Outpatient administration of ciltacabtagene autoleucel (CARVYKTI) in relapsed/refractory multiple myeloma: a single-center feasibility, safety, and efficacy analysis

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BACKGROUND

- Ciltacabtagene autoleucel (cilta-cel; CARVYKTI), a BCMA-directed CAR-T cell therapy, delivers deep and durable remissions in relapsed/refractory multiple myeloma (RRMM) as established in CARTITUDE-1 and -4, yet widespread adoption remains limited by the burden of prolonged inpatient monitoring for CRS and ICANS.

- Outpatient CAR-T delivery, well-established in B-cell Lymphoma, remains nascent in myeloma. We report our outpatient cilta-cel experience in RRMM.

METHODS

- Retrospective analysis, UMMC, January 2025 – February 2026
- Lymphodepleting chemotherapy and CAR-T infused in outpatient infusion center
- Hospitalization reserved for clinical toxicity only
- CRS/ICANS graded per ASTCT 2019 consensus criteria

Standardized prophylaxis protocol:

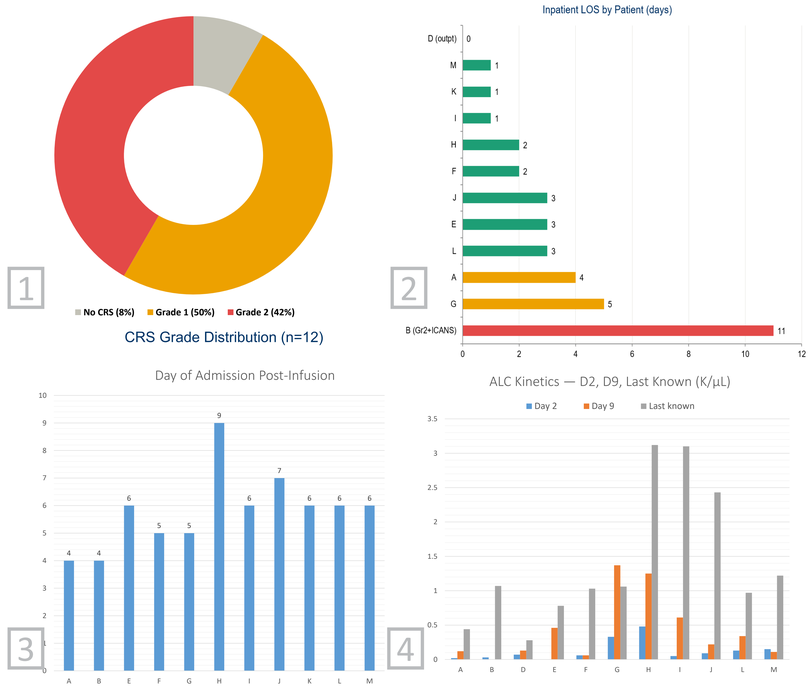
- IVIG for IgG <400 mg/dL
- IV pentamidine every 4 weeks × 12 months (PJP prophylaxis)
- Fluconazole + levofloxacin for ANC <500 K/µL until neutrophil recovery

Patient Characteristics	
Total patients	12
Median prior lines of therapy (range)	2 (2–5)
Triple-class exposed	12/12 (100%)
Prior autologous SCT	11/12 (92%)
CRS — any grade	11/12 (92%)
Grade 1	6/12 (50%)
Grade 2	5/12 (42%)
Grade ≥3	0/12 (0%)
ICANS — any grade (grade 1 only)	1/12 (8%)
Tocilizumab administered	11/12 (92%)
Fully outpatient (no admission)	1/12 (8%)
Median day to admission — admitted (range)	Day 6 (4–9)
91% admitted by Day 7	Predictable window
Median inpatient LOS — admitted pts (range)	2 days (1–11)
LOS ≤3 days	9/11 (82%)
Major infections / PJP pneumonia	**0/12 (0%)**
3 month BMB — no evidence of myeloma (evaluable10, 2 pending)	**10/10 (100%)**

Results

Hematologic Recovery

WBC recovery	Day 12	5–42	All recovered
Platelet recovery	Day 14	9–73	7/12 recovered
Persistent thrombocytopenia	—	—	**4/12 (33%)**
Plt maintained >150 K/µL	—	—	1 patient



IMAGES:

1. CRS Grade Distribution.
2. Inpatient Length of Stay.
3. Day of Admission Post Infusion.
4. ALC Kinetics D2, D9 and Last known.

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Feasibility

- ✓ All infusions administered in outpatient infusion center
- ✓ No hospitalizations required for lymphodepletion
- ✓ Admissions occurring no earlier than Day 4 post-infusion
- ✓ 91% of admissions occurred by Day 7 — predictable window
- ✓ 82% of admitted patients discharged within 3 days
- ✓ Zero grade ≥3 CRS across entire cohort
- ✓ Zero major infections or PJP pneumonia

Conclusion

- Outpatient cilta-cel is feasible and safe in carefully selected patients with RRMM.

- Predictable toxicity, Median time to admission day 6, a median 2-day LOS,

- No infectious complications, and universal bone marrow remission at Day 100 demonstrate effective outpatient delivery.

- Notably, the sole patient who received cilta-cel in the second line of therapy required no hospitalization and experienced no CRS — supporting the hypothesis that earlier CAR-T administration may be associated with reduced toxicity and improved feasibility of outpatient delivery.

- Expanding outpatient CAR-T has meaningful implications for patient access, healthcare utilization, and quality of life.

- Our institutional experience continues to grow as data mature — prospective validation is planned.

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