EFFICACY AND SAFETY OF DARATUMUMAB-ADDED REGIMENS IN MULTIPLE MYELOMA: A SYSTEMATIC REVIEW AND META-ANALYSIS

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INTRODUCTION

Multiple myeloma remains a heterogeneous plasma cell malignancy marked by relapse and treatment resistance despite advances in proteasome inhibitors, immunomodulatory agents and stem cell transplantation. Daratumumab, an anti-CD38 monoclonal antibody, has become an important addition to modern myeloma therapy because of its direct anti-myeloma and immune mediated effects. Across newly diagnosed, transplant eligible, transplant ineligible and relapsed/refractory settings, daratumumab added regimens have shown deeper responses, higher minimal residual disease negativity and improved disease control. However, differences in patient populations, treatment backbones, outcomes, and toxicity profiles require comprehensive evaluation. This systematic review and meta-analysis aims to assess the efficacy and safety of daratumumab-added therapy in multiple myeloma.

METHODOLOGY

This meta-analysis was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. An extensive search was conducted in major medical databases, including PubMed, Google Scholar and ScienceDirect for relevant studies concerning daratumumab-added therapeutic regimens in patients with multiple myeloma. Statistical analysis was performed in R-Studio using the meta and metafor packages. Pooled effect estimates were calculated for survival outcomes, and response rates, and heterogeneity was assessed using the I^2 statistic.

CONCLUSIONS

The study highlights superior efficacy in newly diagnosed patients compared to those in relapsed or refractory stages, suggesting that clinical outcomes are significantly influenced by the timing of intervention and prior treatment history.

RESULTS

The meta-analysis of 5,606 patients revealed a weighted median overall survival (OS) of 49.98 months and a weighted median progression-free survival (PFS) of 35.74 months. The overall response rate (ORR) across the entire cohort was 78% (95% CI: 0.72–0.84), with subgroup analysis showing a higher response in the newly diagnosed multiple myeloma (NDMM) group (84%; 95% CI: 0.74–0.90) compared to the relapsed/refractory multiple myeloma (RRMM) group (75%; 95% CI: 0.66–0.82).

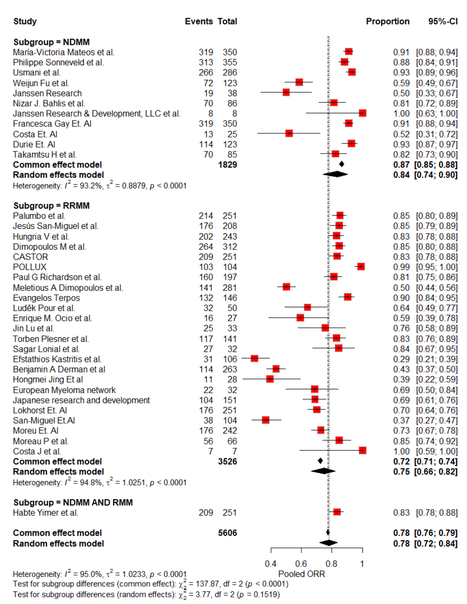


Figure 1: Median Overall Survival (OS)

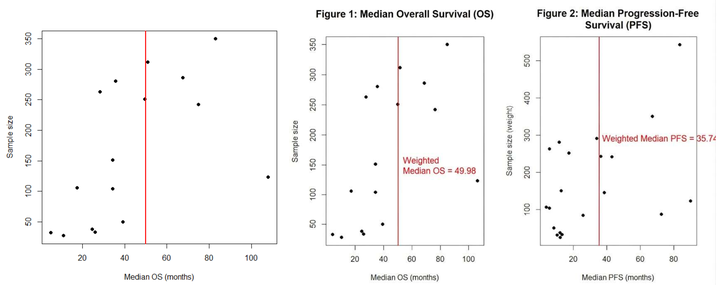
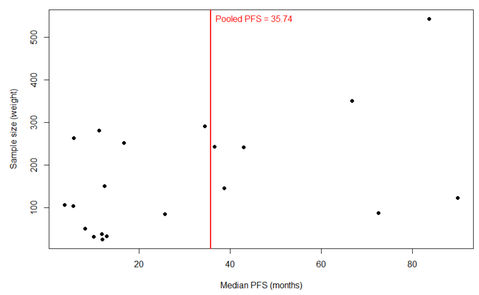


Figure 2: Median Progression-Free Survival (PFS)



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REFERENCES

•Hungria V, Robak P, Hus M, Zherebtsova V, Ward C, Ho PJ, et al. Belantamab mafodotin plus bortezomib and dexamethasone in patients with relapsed or refractory multiple myeloma (DREAMM-7): updated overall survival analysis from a global, randomised, open-label, phase 3 trial. The Lancet Oncology [Internet]. 2025 Aug [cited 2026 July 23];26(8):1067–80.
•Corre J, Vincent L, Moreau P, Hebraud B, Hulin C, Béné MC, et al. Daratumumab-Bortezomib-Thalidomide-Dexamethasone for Newly Diagnosed Myeloma: CASSIOPEIA Minimal Residual Disease Results. Blood [Internet]. 2025 Winter [cited 2026 July 23];blood.2024027620.
•Usmani SZ, Thierry Facon, Hungria V, Bahlis NJ, Venner CP, Braunstein M, et al. Daratumumab plus bortezomib, lenalidomide and dexamethasone for transplant-ineligible or transplant-deferred newly diagnosed multiple myeloma: the randomized phase 3 CEPHEUS study. Nature Medicine [Internet]. 2025 Feb 5 [cited 2026 July 23];.
•Dimopoulos MA, E. Terpos, Boccadoro M, Sosana Delimpasi, Meral Beksac, Eirini Katodritou, et al. Subcutaneous Daratumumab Plus Pomalidomide and Dexamethasone (D-Pd) Versus Pomalidomide and Dexamethasone (Pd) Alone in Patients with Relapsed or Refractory Multiple Myeloma (RRMM): Overall Survival Results from the Phase 3 Apollo Study. 2022 Nov 15 [cited 2026 July 23];140(Supplement 1):7272–4.
•Knauf W, Uhlig J, von der Heyde E, Losem C, Ammon A, Nusch A, et al. Treatment adherence and effectiveness in patients treated with carfilzomib-based therapy combinations for relapsed/refractory multiple myeloma in Germany: interim results from the non-interventional CARO study. Leukemia & Lymphoma. 2024 Dec 9;66(4):691–701.
•Fu W, Bang SM, Huang H, Kim K, Li W, An G, et al. Daratumumab, bortezomib, melphalan, and prednisone versus bortezomib, melphalan, and prednisone alone in transplant-ineligible Asian patients with newly diagnosed multiple myeloma: final analysis of the phase 3 OCTANS Study. Annals of Hematology. 2024 Sept 4;.
•Terpos E, Ntanasis-Stathopoulos I, Gavriatopoulou M, Katodritou E, Hatjiharissi E, Malandrakis P, et al. Efficacy and safety of daratumumab with ixazomib and dexamethasone in lenalidomide-exposed patients after one prior line of therapy: Final results of the phase 2 study. American Journal of Hematology. 2024 Jan 31;99(3):396–407.
•Pour L, Szarejko M, Bila J, Schjesvold FH, Spicka I, Maisnar V, et al. Efficacy and safety of melflufen plus daratumumab and dexamethasone in relapsed/refractory multiple myeloma: results from the randomized, open-label, phase III LIGHTHOUSE study. Haematologica. 2023 Aug 31;109(3):895–905.