Abstract Number : abs25-9496

Abstract Title : Cost-conscious CAR T delivery: Outpatient (OP) cilta-cel administration reduces health care resource utilization (HCRU) and the associated post-infusion cost

Category: 900s - Health Services, Quality Improvement, and Outcomes Research

Review Category: 902. Health Services and Quality Improvement: Lymphoid Malignancies

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Abstract Body

Introduction:
Cilta-cel is a BCMA-targeted CAR T cell therapy approved for the treatment of lenalidomide-refractory multiple myeloma. While most often administered in the inpatient (IP) setting due to the risk of cytokine release syndrome (CRS) and immune effector cell-associated neurotoxicity syndrome (ICANS), OP cilta-cel administration is feasible and safe (Hansen DK et al, Front Immunol 2024). The per-patient post-infusion cost was estimated to be $18,922 lower in the OP setting in a study analyzing the component costs of cilta-cel therapy, although no patient level data was used (Jagannath et al, Oncol Ther 2023). Our study compared the patient level HCRU and estimated costs for the first 30 days after OP cilta-cel infusion to a 1:1 toxicity matched IP cohort.

Methods:
We conducted a longitudinal observational matched cohort study to assess differences in HCRU and estimated costs within 30 days after infusion for patients (pts) receiving commercial cilta-cel in the OP setting (prospective observational arm) compared to IP administration (retrospective matched cohort). The pts receiving OP cilta-cel consented for this IRB-approved pilot study and were provided with non-invasive TempTraq® axillary patches for high-frequency temperature monitoring which alerted to an application on their mobile device if meeting the threshold for a fever ($100.4 \geq {}^{O}F$). Pts were admitted at the onset of any grade CRS. To mitigate confounding from early toxicity that would be anticipated to impact post-infusion HCRU, we performed 1:1 matching based on the maximum grade of CRS and ICANS, and post-infusion day of maximum CRS grade occurrence. HCRU data was collected from billing data and the electronic medical record, and categorized by facility care (inpatient days, outpatient visits, etc.), laboratory studies, imaging studies, procedures, and therapeutics related to CAR T (anti-inflammatory medications, antimicrobials, growth factors, etc.). Micro-costing was performed, and unit cost estimates were derived from the following publicly available databases: Centers for Medicare & Medicaid Services (CMS) Physician Fee Schedule for provider visits, imaging studies, and procedures; 2025 CMS Clinical and Laboratory Fee Schedule for laboratory studies, and UpToDate LexiDrug (Average Wholesale Price) for medications. The cost per standard inpatient day ($3,288) was estimated from the 2023 American Hospital Association Annual Survey Data (US average for non-profit hospitals). Differences in the median per-patient cost estimates for OP vs. IP cilta-cel were compared via the Wilcoxon rank-sum test.

Results:
There were 19 pts who received OP cilta-cel for the pilot study, and 1:1 matching was performed to generate a cohort of 19 pts who received IP cilta-cel at a center where OP CAR T was not yet available to avoid selection bias. Pts in the OP cohort were younger (median age 59 vs 67; p = 0.009) and had a lower median ECOG performance status (0 vs 1; p = 0.003). There was no significant difference in median prior lines of therapy (4 in both groups), prior autologous stem cell transplant (84% vs 63%; p = 0.14), presence of extramedullary disease (21% vs 5%; p = 0.3), or use of bridging chemotherapy (95% vs 74%; p = 0.2) between the two groups. Rates of CRS (84% vs 89%; p = 0.6) and ICANS (0% vs 16% [all grade 1]; p = 0.2),

as well as tocilizumab (58% vs 63%; p = 0.7) and corticosteroid use (11% vs 26%; p = 0.4) for toxicity management were not significantly different between the OP and IP cohorts. Pts in the OP cohort were hospitalized for significantly less time (5 vs 10 days; p = <0.001). The median estimated total per-patient cost of post-infusion care within the first 30 days was significantly lower at $19,180 less for the OP group compared to the IP group ($29,339 vs $48,519; p = <0.001). The difference in per-patient median cost was driven by lower estimated facility care costs ($19,431 vs $35,043; p = < 0.001). There was no significant difference in the median estimated cost of laboratory studies ($2,015 vs $1,687), imaging studies ($256 vs $242), or therapeutics ($7,449 vs $6,849) between OP and IP cohorts.

Conclusions:
In this micro-costing study comparing HCRU and estimated post-infusion cost within 30 days of cilta-cel therapy, OP treatment significantly reduced the median length of inpatient stay by five days and led to a meaningful reduction in the estimated median post-infusion cost by $19,180 per patient.

Keywords: Clinical Practice (Health Services And Quality), Value, Lymphoid Malignancies, Practice Models, Diseases, Real-World Evidence, Study Population, Health Economics, Adult, Human, Clinical Research, Plasma Cell Disorders, Research

Disclosure : Christopher Ferreri: Affirmed, Consultancy (Includes expert testimony): No, Patents & Royalties: No, Ended employment in the past 24 months: No, Research Funding: No, Divested equity in a private or publicly-traded company in the past 24 months: No, Current equity holder in publicly-traded company: Yes, Current Employment: No, Current holder of stock options in a privately-held company: No, Current equity holder in private company: No, Honoraria: No, Janssen, Consultancy (Includes expert testimony): Yes, Patents & Royalties: No, Ended employment in the past 24 months: No, Research Funding: Yes, Divested equity in a private or publicly-traded company in the past 24 months: No, Current equity holder in publicly-traded company: No, Current Employment: No, Current holder of stock options in a privately-held company: No, Current equity holder in private company: No, Honoraria: No, Regeneron, Consultancy (Includes expert testimony): No, Patents & Royalties: No, Ended employment in the past 24 months: No, Research Funding: Yes, Divested equity in a private or publicly-traded company in the past 24 months: No, Current equity holder in publicly-traded company: No, Current Employment: No, Current holder of stock options in a privately-held company: No, Current equity holder in private company: No, Honoraria: No, Mahmoud Gaballa: Arcellx, Consultancy (Includes expert testimony): Yes, Patents & Royalties: No, Ended employment in the past 24 months: No, Research Funding: No, Divested equity in a private or publicly-traded company in the past 24 months: No, Current equity holder in publicly-traded company: No, Current Employment: No, Current holder of stock options in a privately-held company: No, Current equity holder in private company: No, Honoraria: No, Guidepoint, Consultancy (Includes expert testimony): No, Patents & Royalties: No, Ended employment in the past 24 months: No, Research Funding: No, Divested equity in a private or publicly-traded company in the past 24 months: No, Current equity holder in publicly-traded company: No, Current Employment: No, Current holder of stock options in a privately-held company: No, Current equity holder in private company: No, Honoraria: Yes, Arcellx, Consultancy (Includes expert testimony): Yes, Patents & Royalties: No, Ended employment in the past 24 months: No, Research Funding: No, Divested equity in a private or publicly-traded company in the past 24 months: No, Current equity holder in publicly-traded company: No, Current Employment: No, Current holder of stock options in a privately-held company: No, Current equity holder in private company: No, Honoraria: No, BMS, Consultancy (Includes expert testimony): Yes, Patents & Royalties: No, Ended employment in the past 24 months: No, Research Funding: No, Divested equity in a private or publicly-traded company in the past 24 months: No, Current equity holder in publicly-traded company: No, Current Employment: No, Current holder of stock options in a privately-held company: No, Current equity holder in private company: No, Honoraria: No, Bristol-Myers Squibb, Consultancy (Includes expert testimony): Yes, Patents & Royalties: No, Ended employment in the past 24 months: No, Research Funding: No, Divested equity in a private or publicly-traded company in the past 24 months: No, Current equity holder in publicly-traded company: No, Current Employment: No, Current holder of stock options in a privately-held company: No, Current equity holder in private company: No, Honoraria: No, Minifrida Santiago: None declared, Michelly Abreu: None declared, Muhammad Bilal Abid: None declared, Michelle Hildebrandt: None declared, Misha Hawkins: Johnson & Johnson, Consultancy

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