



June 2013 Up2Date

## Tranexamic Acid (TXA)

- Synthetic form of lysine, which inhibits fibrinolysis by preventing clots from dissolving (refer to diagram on page 2 for more details) – simply stated it helps to maintain the clots that a patient is producing on their own
- Used to treat hyperfibrinolysis related to any type of trauma, most useful when other measures are not an option (ex: pressure, tourniquet, hemostatic dressing/powder) such as internal bleeding (ex: blunt trauma, GSW, etc.)
- Crosses the placenta and the blood-brain barrier (Can be used for eye trauma, i.e., hyphaema)
- British Army implemented in 2010, U.S. Army in 2011
- Brand names: Transamin, Lysteda, Cyklokapron
- Has been in literature since 1962 mainly for surgery, currently replacing aprotinin

## Research

- Shown to decrease risk of death due to bleeding
- Has not shown a decreased number of patients needing blood transfusions or a decrease in the amount of blood transfused
- Most research has been done in the surgical arena
- Most beneficial if given within 1 hour of trauma (decreased death d/t bleeding by one third when given within 3 hrs)
- Most beneficial in low and middle income settings (see map on page 2)

*Dosing:* 1000mg IV over 10 minutes. Then 1000 mg over the next 8 hours (125mg/hr).

*Preparation:* Adult – Mix 1000mg in 100 ml NS for loading dose; Mix 1000mg in 500 ml NS for maintenance dose

Available form in aircraft – 1000 mg/ 10ml vial (100mg/ml)

## Side Effects/ Contraindications

- Side effects: headache, n/v, diarrhea, dyspepsia, dysmenorrhea, dizziness, back pain, numbness, and anemia but generally well tolerated
- Should not be used in patients taking Thrombin or with a history of Thrombosis or Renal impairment
- Long-term use showed retinal degeneration in dogs
- Theoretical possibility of an increased risk of thromboembolic events

## How TXA functions at cellular level:

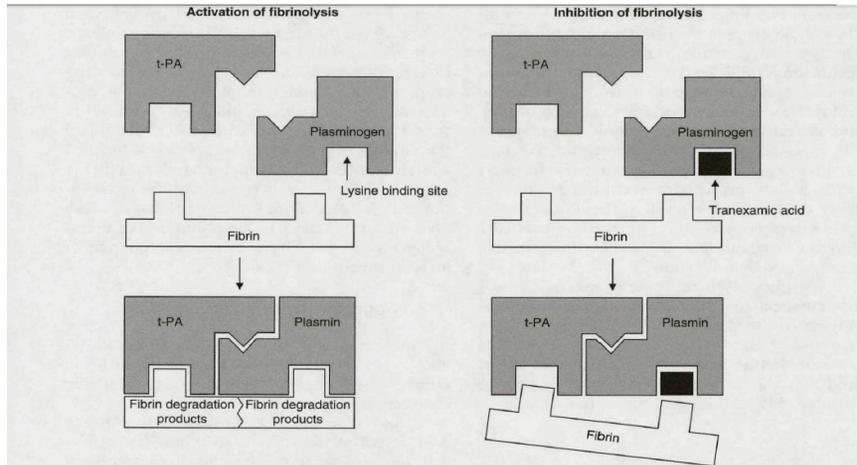


Fig. 2. Antifibrinolytic action of tranexamic acid. Plasminogen normally binds to lysine residues on fibrin and is converted to plasmin in the presence of tissue plasminogen activator; plasmin then digests fibrin. Tranexamic acid reversibly binds to plasminogen at the lysine binding site, preventing the binding of plasmin(ogen) to fibrin and the subsequent degradation of fibrin [reproduced from Dunn and Goa. Tranexamic acid: a review of its use in surgery and other indications. *Drugs* 1999 Jun; 57 (6): 1005-32 with permission from Adis (© Adis Data Information BV 1991. All rights reserved)]. t-PA = tissue plasminogen activator.

## References:

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6. Morrison JJ, Dubose JJ, Rasmussen TE, et al. Military Application of Tranexamic Acid in Trauma Emergency Resuscitation (MATTERs) Study. *Arch Surg*. 2012;147(2):113-119
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## Deaths prevented per year globally:

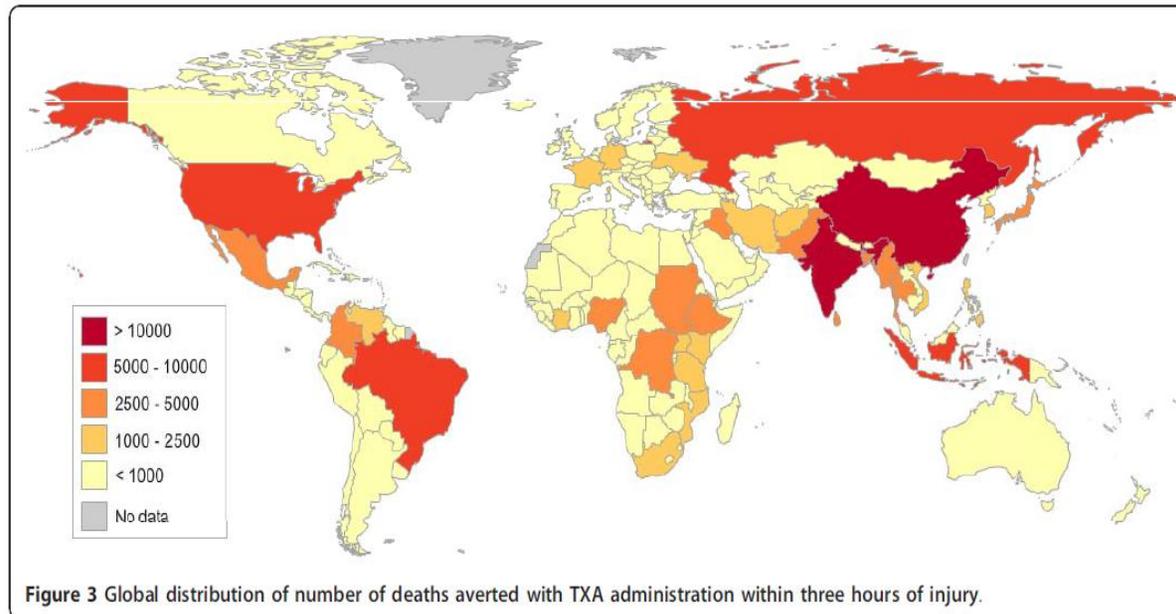


Figure 3 Global distribution of number of deaths averted with TXA administration within three hours of injury.