Maine Medical Center
Department of Emergency Medicine
Journal Club Summary Template

Date: 3/18/21	**Presenter Name: John McNamara MD**

Article Citation: The incidence of venous thromboembolic events in trauma patients after tranexamic acid administration: an EAST multicenter study
Country(ies): United States
Funding Source(s): None Stated

Purpose
Research Question(s): What is the incidence of VTE as well as cerebrovascular accident (CVA) and myocardial infarction (MI) in bleeding, injured patients who did and did not receive TXA during their initial resuscitation?
Hypotheses: TXA administration is not associated with increased risk of VTE, MI, or CVA in this population.
Study Purpose: To evaluate the incidence of VTE, CVA and MI in bleeding patients receiving TXA versus those who did not.

Methods
Study Design: Multicenter Retrospective Review
Outcome(s) ***[or Dependent Variable]:*** Incidence of VTE, CVA and MI
Intervention ***[or Independent Variable]:*** TXA administration
Ethics Review: IRB Review
Research Setting: Patients admitted to a participating state or American College of Surgeons verified level I or II trauma center in the United States between 1 January 2011 and 1 January 2017
Study Subjects: Injured patients ages 18–80 years old, presenting directly to the trauma center from the scene, and receiving at least 5 units of packed red blood cells (PRBC) within the first 24h of hospital arrival.
Inclusion Criteria: See above
Exclusion Criteria: Excluded if they were transferred from a referring hospital, died within 24h of hospital admission, were pregnant, received TXA more than 3h following injury or lacked documentation regarding timing of TXA administration. Centers that routinely use screening duplex to detect asymptomatic deep venous thrombosis (DVT) were asked to not paricipate in the study thereby excluding this cohort of patients.
Study Interventions: TXA administration

Study Groups: Patients were divided into two cohorts based on presence or absence of TXA administration.

Instruments/Measures Used:
Symptomatic DVT or PE by duplex or CTA

Data Collection:

Patient age, sex, comorbid conditions, mechanism of injury, injury severity score (ISS), arrival vital signs and laboratory values, time of TXA administration relative to hospital presentation, and transfusion requirements during the initial 24 h following injury were collected. Start date of pharmacologic VTE prophylaxis (both drug and total dose administered) as well as number of missed doses for the entire hospital stay were recorded.

Primary outcome variables were the incidence of VTE, defined as a composite measure of duplex confirmed DVT and computerized tomography angiogram confirmed pulmonary embolism, as well as the individual incidence of DVT or pulmonary embolism during the entire hospital stay. Secondary outcome variables included the incidence of MI or CVA, as well as hospital length of stay, in-hospital mortality, and blood product usage.

Data Analysis:

***A priori* sample size calculation?** Yes

Statistical analyses used:

Adjustment for potential confounders? Yes
If yes, list: univariate comparisons with P less than 0.2 and administration of VTE prophylaxis were adjusted as potential confounding covariates in subsequent multivariate analyses

Results

Study participants:

A total of 1333 patients across 17 trauma centers were enrolled in the study. Of those patients, 887 (67%) received TXA, while 446 (33%) did not.

Brief answers to research questions *[key findings]:*

No difference in the associated risk of VTE or MI/CVA after multivariable risk adjustment

Additional findings:

The group that received TXA required 25 – 30% less blood product transfusions in the first 24 h following arrival. They do comment that the study did not access hemorrhage control methods and suggest that it is possible that there are other explanations for these findings.

In hospital mortality was lower in the TXA group.

Limitations:
No protocol governing administration of TXA, so not equally distributed across centers. Attempted to address this with injury severity scores and hemorrhaging patients.
No BMI information collected, known risk factor for VTE.
Unable to determine if patients were on antiplatelet or anticoagulation medication prior to injury.
Survival bias given only patients surviving past 24 hrs
Different threshold to obtain DVT US, attempted to use only symptomatic patients to correct for this.

Clinical Implications
Applicable? Yes **Feasible?** Yes **Clinically relevant?** Yes **Comments:**
Level of evidence generated from this study
IIb: evidence obtained from at least one other type of well-designed quasi-experimental study III: evidence obtained from a well-designed, non-experimental study

Additional Comments/Discussion/Notes