Cost-effectiveness Analysis of Teclistamab and Daratumumab Versus Ciltacabtagene Autoleucel in Relapsed Multiple Myeloma

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INTRODUCTION

- The phase III MajesTEC-3 trial showed superior progression-free survival (PFS) with teclistamab plus daratumumab (tec-dara) versus standard of care in relapsed/refractory multiple myeloma (RRMM): HR 0.17; 95% CI, 0.12–0.23; P<0.001.
- Ciltacabtagene autoleucel (cilta-cel), a BCMA-directed CAR T-cell therapy, is also approved in this clinical setting.
- The two strategies carry divergent economic profiles: a one-time CAR T-cell infusion versus indefinite bispecific antibody therapy.

AIM

- To evaluate the cost-effectiveness of tec-dara versus cilta-cel in RRMM after 1–3 prior lines of therapy, from a United States payer perspective.

METHODS

- Partitioned survival model: tec-dara (MajesTEC-3) vs cilta-cel (CARTITUDE-4) in RRMM, 1–3 prior lines.
- Three health states (PFS, progressed disease, death); 10-year horizon, monthly cycles.
- Long-term PFS extrapolated using exponential parametric fits to clinical data.
- Teclistamab costs capped at 48 months in the base case, reflecting plausible payer-imposed restrictions.
- Costs in 2025 US dollars, discounted 3% annually; utilities 0.82 (PFS) and 0.64 (progressed disease).
- Deterministic one-way and probabilistic sensitivity analyses; willingness-to-pay (WTP) threshold $150,000/QALY.

CONCLUSIONS

- Despite superior modeled PFS, tec-dara is not cost-effective compared with cilta-cel at current pricing in RRMM.
- Response-adapted, fixed-duration treatment strategies merit further evaluation to reconcile clinical benefit with cumulative economic burden.
- As the RRMM landscape evolves, accessibility of bispecific antibodies must be balanced against the cost-efficiency of one-time cellular therapies.

RESULTS

Key findings

- Tec-dara delivered 2.094 additional QALYs at an incremental cost of $565,686.
- The resulting ICER of $270,103/QALY exceeds the $150,000/QALY willingness-to-pay threshold, so tec-dara was not cost-effective relative to cilta-cel.
- The teclistamab treatment-duration cap was the single most influential driver of cost.
- One-way sensitivity analysis produced ICERs from $44,016 to $367,572/QALY; restricting therapy duration could render tec-dara cost-effective at the standard threshold.
- Probabilistic analysis confirmed cilta-cel as the preferred strategy in the majority of simulations, with tec-dara becoming cost-effective only at WTP thresholds substantially exceeding commonly accepted benchmarks.

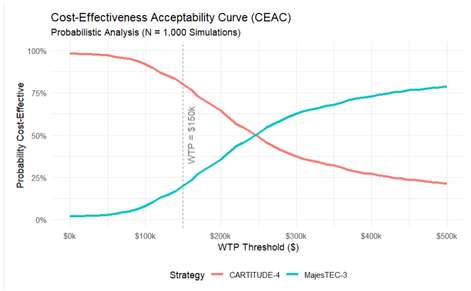

Figure 1. Cost-Effectiveness Acceptability Curve (CEAC)

Outcome	Tec-Dara	Cilta-cel	Incremental
Total cost (2025 USD)	$1,122,707	$557,021	+$565,686
Total QALY	5.219	3.125	+2.094
ICER ($/QALY)	—	Reference	$270,103
Cost-effective at WTP $150,000/QALY	No	Reference	—

Table 1. *Base-case cost-effectiveness results, US payer perspective, 10-year horizon.*

ICER: $270,103 per QALY gained
Above the $150,000/QALY threshold — tec-dara is not cost-effective. One-way sensitivity range: $44,016–$367,572/QALY.

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