



## Blood

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# Tranexamic Acid for Trauma Care: An Updated Meta-Analysis of Mortality and Thromboembolic Events in Severely Injured Patients

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## Disclosures

No relevant conflicts of interest to declare.

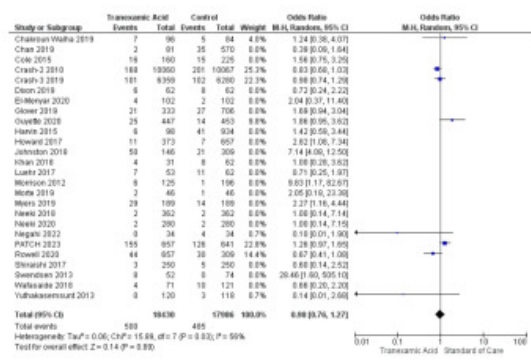


Figure 1: Overall Mortality rate in patients receiving TXA vs. control/standard care

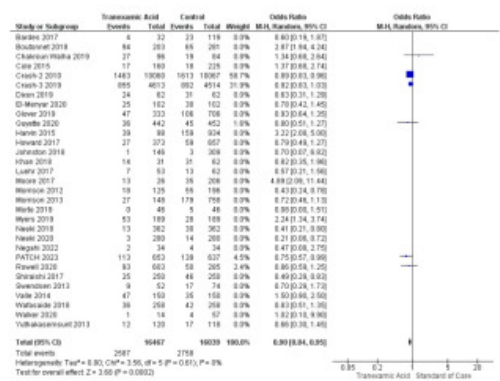


Figure 2: Thromboembolic event rate in patients receiving TXA vs. control/standard care

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Figure 1.

**Introduction :** Tranexamic Acid (TXA) is an anti-fibrinolytic agent that inhibits fibrinolysis and prevents blood clot breakdown. Widely used to manage hemorrhage in various clinical scenarios, including trauma, menorrhagia, bleeding in hemophilia, cardiac surgery, and orthopedic surgery, its impact on morbidity and mortality in severely injured patients necessitates an updated systematic review and meta-analysis. Our study aimed to evaluate the association of TXA with mortality and thromboembolic events in trauma patients.

**Methods:** We conducted a comprehensive literature search on PubMed, EMBASE, CENTRAL, and Google Scholar up to July 2023, focusing on randomized controlled trials (RCTs) involving adult trauma patients receiving Tranexamic Acid (TXA) compared to standard care or placebo. Primary outcomes included mortality rates and thromboembolic event incidence. Statistical analyses used Review Manager Software (RevMan, version 5.3) with the Mantel-Haenszel random-effect model.

**Results :** A total of 8 randomized controlled trials (RCTs) with 36,416 patients were

included in this meta-analysis, comparing Tranexamic Acid (TXA) to control (placebo or standard care). The mean age of the included patients was 39 years. The analysis focused on various patient categories, including multiple trauma versus predominantly traumatic brain injury (TBI) patients, severely injured ( Injury Severity Score ,ISS  $\geq$  16, massive transfusion requirement, signs of shock) versus non-severely injured patients, blunt versus penetrating versus burn trauma, in-hospital versus prehospital TXA administration, and TXA administration within 3 hours versus beyond 3 hours of injury. The meta-analysis showed that TXA administration was not significantly associated with mortality (odds ratio: 0.98, 95% CI: 0.76 to 1.27,  $p = 0.89$ ), with moderate heterogeneity observed ( $I^2 = 56\%$ ). However, TXA use demonstrated a significant reduction in the incidence of thromboembolic events (odds ratio: 0.90, 95% CI: 0.84 to 0.95,  $p = 0.0002$ ), with no significant heterogeneity ( $I^2 = 0\%$ ). **(Figure 1 & 2)**

**Conclusion** TXA administration was not significantly associated with mortality in patients with significant trauma; however, it significantly reduced thromboembolic events, suggesting its potential benefit in preventing such complications. Further research is needed to explore its efficacy and safety in specific patient categories and administration settings to optimize its use in trauma care.

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