: 0.14-0.39, p<0.05) compared to patients with commercial, Medicaid, or other insurance types (Table 5a).

RESULTS (cont.)

Table 5a. Logistic Regression, Factors Associated with Setting of CAR T Infus

	Odds Ratio (95% CI)
Inpatient vs. Outpatient (ref.)	0-90 Days
Age (> 65 vs. <65 years (ref.))	0.88 (0.63, 1.24)
Sex (Male vs. Female (ref.))	1.25 (0.90, 1.71)
Number of Elixhauser Comorbidities	1.04 (0.96, 1.12)
Insurance Type Commercial (ref.) Medicaid Medicare Other Unknown	- 1.41 (0.38, 9.11) 0.23 (0.14, 0.39)* 0.80 (0.28, 2.88) 1.70 (1.20, 2.42)*

Table 5b. Cox Proportional Hazards Model, Factors Associated with Any Observed AE 0-3 and 0-30 Days Following CAR T Infusion

	Hazard Ratio (95% CI)				
Any Observed AE (by Follow-up Period)	0- 3 Days	0- 30 Days			
Age	1.07 (0.92,1.24)	1.03 (0.90,1.18)			
Sex (Male vs. Female (ref.))	0.96 (0.83,1.11)	0.97 (0.85,1.11)			
Number of Elixhauser Comorbidities	0.98 (0.94,1.02)	0.97 (0.94,1.01)			
Insurance Type Commercial (ref.) Medicaid Medicare Other Unknown	- 0.81 (0.40,1.63) 0.80 (0.59,1.09) 1.41 (0.84,2.37) 0.88 (0.76,1.02)	- 0.82 (0.44,1.53) 0.83 (0.63,1.10) 1.35 (0.82,2.23) 0.85 (0.74,0.97)*			
Diabetes with chronic complications	0.82 (0.68,0.98)*	0.85 (0.72,1.01)			
Liver Disease (moderate/severe)	1.30 (0.79,2.14)	1.31 (0.82,2.09)			

°p <0.05 AE adverse event, CAR T chimeric antigen receptor t-cell, CI confidence interval

- Observed patient characteristics (Table 5b) such as age, sex, and comorbidities were not predictive of "any" observed AE occurrence within 3- and 30-days following CAR T infusion.
- However, when CAR T infusion setting was incorporated, the models were found to have greater explanatory power. Inpatient setting was associated with a 2-fold risk of any observed AE (HR: 2.67, 95% CI: 2.09-3.42) compared to outpatient settings; this risk narrowed but remained significant over the 30-day follow-up period.

LIMITATIONS

- AEs may be under-identified using a claims-based algorithm. AE severity and direct attribution of AEs to a specific exposure is not possible with claims data.
- The extent to which AEs are documented in claims data may be influenced by coding conventions and reimbursement policies which may differ by infusion setting. For example, patients receiving CAR T in the inpatient setting will have their AEs immediately observed compared to the inherent lag in outpatient AE reporting.
- There may be unmeasured differences in patient characteristics that influence AEs and the decision to infuse in inpatient versus outpatient settings.
- It is possible that medications administered in inpatient settings (e.g., tocilizumab) may be under-reported due to bundled diagnosis-related group (DRG) payments.
- The CAR T product was not specified for the majority of study patients (N=1,029), and product-level analysis was beyond the scope of this project.

CONCLUSIONS

- More than 4 in 5 patients received CAR T therapy infusions in inpatient settings, although Medicare patients were more likely to receive CAR T in the outpatient setting than patients with other insurance.Axi-cel patients had a shorter time from leukapheresis to CAR T infusion compared to tisa-cel patients; opportunities to narrow this pre-treatment window still exist.
- Axi-cel patients had a shorter time from leukapheresis to CAR T infusion compared to tisacel patients; opportunities to narrow this pre-treatment window still exist.
- The majority (67%) of patients with outpatient CAR T infusions were hospitalized within 30 days of their infusion.
- Inpatient CAR T patients had a significantly higher risk of any observed AE in the three days following CAR T infusion as compared to patients treated in the outpatient setting.
- Observed AEs in the first 3 days post infusion appeared to be a driver of HRU, with such patients having greater 30-day HRU than those without observed AEs. By contrast, 30-day HRU was more similar for patients with and without an observed AE within 30 days postinfusion, suggesting that factors other than AEs may more strongly influence HRU over the longer term.

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DISCLOSURES

Seyedin: Kite/Gilead: Consultancy Snider: Kite/Gilead: Employment, Stock **Rajagopalan:** Kite/Gilead: Consultancy **Wade:** Kite/Gilead: Consultancy **Gergis:** Kite/Gilead: Consultancy, Speaker Bureau

