# A retrospective analysis of tranexamic acid administration in the major trauma population conveyed to the Queen Elizabeth University Hospital, Glasgow.

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## Background

NICE Major Trauma Guidelines, introduced in February 2016, support the administration of 1g bolus of tranexamic acid (TXA) within 3-hours in patients with major trauma and active or suspected bleeding, followed by a further 1g over 8-hours.[1, 2] This recommendation, based on evidence from the CRASH-2 trial, illustrated a significant time-dependent mortality benefit.[3-6] The Queen Elizabeth University Hospital (QEUH), Glasgow, receives the majority of the West of Scotland's major trauma and was identified as a site where appropriate administration of TXA could yield most benefit.

## Aims

To assess those patients admitted to the QEUH, who were administered 1g TXA and whether this was within 3 hours of injury as per NICE guidelines. The second aim was to identify how many of these patients go on to have a second dose of TXA administered as an infusion over 8-hours when clinically indicated.

## Methods

### *Study Design*

A retrospective cohort study was designed including all major trauma patients from 01/11/17 – 28/08/18 who received TXA and were subsequently transported to the QEUH.

### *Literature Search*

A search of the 'Embase' was performed using the terms 'TXA' or 'tranexamic acid', 'mortality' and 'major trauma'. No other standard filters were used. The search was carried out on April 5th, 2018. Abstracts were then independently reviewed.

### *Data Collection*

Patients involved in major trauma and received TXA were identified using the electronic Scottish Trauma Audit Group (eSTAG) database and then verified using electronic clinical records (Clinical Portal, Trakcare).

Data collected included; age, gender, date of attendance, time of injury/call, injury severity score (ISS), mechanism of injury, time and location of 1st of dose, time, location and preparation of 2nd dose and if patient alive at 24 hours, 7 days and 30 days. Twenty-five secondary transfers were excluded as well as ten patients with insufficient data.

## Results

One hundred and fourteen patients were identified by eSTAG as having received TXA and were admitted to the QEUH. Of these, 79 patients were analysed and 35 were excluded (Table 1). Seventy-three (92.4%) patients received their initial dose of TXA within 3 hours and 6 (7.6%) did not. Median time to first dose was 70 minutes (44-110 minutes). Only 1 (0.79%) patient received an incorrect dose of 200mg, all others received 1g.

Of the 79 patients, 9 received a second dose of TXA, 3 as an infusion (Figure. All second doses were given within 24 hours of the initial TXA dose, median time 115 minutes (65-162.5). One patient received a second dose of 800mg, the rest received 1g.

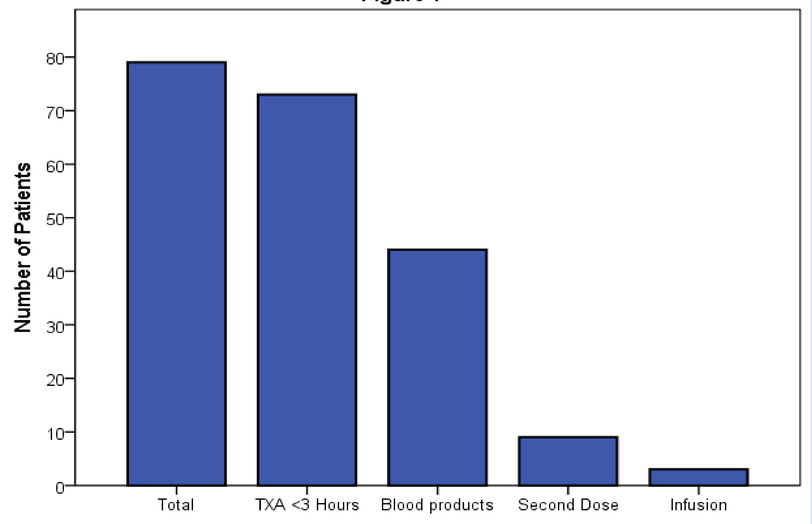
Forty-four patients received blood products including the 9 who received a second dose of TXA.

**Table 1** – Study population characteristics

| **Characteristics** | **All Patients** (n=79) |
|---|---|
| **Age (Years)** | 43 (16-84) |
| **Female Gender n (%)** | 19/60 (24) |
| **Injury Severity Score** | 21.5 (14-30) |
| **24 Hour Mortality n (%)** | 4/79 (5) |
| **7 Day Mortality n (%)** | 9/79 (11.4) |
| **30 Day Mortality n (%)** | 13/79 (16.5) |
| **Mechanism of Injury** | |
| Moving Vehicle | 39/79 (49.4) |
| Fall >2m | 15/79 (19) |
| Fall ≤2m | 3/79 (3.8) |
| Crushing Force | 1/79 (1.3) |
| Mechanical Threat to Breathing | 1/79 (1.3) |
| Penetrating Trauma | 8/79 (10.1) |
| Contact with Animal/Object | 1/79 (1.3) |
| Contact with Person | 6/79 (7.6) |
| Blast | 3/79 (3.8) |
| Other | 1/79 (1.3) |

Data presented Median (IQR) or Frequency (%)

Figure 1




## Discussion

In spite of current trial data demonstrating a significant reduction in mortality following use of TXA in major trauma with suspected bleeding,[7] this study indicates that this has not yet been incorporated into clinical practice. This is especially true regarding administration of a second dose with only 9 patients receiving this dose and with three of these following the protocol outlined in the literature. One reason secondary dosing might be so low is that it may not be indicated if patients were found not to be actively bleeding. Not being able to verify those that had a clinical indication and those that did not is a limitation of the study. In an attempt to combat this we identified those patients who received blood products as a caveat indicator for active bleeding and therefore an appropriate candidate for second dosing of TXA.

With current evidence supporting administration of a secondary TXA dose[2] further efforts should be made to encourage this through education of both pre-hospital and hospital practitioners. We intend to work with the emergency practioners at the QEUH to implement simple changes to improve prescription of TXA in bleeding trauma as per NICE guidelines

## References

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