IRISH ASSOCIATION FOR EMERGENCY MEDICINE

IAEM Clinical Guideline

The Use of Tranexamic Acid in Trauma Patients

Version 2.2

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DISCLAIMER

IAEM recognises that patients, their situations, Emergency Departments and staff all vary. These guidelines cannot cover all clinical scenarios. The ultimate responsibility for the interpretation and application of these guidelines, the use of current information and a patient's overall care and wellbeing resides with the treating clinician.

Revision History

Date	Version	Section	Summary of changes	Author
September 2015	V1.0	All	Final version	ÁM/CB/ GW/UK
April 2019	V1.1	Front cover	Removed guideline number	C. Briant
February 2021	V2.0	All	Guideline reviewed and updated	ÁM
April 2021	V2.1	Introduction	Added information regarding use in patients with traumatic brain injury	ÁM
August 2024	V2.2	All Front cover Contents References	Updated formatting Added guideline referencing information Added table of contents Added references to main document	C. Briant C. Briant C. Briant C. Briant

CONTENTS

GLOSSARY OF TERMS

Significant haemorrhage	Any patient with Class II-IV haemorrhage as per the Advanced Trauma Life Support (ATLS) classification of haemorrhage.
At risk of significant haemorrhage	Includes any patient who may have compensated haemorrhage or any patient at risk of re-bleeding.

GLOSSARY OF ABBREVIATIONS

CRASH-2	Clinical Randomisation of an Antifibrinolytic in Significant Haemorrhage -2
DIC	Disseminated Intravascular Coagulation
ED	Emergency Department
NaCl	Sodium Chloride
RCT	Randomised Control Trial
SR	Systematic Review
TBI	Traumatic Brain Injury
TXA	Tranexamic Acid

The Use of Tranexamic Acid in Trauma Patients

INTRODUCTION

This guideline aims to act as a resource for medical and nursing staff and other members of the multidisciplinary Emergency Department (ED) team to aid in the use of tranexamic acid (TXA) in trauma patients. This guideline is not intended to replace clinical judgement.

Trauma is the leading cause of death in Ireland in young people, and the third leading cause of death in Ireland overall. Each year, approximately 3 million people die worldwide as a result of trauma, many after reaching hospital. In trauma patients who survive to reach hospital, exsanguination is a common cause of death. Central nervous system injury and multi-organ failure account for most of the remainder, both of which can be exacerbated by severe bleeding.

Anti-fibrinolytic agents have been shown to reduce blood loss in surgical patients without increasing the risk of post-operative complications and have been in long-term clinical use in multiple surgical specialties, particularly cardiothoracic surgery.

Use of TXA is advised in trauma patients with known or suspected major bleeding, within three hours of injury. This is based largely on data published in 2010 from the Clinical Randomisation of an Antifibrinolytic in Significant Haemorrhage (CRASH-2) trial. This trial showed that administration of TXA to trauma patients with significant haemorrhage reduces the risk of death due to bleeding by 15% without increasing the risk of adverse events.

Following the CRASH-2 trial, further trials and systematic reviews have looked at the use of TXA in bleeding trauma patients. In highly developed trauma systems, the mortality benefit of TXA demonstrated in the CRASH-2 trial is likely lessened in clinical practice by other factors

such as early availability of blood products and the ability to perform damage control resuscitation and damage control surgery. Notwithstanding, TXA is known to be safe and beneficial to bleeding trauma patients.

Study of the use of TXA in patients with traumatic brain injury (TBI) has not shown a statistically significant benefit. Use of TXA in this patient population is safe and may possibly be beneficial. Please see “Administration to patient with TBI” section in “Special Considerations” below.

International guidance based on Grade 1A evidence recommends that TXA be administered as early as possible (within three hours) to the trauma patient who is bleeding or at risk of significant haemorrhage at a loading dose of 1g infused over 10 minutes, followed by an intravenous infusion of 1g over 8 hours.

PARAMETERS

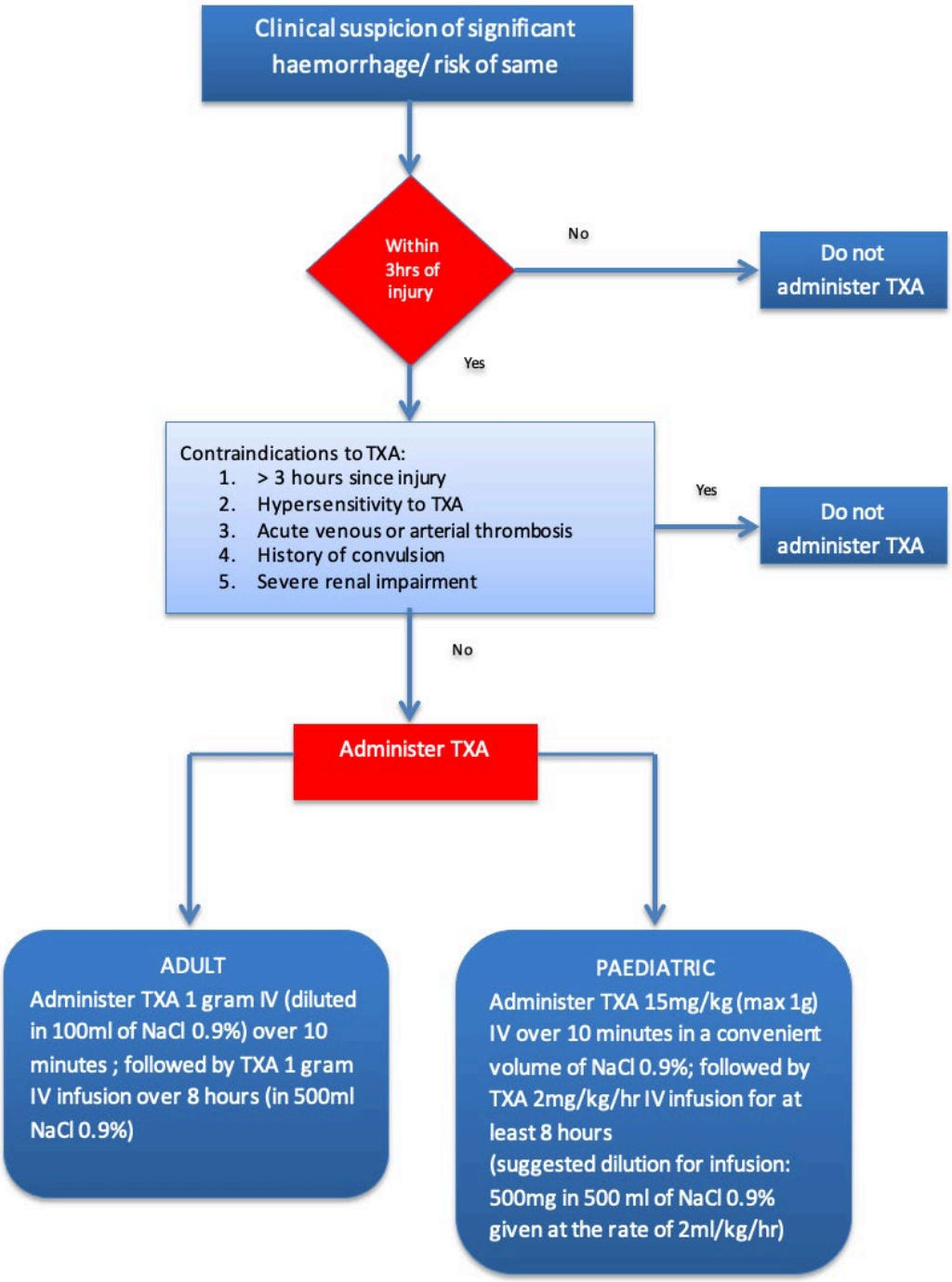
Target audience	This guideline is intended for use by Emergency Medicine clinicians involved in the early management of patients with trauma.
Patient population	Trauma patients with suspected significant haemorrhage, or those at risk of significant haemorrhage, seen within 3 hours of trauma.
Exclusion criteria	Patients who are 3 or more hours post-trauma, as administration of TXA does not show any benefit outside of 3 hours and may cause harm.
Contraindications	Hypersensitivity to TXA or any of its excipients, acute venous or arterial thrombosis.
Relative Contraindications	History of convulsions, severe renal impairment, disseminated intravascular coagulation (DIC).

AIMS

To ensure the use of TXA in all trauma patients with known or suspected significant haemorrhage as part of their ED management. As a rule of thumb, any trauma patient on whom you draw a transfusion blood sample should be given TXA.

TXA 1g should be administered over 10 minutes within 3 hours of injury, followed by a further dose of TXA 1g infused over 8 hours.

Figure 1. Algorithm for use of TXA in trauma



SPECIAL CONSIDERATIONS

Administration in children

TXA is safely used in paediatric surgery. Specific paediatric data for its use in trauma is not currently available, and the available guidance is extrapolated from adult studies.

Paediatric weight adjusted doses are based on Royal College of Paediatrics and Child Health recommendations.

Administration in pregnancy

TXA is safely used in pregnancy and in the postpartum period for indications other than trauma (United States Food and Drug Administration Pregnancy category B). Specific data for TXA use in trauma in this population is not currently available.

Administration to patients with traumatic brain injury (TBI)

Multiple RCTs and well conducted SRs now exist on use of TXA in TBI. Data shows that its use in this population is safe. Some data shows a not-statistically significant improvement in patient outcomes. Available evidence does not show a clear improvement in this patient population.

TXA should be administered within 3 hours of injury to all trauma patients with known or suspected significant haemorrhage, including those with known of suspected TBI.

TXA can be considered for patients with isolated TBI within 3 hours of injury.

Renal dosing

Dose adjustment in renal impairment is not necessary due to the short course of treatment.

2g Dosing

Local guidelines exist using TXA 2g bolus dosing. This does not currently have evidence.

REFERENCES

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