

Guideline



CCHMC Trauma Service Guidelines

Title: Tranexamic acid (TXA) usage in trauma

Effective Date: 8/1/2017

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1.0 SCOPE

1.1 Hemorrhagic shock is the most preventable cause of death in trauma. In adult patients with hemodynamic instability and ongoing bleeding, tranexamic acid has proven effective if administered within the first three hours of the trauma.^{1,2} Tranexamic acid is an antifibrinolytic that reversibly binds to plasminogen at the lysine binding site, thus preventing the binding of plasmin to fibrin and the subsequent degradation of fibrin.³ The Royal College of Paediatrics and Child Health developed an evidence statement in 2012 on the use of tranexamic acid in children based on the CRASH-2 trial and implemented in the United Kingdom and Canada.⁴

2.0 DEFINITIONS

- 2.1. Tranexamic acid – TXA
- 2.2. Systolic blood pressure - SBP
- 2.3. Hemoglobin – Hgb
- 2.4. Traumatic Brain Injury - TBI

3.0 GUIDELINE

- 3.1. Consider TXA for children with evidence of severe internal or non-compressible external hemorrhage as evidenced by three or more of the following:
 - 3.1.1. SBP < 80 mmHg in children <5 years or <90 if ≥5 years of age
 - 3.1.2. Sustained tachycardia for age
 - 3.1.3. Tachypnea for age
 - 3.1.4. Cool pale skin with cap refill >2 seconds
 - 3.1.5. Hgb <11

- 3.2. Contraindications to TXA include:
 - 3.2.1. Time of injury to administration is ≥ 3 hours
 - 3.2.2. Patients with TBI

- 3.3. In children <12
 - 3.3.1. The loading dose is 15 mg/kg IV (max 1g) given over 10 minutes
 - 3.3.1.1. The maintenance infusion of 2 mg/kg/hour for at least 8 hours or until bleeding stops

- 3.4. In children ≥ 12 years
 - 3.4.1. The loading dose is 1 g IV over 10 minutes (max 1 g)
 - 3.4.1.1. Maintenance infusion 1 g over 8 hours

Age	Pulse Beats/min	Respirations Breaths/min	Avg. Systolic BP
Premature	120 – 170	40 – 70	55 – 75
0 – 3 months	100 – 150	35 – 55	65 – 85
3 – 6 months	90 – 120	30 – 45	70 – 90
6 – 12 months	90 – 120	25 – 40	80 – 100
1 – 3 years	70 – 110	20 – 30	90 – 105
3 – 6 years	65 – 110	20 – 25	95 – 110
6 – 12 years	60 – 95	14 – 22	100 – 120
12+ years	55 – 85	12 – 18	110 – 135

Behman, RE, Kliegman, RM & Jenson, HB. (2003). *Nelson Textbook of Pediatrics*. Saunders

4.0 REFERENCES

- 4.1. Oldashi, F, Kerci, M, Zhurda, T., (...) Sakala, D., Chengo, C. (2010). Effects of tranexamic acid on death, vascular occlusive events, and blood transfusion in trauma patients with significant haemorrhage (CRASH-2): A randomized, placebo-controlled trial. *The Lancet*. 376 pp 23-32. doi:10.1016/S0140-6736(10)60835-5
- 4.2 Morrison, J.J., Dubose, J.J., Rasumssen, T.E., Midwinter, M.J., (2012). Military application of tranexamic acid in trauma emergency resuscitation (MATTERS) Study. *Arch Surg*. 147 (2) pp113-119. doi:10.1001/archsurg.2011.287
- 4.3 Beno, S., Ackery, A.D., Callum, J., Rizoli, S. (2014). Tranexamic acid in pediatric trauma: why not? *Critical Care*. 18:313

4.4 Royal College of Paediatrics and Child Health. Major trauma and the use of tranexamic acid in children.

Available at:

<http://www.rcpch.ac.uk/system/files/protected/page/Major%20Trauma%20and%20the%20Use%20of%20Tranexamic%20Acid%20in%20Children%20-%20Evidence%20Statement%202012-11.pdf>

5.0 APPROVALS

All revisions of this guideline are approved by the Trauma Service. This guideline is reviewed every three years or sooner if deemed necessary. Authority for this document resides with the Trauma Service. This guideline is approved by the Medical Director for the Trauma Service.

HISTORY	
Original Date	
7/2017	