MM-613

Healthcare Resource Utilization and Costs Among Patients With Relapsed/Refractory Multiple Myeloma Treated With Chimeric Antigen Receptor-T (CAR-T) Cell Therapy

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INTRODUCTION

- Chimeric antigen receptor-T (CAR-T) therapies have advanced treatment of multiple myeloma (MM)
  - Ciltacabtagene autoleucel (overall response rate [ORR], 97%; overall survival [OS], 89%; progression-free survival [PFS], 16.8 months) and idecabtagene vicleucel (ORR, 73%; median OS, 19.4 months; PFS, 8.8 months) are 2 approved CAR-T therapies for patients with relapsed/refractory MM (RRMM)
- There is high clinical and economic burden among patients with RRMM in later lines of therapy[1,2]
- It is important to understand the total cost of care, since CAR-T acquisition costs are high[3]
- However, healthcare resource utilization (HCRU) and costs are not well characterized for patients with RRMM who receive commercial CAR-T therapy

OBJECTIVES

- To describe real-world HCRU and costs with commercial CAR-T treatment in RRMM

METHODS

Study design

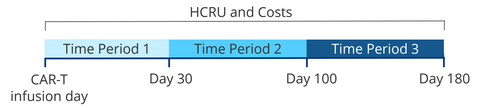
- This longitudinal, retrospective, observational study identified patients with RRMM treated with commercial CAR-T using the US national all-payer claims database, which covers approximately 80% of the nationally insured population

Patient eligibility

- Adults were eligible if they had:
  - ≥1 inpatient or outpatient claim with MM diagnosis in any position from January 1, 2014
  - ≥1 claim for commercial CAR-T (idecabtagene vicleucel or ciltacabtagene autoleucel) from March 1, 2021, to September 30, 2022, on or after first observed MM diagnosis, with ≥12 months continuous enrollment before CAR-T infusion
  - Were not enrolled in a clinical trial during the study period
- Age ≥18 years on the day of the first claim for commercial CAR-T (index date)

Outcomes

- All-cause HCRU and costs (in 2022 USD) were evaluated starting from the day of CAR-T infusion up to day 30 (including the CAR-T infusion day), from days 31-100 and days 101-180 post-infusion



MULTIPLE MYELOMA

RESULTS

Baseline characteristics

Of the 196 patients who received commercial CAR-T therapy, the mean age was 64.2 years, 58.2% were male, 130 (66.3%) received bridging therapy before CAR-T infusion, and 179 (91.3%) received inpatient CAR-T infusion (**Table 1**)

TABLE 1: Baseline characteristics during the 12-month period before index date

Sociodemographic characteristics	N=196[a]
Age, mean	64.2
Sex, n (%)	
Male	114 (58.2)
Region, n (%)	
South	86 (43.9)
Northeast	41 (20.9)
Mid-West	39 (19.9)
West	30 (15.3)
Race, n (%)	
White	120 (61.2)
Black	15 (7.7)
Other	7 (3.6)
Unknown	54 (27.6)
Ethnicity, n (%)	
Hispanic	20 (10.2)
Non-Hispanic	114 (58.2)
Unknown	62 (31.6)
Income, n (%)	
≤$25,000	32 (16.3)
$25,001-$50,000	41 (20.9)
$50,001-$75,000	27 (13.8)
$75,001-$100,000	22 (11.2)
>$100,000	23 (11.7)
Unknown	51 (26.0)
Payer channel, n (%)	
Commercial	67 (34.2)
Medicare	104 (53.1)
Medicaid	25 (12.8)

Baseline clinical characteristics	N=196
CCI index, mean, median (range)	3.6, 2 (0-14)
Any CRAB symptoms, n (%)	114 (58.2)
Hypercalcemia	33 (16.8)
Renal impairment	39 (19.9)
Anemia	75 (38.3)
Bone lesions	28 (14.3)
Diabetes, n (%)	32 (16.3)
Peripheral neuropathy, n (%)	87 (44.4)
Hypertension, n (%)	120 (61.2)
Cardiovascular conditions (MI, angina, CHF, PVD), n (%)	57 (29.1)
Stroke, n (%)	8 (4.1)
Drug classes used in 12-month baseline period, n (%)	
PI	77 (39.3)
Anti-CD38 monoclonal antibody	60 (30.6)
BCMA	18 (9.2)
iMiD	14 (7.1)
Chemotherapy	151 (77.0)
Other[b]	23 (11.7)
Patients with no claims for the above classes	20 (10.2)

Index CAR-T infusion-specific characteristics	N=196
Year of index CAR-T infusion, n (%)	
2021	36 (18.4)
2022	160 (81.6)
Patients with available apheresis date, n (%)	152 (77.6)
Days from apheresis to index CAR-T, mean (range)	63.3 (23-150)
Patients receiving bridging therapy, n (%)*	130 (66.3)
Type of bridging therapy, n (%)[c]	
Chemotherapy	121 (61.7)
Corticosteroids	39 (19.9)
Other	42 (21.4)
Site of index CAR-T administration, n (%)	
Outpatient hospital	17 (8.7)
Inpatient hospital	179 (91.3)
Baseline total all-cause costs (PPPM), mean (SD)[d,e]	$15,591 (14,190)
Baseline HCRU, mean (SD)[d]	
Inpatient admissions PPPM	0.4 (0.7)
Average LOS PPPM	1.3 (4.4)
ER visits PPPM	0.04 (0.09)
Outpatient visits PPPM	2.7 (1.9)

[a]Percentages may not add up to 100 due to rounding. [b]Other includes B-cell lymphoma 2 inhibitor, nuclear export inhibitor, other monoclonal antibodies. [c]Among those evaluated with an available apheresis date and evaluated between apheresis and index date. [d]Baseline costs and HCRU are calculated in the 12-month period prior to the index date. [e]Total costs include inpatient, ER, outpatient, and pharmacy costs. BCMA, B-cell maturation antigen; CCI, Charlson comorbidity index; CAR-T, chimeric antigen receptor-T cell; CHF, congestive heart failure; CRAB, calcium, renal failure, anemia, bone lesions; ER, emergency room; HCRU, healthcare resource utilization; iMiD, immunomodulator; LOS, length of stay; MI, myocardial infarction; PI, proteosome inhibitor; PPPM, per patient per month; PVD, peripheral vascular disease; SD, standard deviation.

All-cause costs

- Mean ± standard deviation [SD] total costs from CAR-T infusion up to 30 days follow-up was $586,801 ± $250,128, including CAR-T acquisition costs and infusion encounter costs ($522,920 ± $201,557). Mean ± SD total costs 31-100 and 101-180 days post-infusion were $27,485 ± $32,056 and $17,869 ± $46,824, respectively. **Table 2** represents costs in PPPM basis.

TABLE 2: All-cause PPPM costs from CAR-T infusion to day 30, days 31-100, and days 101-180

All-cause costs	30 days[a] (n=153)	31-100 days (n=94)	101-180 days (n=50)
Inpatient cost PPPM, mean (SD)	$505,020 ($194,095)	$1,937 ($5,443)	$1,801 ($6,786)
ER cost PPPM, mean (SD)	$57 ($491)	$59 ($369)	$4 (28)
Outpatient cost PPPM, mean (SD)	$80,688 ($260,855)	$9,428 ($12,550)	$4,242 ($12,422)
Pharmacy cost PPPM, mean (SD)	$1,037 ($2,475)	$355 ($666)	$654 ($2,497)
Total cost PPPM, mean (SD)	**$586,801 ($250,128)**	**$11,780 ($13,738)**	**$6,701 ($17,559)**

[a]Includes CAR-T acquisition costs and infusion encounter costs. CAR-T, chimeric antigen receptor-T cell; ER, emergency room; SD, standard deviation; PPPM, per patient per month.

All-cause HCRU

- Including CAR-T infusion day to 30-day follow-up, the mean length of stay (LOS) and number of outpatient visits PPPM were 14.6 days and 9.1 visits, respectively; eight patients had ≥1 emergency room (ER) visit (**Table 3**)
  - At 31-100–day follow-up, mean (SD) LOS and outpatient visits PPPM were 1.1 days and 2.7 visits, respectively; eight patients had ≥1 ER visit
  - At 101-180–day follow-up, mean (SD) LOS and outpatient visits PPPM were 0.4 days and 1.7 visits, respectively; 1 patient had ≥1 ER visit

TABLE 3: All-cause PPPM HCRU from CAR-T infusion to day 30, days 31-100, and days 101-180

All-cause HCRU	30 days[a] (n=153)	31-100 days (n=94)	101-180 days (n=50)
≥1 inpatient admission, n (%)	147 (96.1)	18 (19.1)	6 (12.0)
≥1 ICU visit, n (%)	48 (31.4)	2 (2.1)	0 (0)
≥1 ER visit, n (%)	8 (5.2)	8 (8.5)	1 (2.0)
≥1 outpatient visit, n (%)	143 (93.5)	90 (95.7)	39 (78.0)
Inpatient admissions PPPM, mean (SD)	1.8 (2.3)	0.4 (1.1)	0.1 (0.5)
LOS, mean (SD)	14.6 (8.1)	1.1 (3.5)	0.4 (1.1)
ER visits PPPM, mean (SD)	0.1 (0.4)	0.1 (0.2)	0.01 (0.05)
Outpatient visits, mean (SD)	9.1 (5.8)	2.7 (2.5)	1.7 (2.8)

[a]Includes CAR-T infusion visit. CAR-T, chimeric antigen receptor-T cell; ER, emergency room; HCRU, healthcare resource utilization; ICU, intensive care unit; SD, standard deviation; LOS, length of stay; PPPM, per patient per month.

KEY TAKEAWAY

Total costs and HCRU for patients with RRMM were highest in the first 30 days after CAR-T infusion (including infusion cost) and decreased in the 30-180 days after infusion

CONCLUSIONS

Patients with RRMM who received CAR-T incurred about $632,000 in all-cause healthcare costs through 180 days post-infusion, inclusive of CAR-T acquisition costs

LIMITATIONS

There are limitations associated with use of administrative claims data because these data are primarily used for billing and not research purposes. Due to the open-source nature of the dataset some healthcare encounters could be missing.

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DISCLOSURES

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