



## Tranexamic Acid – Golden in the golden hours of trauma?

### CLINICAL QUESTION

**Does Tranexamic acid (TXA) in general adult trauma or traumatic head injuries improve mortality or disability without increased risk of adverse events?**

### BOTTOM LINE

**Giving TXA to adult trauma patients within 3 hours of injury reduces overall mortality from 16% with placebo to 14.5% at 28 days. Giving TXA to isolated head injury patients within 3 hours decreases head injury death in patients with Glasgow Coma Scale (GCS) >3 (from 14% with placebo to 12.5%), largely driven by improvements in patients with GCS 9-15. Serious adverse events were similar to placebo.**

### EVIDENCE

- Two large randomized, placebo-controlled trials of intravenous TXA (1g over 10 minutes, then 1 g over 8 hours) in adult trauma. Patients >80% male, median age 35-42 years. Outcomes at 28 days.
- General trauma: 20,211 patients with signs of shock or risk of significant hemorrhage, presenting within 8 hours of injury. 31% had co-existing head injury.<sup>1,2</sup>
  - All-cause mortality: 14.5% versus 16% placebo; number needed to treat (NNT)=67.
    - Only treatment ≤3 hours improved mortality (treatment >3 hours: No difference).

- Adverse events: Vascular occlusive event (myocardial infarction, stroke, pulmonary embolism) 1.7% versus 2.0% placebo, not statistically different.
- Traumatic brain injury: 12,737 patients with GCS of  $\leq 12$  or intracranial bleeding on CT and no major extracranial bleeding.<sup>3,4</sup> Allowable time post-injury changed from 8 to  $\leq 3$  hours during study. Outcomes [for patients presenting  $\leq 3$  hours (N=9202)]:
  - All-cause mortality: No difference.
  - Head injury mortality (overall): No difference.
    - Analyzed by severity of head injury (some pre-specified):
      - Excluding GCS 3: 12.5% versus 14% placebo NNT=67.
      - GCS 4-8 no difference.
      - GCS 9-15: 5.8% versus 7.5% placebo NNT=59.
  - Disability scores similar between groups.
  - Adverse events: No difference.
  - Limitation: No statistical correction for multiple sub-group analyses.
- Systematic reviews<sup>5,6</sup> dominated by above studies found similar outcomes.

## CONTEXT

- Hemorrhage causes 20-45% of trauma deaths.<sup>7,8,9</sup>
- Guidelines recommend using TXA within 3 hours in:
  - “Severely injured bleeding patients”.<sup>10</sup>
  - “Patients with major trauma and active or suspected bleeding”.<sup>11</sup>
- Pre-hospital TXA did not improve:
  - Mortality in general trauma.<sup>12</sup>
  - Neurological outcomes in traumatic brain injury patients.<sup>13</sup>

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