# EFFICACY OF TRANEXAMIC ACID IN BLEEDING PEDIATRIC TRAUMA PATIENTS IN EMERGENCY DEPARTMENT

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## Introduction

- Pediatric injuries are the main cause of death among children in the United States. Up to 70% of pediatric patients even die before reaching a specialized trauma center. Pediatric injuries represent the majority of hospital admissions and visits to Emergency Department (ED). The physical and psychological needs of any traumatized child and his family must be considered, as any minor injuries may have a long-term impact physically and mentally, and could impair children's quality of life.
- TXA is an antifibrinolytic drug used to reduce surgical bleeding and the need for perioperative blood transfusion. TXA is reversibly bind to lysine-binding receptors on plasminogen, displacing plasminogen from the surface of fibrin and reducing the conversion of plasminogen to plasmin. Thus help to prevent fibrin and clot degradation and preserve the fibrin matrix framework.

## Aim of the work

- The aim of this study is to evaluate the effect of early use of tranexamic acid (TXA) on outcomes of pediatric trauma patients in the Emergency Department.

## Patients

- In this study, ninety pediatric trauma patients (n=90) were enrolled. Patients who need immediate surgical intervention, with known hypersensitivity to TXA, thrombophilia, burns or fatal head traumas were excluded.
- Enrolled patients were randomized to receive IV TXA (TXA group, 45) or placebo (control group, 45).

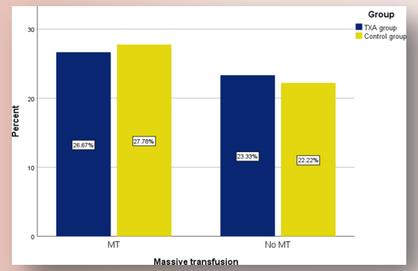
## Methods

- All patients in this prospective study will be subjected to initial assessment according to ATLS (Advanced Trauma Life Support) guidelines.
- Patient will be followed as required and will be assessed for:
  - Transfusion requirements (hemoglobin level-heart rate-blood pressure).
  - Need for surgical intervention.
  - Mortality.
  - Drug side effects
  - Length of hospital stay.
- The primary outcome was the 24-hour blood product administration. The secondary outcomes were in-hospital mortality and adverse events.

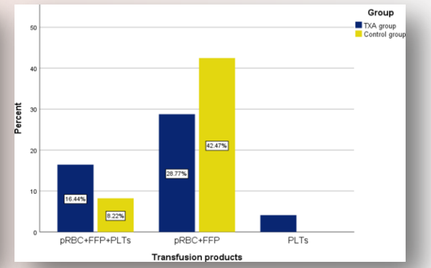
## Results

Comparison between the two groups according to transfusion requirements

| | Overall (n = 90) | | TXA group (n = 45) | | Controlgroup (n = 45) | | Test of sig. | p |
|---|---|---|---|---|---|---|---|---|
| | No. | % | No. | % | No. | % | | |
| Massive transfusion | 49 | 54.4 | 24 | 53.3 | 25 | 55.5 | 0.045 | 1.000 |
| Transfusion | | | | | | | 6.982 | 0.884 |
| ALL products | 18 | 20.0 | 12 | 26.6 | 6 | 13.3 | | |
| PRBC+FFP | 52 | 57.7 | 21 | 46.6 | 31 | 68.8 | | |
| Platelets only | 3 | 3.3 | 3 | 6.6 | 0 | 0 | | |
| TBP (mL/Kg) | | | | | | | 1067. 5 | 0.656 |
| Min. – Max. | 0 – 96.9 | | 0 – 61.8 | | 0 –96.9 | | | |
| Mean ± SD. | 35.6 ± 20.722 | | 33.6± 20.225 | | 37.6± 21.245 | | | |
| Median | 41.0 | | 40.35 | | 41.45 | | | |
| PRBC (mL/Kg) | | | | | | | 1034. 0 | 0.862 |
| Min. – Max. | 0 – 52.9 | | 0 – 29.2 | | 0 –52.9 | | | |
| Mean ± SD. | 16.9 ± 10.588 | | 15.7± 10.144 | | 18.1± 10.996 | | | |
| Median | 19.1 | | 19.3 | | 19.0 | | | |
| FFP (mL/Kg) | | | | | | | 1215. 5 | 0.100 |
| Min. – Max. | 0 – 44 | | 0 – 29.8 | | 0 – 44 | | | |
| Mean ± SD. | 16.5 ± 10.213 | | 14.8± 9.794 | | 18.2± 10.437 | | | |
| Median | 18.35 | | 17.3 | | 20.5 | | | |
| Platelet (mL/kg) | | | | | | | 814.5 | 0.031* |
| Min. – Max. | 0 – 11.7 | | 0 – 11.2 | | 0 – 11.7 | | | |
| Mean ± SD. | 2.2± 4.083 | | 3.1± 4.542 | | 1.3 ± 3.369 | | | |
| Median | 2.19 | | 3.47 | | 1.23 | | | |




Comparison between the two groups according to Massive transfusion




Comparison between the two groups according to Transfusion products

## Conclusion

- In the context of our results, early tranexamic acid may be a safe and effective therapeutic option in pediatric trauma patients during their Emergency Department (ED) stay as benefit may outweigh its risk. It may not reduce the need for massive transfusion directly, but it has an independent late mortality benefit as in adults.