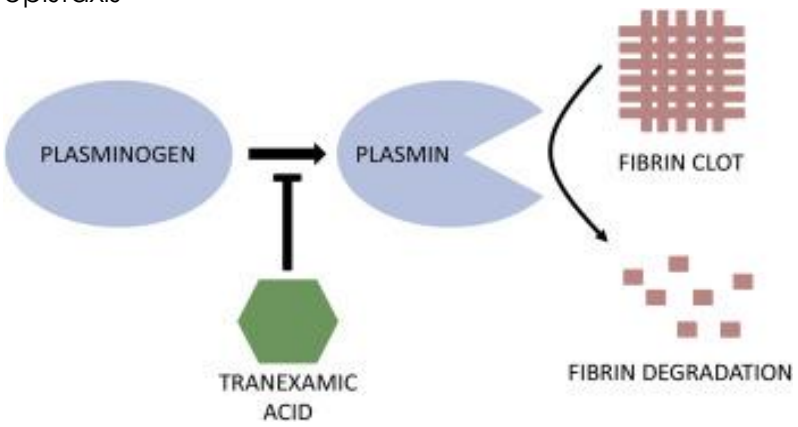
Pharmacy Friday

The use of Tranexamic acid in the ED and Trauma

1. Trauma is the leading cause of death in persons younger than 40 years, with hemorrhage responsible as the cause of death in 30% of these deaths
2. Providing source control and blood products provide the a reasonable resolution to bleeding and trauma induce-coagulopathy
3. Fixed-ratio transfusion, emphasizing the early use of plasma and platelets, has been associated with improved outcomes in retrospective studies and has been widely adopted in both civilian and military practice
4. Within the medical community there has been a resurgence of research on the pathophysiology of trauma-induced coagulopathy and potential pharmacologic agents to adjunct the administration of blood products.
5. Tranexamic acid (TXA) is a synthetic lysine derivative that inhibits fibrinolysis by blocking the lysine binding sites on plasminogen, an inactive form of plasmin which acts to dissolve fibrin clots.
6. Other indications include: Postpartum hemorrhage, Post-operative bleeding, Hereditary angioedema (HAE), anterior epistaxis



Properties	Tranexamic Acid (TXA)
Dose	Loading dose: 1,000 mg, followed by 1,000 mg over the next 8 hours
Administration	IV injection over 1-10 minutes*
PK/PD	Onset IV: 1-5 hours Duration IV: 17 hours Excretion: Urine (>95% as unchanged drug)
Adverse Effect	Rapid administration could cause hypotension
Compatibility/ DDI	Compatible with Normal Saline and Dextrose solutions Avoid in women taking oral contraceptives, patients with clotting disorders, and taking chlorpromazine

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* At GHS IV push has commonly been used based on clinical experience

Author, Year	Design/ sample size	Patient Population	Outcome
Wafaisade, 2016	Prehospital observational/ n= 516	Adult civilian trauma patients	↓ **Early mortality** observed in patients with a high propensity score No difference in hospital mortality
Ker K, 2015	Cochrane Review/ n=20,451	Mix of military and civilian patients	Antifibrinolytic drugs **reduce the risk of death from any cause by 10%** ↓ need for **surgical intervention or receipt of blood transfusion** There is some evidence that TXA may reduce mortality in patients with TBI
Harvin, 2015	Observational/ n=1032	Trauma civilian patients with hyperfibrinolysis defined as LY-30 of 3% or greater	↑ Unadjusted in-hospital mortality in the TXA group, **No difference on in-hospital mortality** among those receiving TXA after adjusting for confounders, **No difference in VTE**
Cole E, 2015	Prospective cohort study/ n=385	Adult civilian trauma patients	TXA associated with ↓ in multiple organ failure [OR = 0.27] ↓ **adjusted all-cause mortality** (OR = 0.16] in shocked patients
Morrison et al (MATTERS), 2012	Retrospective observational/ n=896	Military combat patients (Afghanistan) receiving ≥ 1 unit of PRBCs	**TXA ↓ unadjusted mortality** vs no-TXA group (17.4% vs 23.9%) Benefit greatest in group who received massive transfusion with ↑ **survival** (OR = 7.228) ↓ **less coagulopathy**
CRASH-2 trial collaborators, 2010	RCT/ n= 20,211	Adult civilian trauma patients	↓ All-cause mortality with TXA **14.5% vs. 16.0%.** NNT= 67 ↓ **Risk of death due to bleeding** **Early treatment (≤ 3 h from injury**) significantly reduced the risk of death due to bleeding **No difference in clotting events**

References

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