

Conference Abstracts

Safety and Efficacy of Consolidation-Phase Blinatumomab in Newly Diagnosed B-Cell Acute Lymphoblastic Leukemia: A Systematic Review and Meta-analysis

Yagnapriya Ammakola, MBBS¹, Chandra Kakarala, MBBS², Mahnoor Sukaina, MBBS³, Madhan Kumar, MBBS⁴, Sameer Deshmukh, MBBS⁵, Haritha Gandicheruvu, MBBS^{6a}, Manas Pustake, MBBS⁷, Karan Jatwani, MBBS⁸

¹ COREWELL HEALTH WILLIAM BEAUMONT UNIVERSITY HOSPITAL, 3577 W 13 MILE ROAD, ROYAL OAK, MI, USA, ² University of Kentucky, 800 Rose St, Lexington, Kentucky, United States, ³ karachi medical and dental college, Karachi, Karachi, karachi, Pakistan, ⁴ Baylor College of Medicine, 1 Baylor Plz, Houston, TX, United States, ⁵ Mobile infirmiry medical center, Mobile, Mobile, Alabama, United states, ⁶ Sinai hospital of Baltimore, Baltimore, Baltimore, Maryland, United states, ⁷ Texas Tech University Health Sciences Center, ⁸ The George Washington University

Corresponding author

^a Haritha Gandicheruvu, MBBS, Sinai hospital of Baltimore, Baltimore, Baltimore, Maryland, United states, Email: harithag24@gmail.com

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Background

B-cell acute lymphoblastic leukemia (B-ALL) accounts for 0.3% of all new cancer cases and 0.2% of cancer-related deaths in the United States. While survival outcomes have improved over the years, further intensifying chemotherapy has offered diminishing returns. Blinatumomab, a bispecific T-cell engager targeting CD3 and CD19, has shown clinical benefit in minimal residual disease (MRD)-positive and relapsed/refractory settings. Its recent FDA approval for use in the consolidation phase of newly diagnosed Philadelphia chromosome-negative, CD19-positive B-ALL followed the landmark E1910 trial, which demonstrated a survival advantage when added to standard chemotherapy. We conducted a systematic review and meta-analysis to evaluate the efficacy and safety of blinatumomab in the consolidation phase across clinical trials and real-world studies.

Methods

A comprehensive review was carried out on PubMed, Clinicaltrials.gov, and Cochrane Library from inception up to July 2025 using the terms "Blinatumomab" and "ALL". Studies that

evaluated response: overall response rate (ORR), complete response (CR), and adverse events between the Blinatumomab and control groups were included. Out of the 19 studies that met the inclusion criteria, 12 were clinical trials, and 7 were observational studies. Open meta-analyst software was used to analyze the data. For single arm study, PLO (logit-transformed proportion) was used as a metric. Der Simonian-Laird random effects model was used to generate forest plots of pooled response rate estimates and 95% CI along with p-values and I² statistics for heterogeneity.

Results

A total of 824 patients were included (54.4% male, 45.6% female), with a median age of 48 years. The median follow-up across studies was 18.2 months (range, 3.4 to 92.8 months). Pooled ORR was 96.4% (95% CI, 93–98; p=0.955), and pooled CR was 92.7% (95% CI, 87–95; p<0.001). TRAEs leading to treatment discontinuation occurred in 6.8% (95% CI, 2.5–11.2; p=0.004), dose reductions in 2.9% (95% CI, 0.2–5.6; p=0.069), and treatment-related mortality in 1.4% (95% CI, 0.4–2.3; p=0.256). There was moderate

heterogeneity across studies for toxicity outcomes.

Conclusion

Consolidation-phase blinatumomab is associated with high response rates and a favorable safety profile, reinforcing the survival gains observed in E1910 (3-year OS: 83% vs 65%). With low rates

of treatment-limiting toxicity and mortality, our findings support the incorporation of blinatumomab into standard adult B-ALL consolidation regimens. These data suggest that this immunotherapeutic approach may help narrow the outcome gap between adult and pediatric ALL.