Effects of TXA on ICH Progression, Morbidity, Mortality, & Disability post-TBI in Adults

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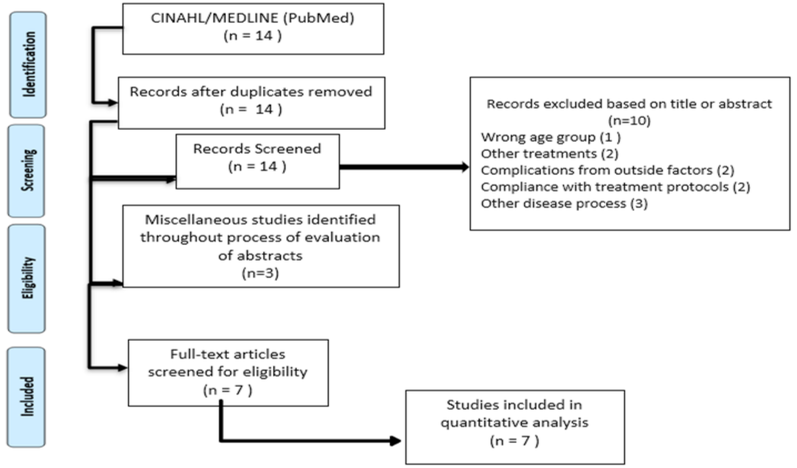
Background:

- Traumatic brain injury (TBI) can cause intracranial hemorrhage (ICH) disabilities & / or death.
- ICH post-injury expansion causes primary brain injury by compressing & stretching brain structures.
- ICH secondary brain injuries result from ↑ ICP & ↓ CPP.
- Tranexamic Acid (TXA) stabilizes formed thrombi by preventing degradation & ↓ hemorrhage progression.
- The WHO lists TXA as a cost-effective essential medication for hemorrhage control.
- Target populations: Pts w/ TBI & healthcare providers managing pts w/ TBI.

Method: Focused Literature Search:



- CINAHL & PubMed: “Tranexamic acid” OR “TXA” AND “Intracranial hemorrhage”.
- Filters: 2018-2020, English, Peer Reviewed, Adult, & Human.

Proposed EBP Change:

For adults w/ TBI & known or suspected ICH, w/o bilateral unresponsive pupils & baseline GCS ≥9:

- Within 3-hrs of injury, give TXA 1Gm over 10-mins, followed by TXA 1Gm over 8-hrs.
- May be reasonable for pts w/o bilateral unresponsive pupils & baseline GCS >3 & ≤ 8.

Conclusion:

- TXA administration resulted in significant ↓ in ICH growth & mortality.
- TXA administration is most effective when given < 3 hrs post TBI.
- Pts w/ GCS ≥ 9 & bilateral or unilateral responsive pupillary reflex showed most benefit from TXA administration.
- No ↑ in thrombotic adverse events was reported.
- More research on long-term neurological outcomes needed.

Purpose:

Evaluate the effects of post injury administration of TXA on change in ICH, mortality, disability, and adverse events.

Current practice:

- Limited to physiological management of ICH, surgical hemorrhage repair, & removal of thrombi.
- **Gap**: Prevent hemorrhagic progression independent of, or prior to surgery to ↓ primary & secondary brain injury.
- **Importance:** ↓ in ICH growth should result in ↓ in primary & secondary brain injury, mortality & disability.
- **Guidelines:** No EB-guideline addresses nonsurgical interventions for direct prevention of ICH progression post-TBI.

Results:

Study	JH LOE	Intervention	ICH Progress	Mortality	Disability	Adverse Events
CRASH-3 Trial (2019)	1B RCT	TXA 1Gm/10 min → 1Gm/8 hrs w/i 3 hrs	Ø	↓ when ǂ	---	---
Alhelaly et al. (2019)	2C MA*	Variability in protocols	↓ growth	---	---	---
Chan et al. (2019)	2B QE	TXA admin not defined	Ø	↓	Ø	Ø
Fakharian, et al., (2018)	1B RCT	TXA 1Gm/10 min → 1Gm/ 8 hrs ASAP; No defined time frame	↓ Δ in volume	---	---	---
July & Pranata (2020)	2C MA*	Variable protocols	↓ Δ expansion	↓	Ø	---
Weng et al. (2019)	1B MA	Variable protocols w/ ↑ effect in early TXA admin	[↓Δ rate & total growth]	[↓]	[Improved neuro not defined]	---
Yokobori et al. (2020)	2C MA*	Variable protocols	---	---	Ø	---

--- = Not Significant; **ø** = Not Measured**; *** = Level Of Evidence downgraded due to inclusion of poor quality, high biased study**; ǂ =** Significance w/ baseline GCS >3 & no bilateral unresponsive pupils, greatest effect w/ GCS ≥9; **[…]** = Results significant w/ exclusion of poor quality, high bias study