

Review Neuroscience. 2026 Jan 8;596:36-44. doi: 10.1016/j.neuroscience.2025.12.064.

Online ahead of print.

The efficacy of combination therapy versus monotherapy in patients with glioblastoma with abnormal epidermal growth factor receptor (EGFR) genes, a systematic review and network meta-analysis

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PMID: 41519428 DOI: [10.1016/j.neuroscience.2025.12.064](https://doi.org/10.1016/j.neuroscience.2025.12.064)

Abstract

The primary objective of this study is to evaluate the efficacy of various pharmaceuticals (combination therapy versus monotherapy) in patients with glioblastoma (GB) with abnormal epidermal growth factor receptor (EGFR) genes. Clinical trials to investigate the therapeutic effects of different therapy was searched by PubMed, Embase, Web of Science, Cochrane Library, and Google Scholar. The Cochrane Risk of Bias Assessment Tool and data analysis software will be applied. Data collection spanned from the earliest available date up to April 2025. Eight studies involving a total of 2,137 individuals were included, with 657 of these receiving combination therapies and 1,480 receiving monotherapies. The analysis revealed that combination therapies generally demonstrated superior efficacy compared to the single ones, while monotherapies exhibited greater potency than temozolomide (TMZ). In terms of median progression-free survival (PFS), the combinations of Afatinib plus TMZ (SUCRA: 62.28%), rindopepimut (CDX-110) plus TMZ (SUCRA: 62.27%), and depatuxizumab mafodotin (Depatux M) plus TMZ (SUCRA: 54.4%) ranked among the top tier. For median overall survival (OS), the combinations of CDX-110 plus TMZ (SUCRA: 68.8%), Depatux M plus TMZ (SUCRA: 68.3%), and Nimotuzumab plus TMZ (SUCRA: 52.5%) were positioned in the upper echelon. In terms of prolonging both median PFS and median OS in GB, CDX-110 plus TMZ and Depatux M plus TMZ have shown slightly better than comparable therapies. However, further clinical trials are needed to confirm the effectiveness of other drugs in this respect.

Keywords: EGFR gene; Glioblastoma; Network meta-analysis; Systematic review.

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