



Tranexamic Acid

The Magic Bullet?

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Trauma

- Kills millions each year world wide
- Hemorrhagic Shock remains a major cause of death in trauma patients
- Stopping hemorrhage remains a mainstay of trauma care
 - We know that works
 - Data from Iraq and Afghan Combat and Tourniquets
- What about bleeding we cannot control in Civilian EMS?

What if there was something:

That helps to stop bleeding?

Reduces the number of massive transfusions?

Improves mortality?

Has little side effects?

Can be given in the Field?

Is inexpensive?

Would You Use It?

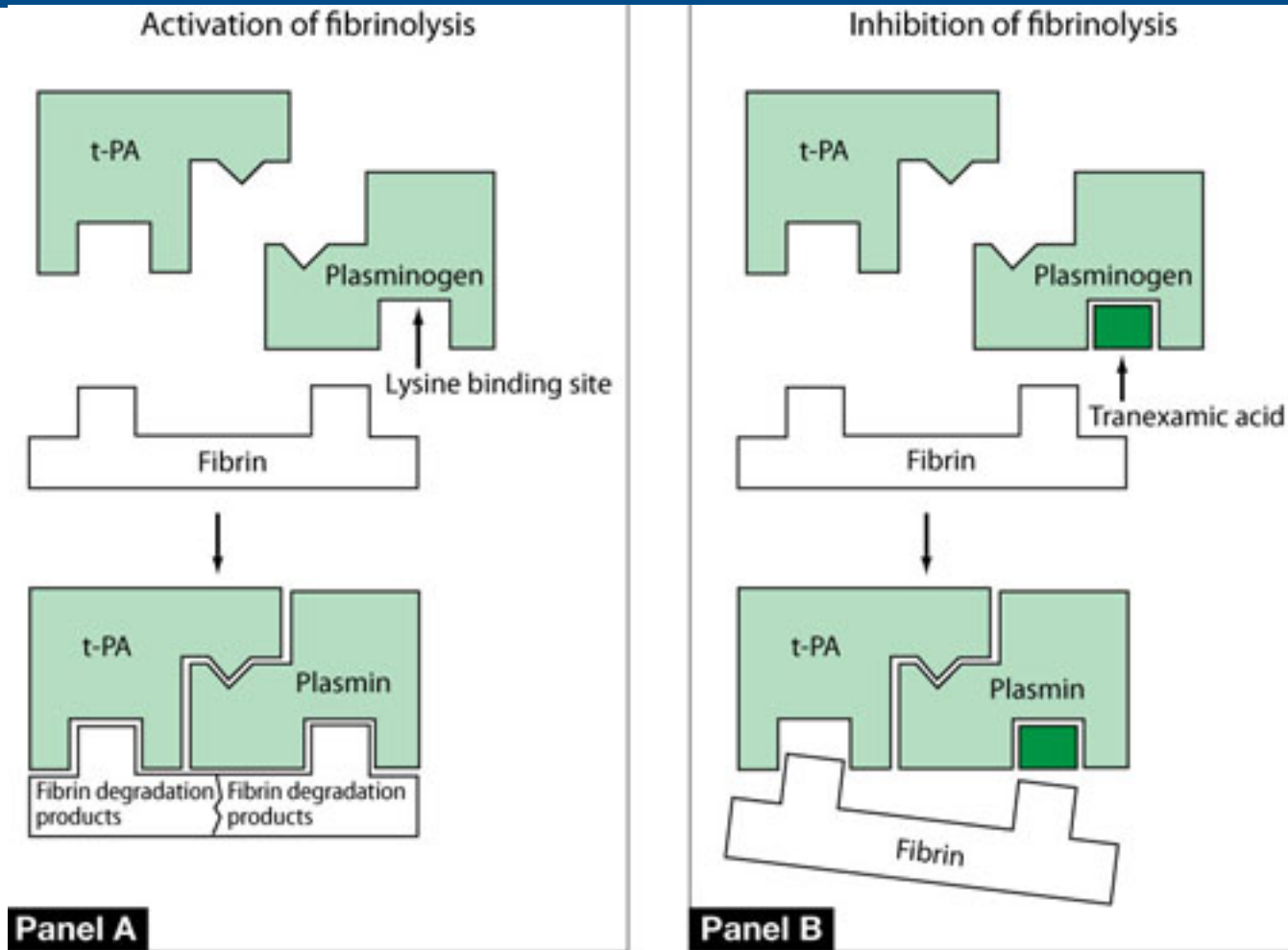
Tranexamic Acid

- Has been used for 50 years to decrease bleeding in surgery¹ and OB cases ²
- Prevents breakdown of clots (fibrinolysis)
 - Blocks the plasminogen binding sites

1 - BMJ 2012: 344,e3054

2 -[http://www.obgmanagement.com/index.php?id=20667&tx_ttnews\[tt_news\]=175428](http://www.obgmanagement.com/index.php?id=20667&tx_ttnews[tt_news]=175428)

TXA and Fibrin



Does It Work in Trauma?

CRASH₂

Clinical Randomisation of an Antifibrinolytic in Significant Hemorrhage -2

- > 20000 patients
- 274 Hospitals
- 47 Countries
 - Including Canada, UK and Australia
- Blinded and Randomized
 - 99% follow up
- Control and Treatment Groups with similar demographics

Key Results

- Reduced need for transfusion by 1/3
- 15% reduction in risk of death from bleeding
- No difference in development of thrombotic events (CVA, PE, MI) or multisystem organ failure
- **ALL CAUSE MORTALITY REDUCED BY 9%**
- **IF GIVEN AFTER 3 HOURS, NO BENEFIT and Increased mortality**

MATTERS

Archives of Surgery 2012:147, 113-119

- Military Application of Tranexamic Acid in Trauma Emergency Resuscitation Study
- Combat Casualties from NATO forces
- Retrospective Analysis
 - Compared TXA to No TXA in patients getting at least one unit PRBC
 - Subgroup analysis of Massive (>10 uPRBC) transfusion
- Outcome is mortality at 24h, 48h and 30D
 - Post operative coagulopathy and thromboembolism

- 896 casualties at Camp Bastion
 - 296 received TXA 603 no TXA
 - 125 TXA and Massive Transfusion
 - 196 No TXA and had Massive Transfusion
- Combat casualties
 - Young Healthy Adults

Outcomes

- At 24 hours less but not statistically significant drop in all cause mortality with TXA which was significant by 48 hours
- Overall all cause in hospital mortality:
 - TXA group had an all cause mortality of 17.4% versus 23.9% for No TXA
 - Massive transfusion group more pronounced
 - 14.4% versus 28.1%
 - TXA group did have higher PE and DVT Rate
- NNT 7!!

So What's the Message?

- WHO considers TXA an essential medication
- Very few side effects or contraindications
- ***Best results if given within an hour of injury***
 - > 3 hours may be harmful Lancet 2011:377, 1096-1101
- Cheap and easy to give... in the field.

Recommended by:

- It is a component of the trauma protocol in the UK
- It is part of C-TECC Tac Med guidelines
- *Tranexamic Acid*
- If casualty is anticipated to need significant blood transfusion (e.g. presents with hemorrhagic shock, one or more amputations, penetrating torso trauma, or evidence of severe bleeding) consider administration of 1 gram of TXA in 100cc NS or LR IV as soon as possible. Do **not** administer later than 3 hours after injury. Begin second infusion of 1 gram of TXA after initial resuscitation.