

Paramedic – Evidence Based Medicine (P-EBP) Program

Paramedic CAT (Critically Appraised Topic)

Worksheet Title: *Comparison of Pediatric Trauma with and Without TXA*

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Clinical Scenario

You arrive to a scene of a 5-year-old male who has experienced a severe laceration to their right femoral artery due to glass. The bleeding is difficult to control with the use of a tourniquet and direct pressure. Knowing the benefits of TXA use in adults, are you wise to use it in the pediatric population to possibly save this young person's life?

PICO (Population – Intervention – Comparison – Outcome) Question

Population: Pediatric patients (age 16 and under) involved in a traumatic incident pre-hospital

Intervention: The use of Tranexamic Acid Intravenously further to be referenced as TXA

Comparison: Those Populations TXA was not used on

Outcome: Survival to hospital Discharge

Search Strategy

. ("paediatrics"[All Fields] OR "pediatrics"[MeSH Terms] OR "pediatrics"[All Fields] OR "paediatric"[All Fields] OR "pediatric"[All Fields] OR ("paediatrics"[All Fields] OR "pediatrics"[MeSH Terms] OR "pediatrics"[All Fields] OR "paediatric"[All Fields] OR "pediatric"[All Fields])) AND ("injuries"[MeSH Subheading] OR "injuries"[All Fields] OR "trauma"[All Fields] OR "wounds and injuries"[MeSH Terms] OR ("wounds"[All Fields] AND "injuries"[All Fields]) OR "wounds and injuries"[All Fields] OR "trauma s"[All Fields] OR "traumas"[All Fields]) AND ("tranexamic acid"[MeSH Terms] OR ("tranexamic"[All Fields] AND "acid"[All Fields]) OR "tranexamic acid"[All Fields] OR "TXA"[All Fields] OR ("antifibrinolytic agents"[Pharmacological Action] OR "antifibrinolytic agents"[MeSH Terms] OR ("antifibrinolytic"[All Fields] AND "agents"[All Fields]) OR "antifibrinolytic agents"[All Fields] OR "antifibrinolytic"[All Fields] OR "antifibrinolytics"[All Fields]))



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Search Outcome

117 Search Results

Relevant Papers:

AUTHOR, DATE	POPULATION: SAMPLE CHARACTERISTICS	DESIGN (LOE)	OUTCOMES	RESULTS	STRENGTHS/WEAKNESSES
Thompson 2021	Pediatric (aged 16 or under) trauma patients	Retrospective study Has a control group	Survival to discharge Thrombosis Surgical Intervention	TXA 19/29 (66%), No TXA: 14/19 (24%) P= 0.55 TXA: 4/29 (14%), No TXA 3/19 (16%) P=0.85 TXA: 20/29 (69%), No TXA 16/19 P= 0.23	Strengths: relevant and measurable, Methods clearly outlined and followed, Studied pediatric Weakness: Difference between age groups, small sample size, Retrospective
Hamele 2020	507 subjects, 5-13 y/o, combat injury in Afghanistan requiring 40mg/kg transfusion within 24 hours of injury	Retrospective study, has control group	In hospital mortality ICU free days median (IQR) Vent free Days, median (IQR)	TXA: 5/59 (8.5%) No TXA: 83/448 (18.3%) P= 0.055 TXA: 25 (20-27) No TXA: 24 (15.3-28) P=0.56 TXA: 27(23-28) No TXA: 27 (20-28) P=0.99	Strengths: Cohorts similar in age, weight, sex, body temp, OSS and AIS Abstract specific and relevant to study Weaknesses Dosage and medication time no data available, lacked adverse effects data, combat injuries not typically seen in civilian settings
Maede, 2018	Pediatric pts less than or equal to 12 years of age admitted in hospital with trauma diagnosis	Retrospective study, has control group	Adverse Effect of Seizure In Hospital Mortality Thrombosis	TXA: 0.37% No TXA: 0% P= 0.008 TXA: 0.68% No TXA: 0.94% P= 0.37 TXA: 0.16% No TXA: 0.1% P= 0.56	Strengths: Large sample size, Studied Pediatric population, Methods clear concise and followed. Weaknesses: Use of only one database Retrospective, Database did not supply detailed information on disease state



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Comments: *Many citation outcomes were not based on a prehospital setting, as well, TXA not commonly used prehospitally unless in combat setting*

Consider: *No articles viewed had a strong enough base to support the use of TXA in the pediatric population in trauma situations*

Clinical Bottom Line: *Even though highly supported for the use in adult trauma, there is not enough to support the use of TXA in the pediatric population in similar situations the use of TXA needs to be further studied to be considered significant*

References

Thomson JM, Huynh HH, Drone HM, Jantzer JL, Tsai AK, Jancik JT. Experience in an Urban Level 1 Trauma Center With Tranexamic Acid in Pediatric Trauma: A Retrospective Chart Review. *J Intensive Care Med.* 2021 Apr;36(4):413-418. doi: 10.1177/0885066619890834. Epub 2020 Feb 24. PMID: 32090705.

Hamele M, Aden JK, Borgman MA. Tranexamic acid in pediatric combat trauma requiring massive transfusions and mortality. *J Trauma Acute Care Surg.* 2020 Aug;89(2S Suppl 2):S242-S245. doi: 10.1097/TA.0000000000002701. PMID: 32265388.

Maeda T, Michihata N, Sasabuchi Y, Matsui H, Ohnishi Y, Miyata S, Yasunaga H. Safety of Tranexamic Acid During Pediatric Trauma: A Nationwide Database Study. *Pediatr Crit Care Med.* 2018 Dec;19(12):e637-e642. doi: 10.1097/PCC.0000000000001724. PMID: 30199511.

