ORIGINAL SCIENTIFIC ARTICLES

Pre-Trauma Center Red Blood Cell Transfusion Is Associated with Improved Early Outcomes in Air Medical Trauma Patients

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CONCLUSIONS: Pre-trauma center RBC was associated with an increased probability of 24-hour survival, decreased risk of shock, and lower 24-hour RBC requirement. Pre-trauma center RBC appears beneficial in severely injured air medical trauma patients and prospective study is warranted as PTC RBC transfusion becomes more readily available. (J Am Coll Surg 2015; 220:797–808. © 2015 by the American College of Surgeons)

The importance of early treatment with tranexamic acid in bleeding trauma patients: an exploratory analysis of the CRASH-2 randomised controlled trial

The CRASH-2 collaborators‡

Summary

Background

The aim of the CRASH-2 trial was to assess the effects of early administration of tranexamic acid on death, vascular occlusive events, and blood transfusion in trauma patients with significant haemorrhage. Tranexamic acid significantly reduced all-cause mortality. Because tranexamic acid is thought to exert its effect through inhibition of fibrinolysis, we undertook exploratory analyses of its effect on death due to bleeding.

Findings

10 096 patients were allocated to tranexamic acid and 10 115 to placebo, of whom 10 060 and 10 067, respectively, were analysed. 1063 deaths (35%) were due to bleeding. We recorded strong evidence that the effect of tranexamic acid on death due to bleeding varied according to the time from injury to treatment (test for interaction p<0·0001). Early treatment (≤1 h from injury) significantly reduced the risk of death due to bleeding (198/3747 [5·3%] events in tranexamic acid group *vs* 286/3704 [7·7%] in placebo group; relative risk [RR] 0·68, 95% CI 0·57–0·82; p<0·0001). Treatment given between 1 and 3 h also reduced the risk of death due to bleeding (147/3037 [4·8%] *vs* 184/2996 [6·1%]; RR 0·79, 0·64–0·97; p=0·03). Treatment given after 3 h seemed to increase the risk of death due to bleeding (144/3272 [4·4%] *vs* 103/3362 [3·1%]; RR 1·44, 1·12–1·84; p=0·004). We recorded no evidence that the effect of tranexamic acid on death due to bleeding varied by systolic blood pressure, Glasgow coma score, or type of injury.

Interpretation

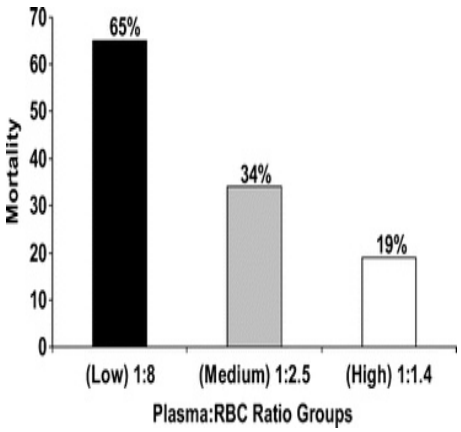
Tranexamic acid should be given as early as possible to bleeding trauma patients. For trauma patients admitted late after injury, tranexamic acid is less effective and could be harmful.

Royal London research team data

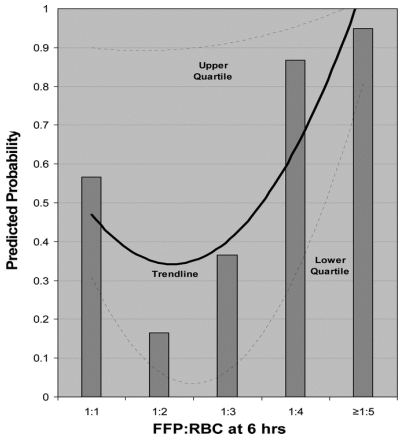
- First dose of TXA is effective for most patients
- Visible reduction in hyperfibrinolysis on ROTEM
- 2nd dose (infusion) may not be required in many cases
- If hyperfibrinolysis persists – need to provide more substrate ie Fg
- Code Red pts who receive TXA have 10% VTE rate (much higher than control group)

- Suggestion from US group that TXA should be more targeted than current practice and guided by ROTEM / TEG.

Moore E et al Transfusion 2016;56(Suppl 2):S115-118



Borgman et al.
J Trauma 2007; 63:805–813



Kashuk et al.
J Trauma 2009; 65: 261-71

Research

Original Investigation

Transfusion of Plasma, Platelets, and Red Blood Cells in a 1:1:1 vs a 1:1:2 Ratio and Mortality in Patients With Severe Trauma
The PROPPR Randomized Clinical Trial

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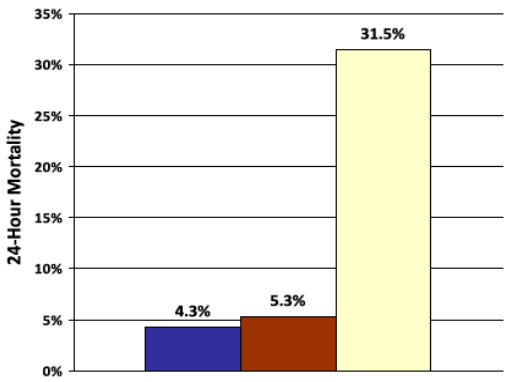
JAMA. 2015;313(5):471-482. doi:10.1001/jama.2015.12

Impact of fibrinogen levels on outcomes after acute injury in patients requiring a massive transfusion.
Inaba K et al. J Am Coll Surg. 2013 Feb;216(2):290-7.



Fibrinogen > 180 mg/dl, **Fibrinogen 180 – 100 mg/dl**, **Fibrinogen < 100 mg/dl**

MEDIZINISCHE UNIVERSITÄT
INNSBRUCK

FIINTIC

Fibrinogen in Trauma induced coagulopathy

E-FIT 1

NHS
Blood and Transplant

A multi-centre, randomised, double blind, placebo-controlled trial evaluating the effects of early administration of fibrinogen concentrate in adults with major traumatic haemorrhage

Early-Fibrinogen in Trauma

http://efit1trial.co.uk/

iTACTIC

Implementing **T**reatment **A**lgorithms for the **C**orrection of **T**rauma **I**nduced **C**oagulopathy

Prospective, randomised controlled trial
Bleeding trauma patients
ROTEM / TEG vs conventional clotting tests (CCT)

iTACTIC

Implementing Treatment Algorithms for the Correction of Trauma Induced Coagulopathy

FIBRINOGEN
If FIBTEM CA5 < 10mm
Give additional 4g equivalent of fibrinogen
(As Cryoprecipitate or Concentrate)

PLATELETS
If (EXTEM CA5 - FIBTEM CA5) < 30mm
Give 1 additional pool of platelets

PLASMA
If EXTEM CA5 >40mm **AND** EXTEM CT >80s
Give 4 additional units of plasma

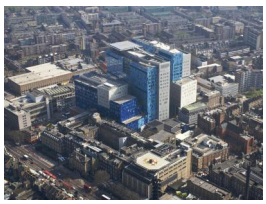
TRANEXAMIC ACID
If EXTEM LI30 <85%
Give additional 1g IV bolus of tranexamic acid

CRYOSTAT
EARLY CRYOPRECIPITATE IN TRAUMA

British Journal of Anaesthesia 115 (1): 76–83 (2015)
doi: 10.1093/bja/aev134
Advance Access Publication Date 19 May 2015
Clinical Practice

Early cryoprecipitate for major haemorrhage in trauma: a randomised controlled feasibility trial

N. Curry[1,*], C. Rourke[2], R. Davenport[2], S. Beer[1], L. Pankhurst[3], A. Deary[3], H. Thomas[3], C. Llewelyn[3], L. Green[4], H. Doughty[5], G. Nordmann[6,7], K. Brohi[2] and S. Stanworth[1]



REVIEW ARTICLE

Whole blood for hemostatic resuscitation of major bleeding

Philip C. Spinella,[1,2] Heather F. Pidcoke,[2] Geir Strandenes,[3,4] Tor Hervig,[4] Andrew Fisher,[5] Donald Jenkins,[6] Mark Yazer,[7] James Stubbs,[8] Alan Murdock,[9] Anne Sailliol,[10] Paul M. Ness,[11] and Andrew P. Cap[2]

- *Transfusion. 2016:56;S190-S202*
- US Army data
- WB superior or equivalent to blood product txn
- 4C platelets have better function than 22C plt
- Leukoreduced, platelets spared.