



TXA Tranexamic Acid

Education for EMS

Southeast Michigan Regional
Drug Box Participants
(MCA's that have adopted protocol 9-43)

TXA

Introduction

Hemorrhagic shock remains a serious problem with the multiple trauma patient. It is the leading cause of preventable trauma death after loss of airway. Rapid and effective control of exsanguinating hemorrhage has been demonstrated to markedly improve survival and outcome.

Increased use of tourniquets has reduced death from hemorrhagic shock in the most recent wars fought by U.S. and NATO forces.

TXA

Introduction

The tactical and military environment is associated with a higher percentage of penetrating trauma and external hemorrhage than is seen in the civilian sector, in which blunt trauma predominates.

This leads to the situation of ongoing hemorrhage that is difficult to control.

Prompt recognition of this with transport to the appropriate facility (Trauma Center) and limiting fluid resuscitation to the level of restoring perfusion (hypotension resuscitation) have been shown in improved survival for the trauma patient.

TXA Introduction

Tranexamic acid is a competitive inhibitor of plasminogen activation, which produces antifibrinolytic effects preserving and stabilizing the fibrins matrix structure.

It reversibly binds to plasminogen at the lysine binding site, thus preventing the binding of plasmin to fibrin.

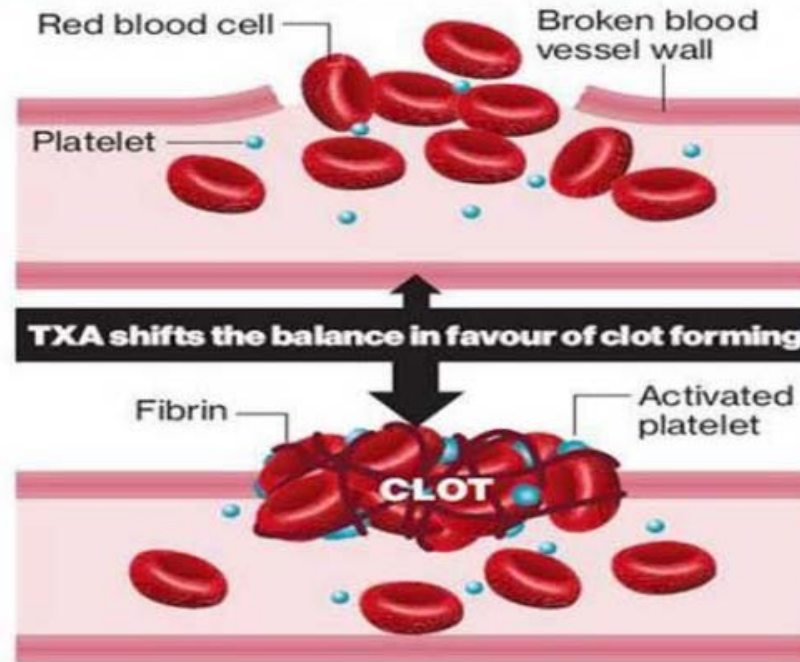
It is categorized as an anti-fibrinolytic that inhibits the activation of plasminogen to plasmin, and thereby preventing fibrinolysis and the breakdown of clots.

How TXA Works

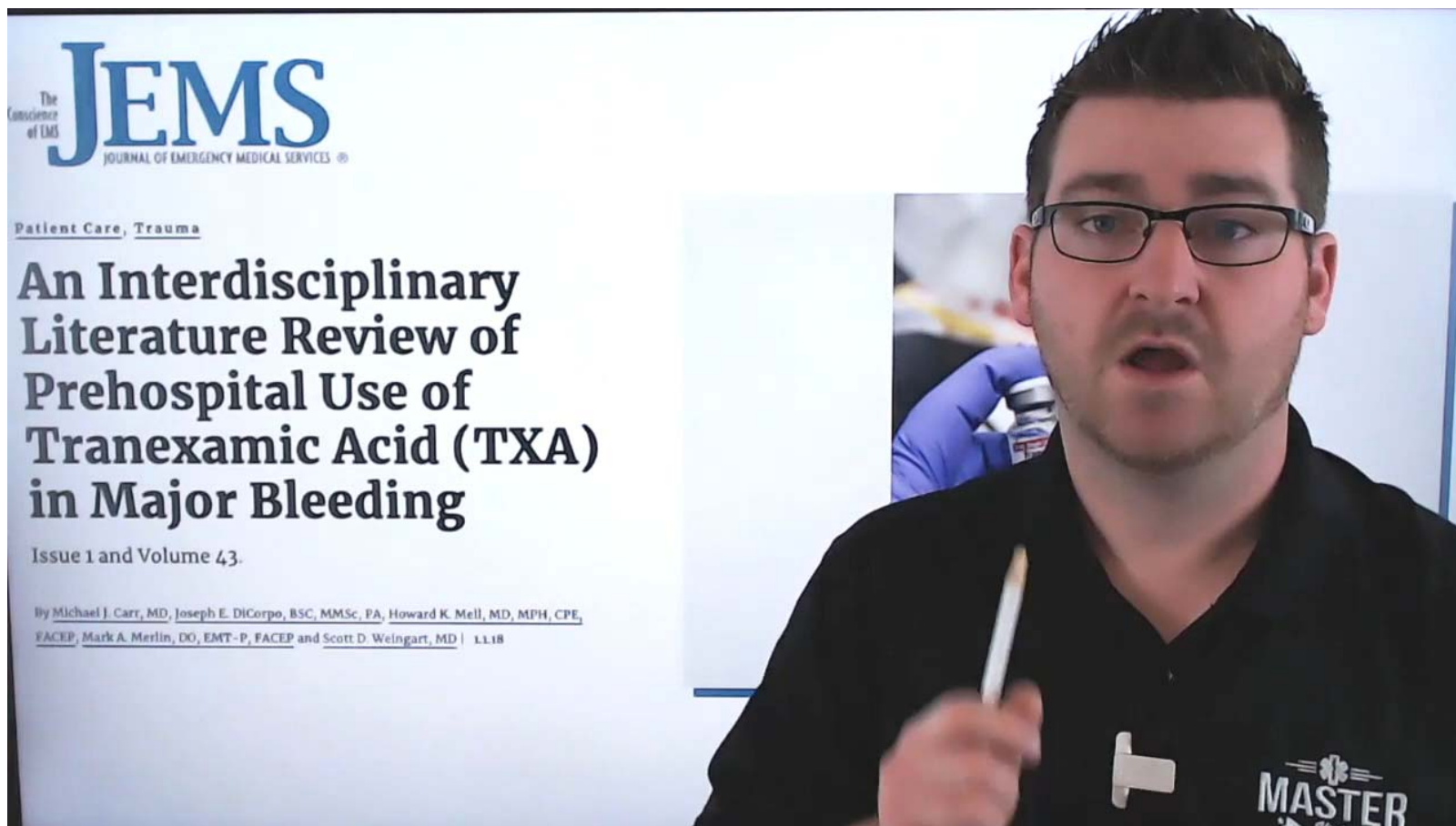
How TXA Works:

Blood clotting

involves a complicated interaction between red cells, platelets and a blood protein called fibrin which binds the clot together. Tranexamic acid (TXA), known by its tradname Cyklokapron, speeds up the process of blood clotting by preventing the breakdown of fibrin. Normally, blood clotting is limited by a substance called plasmin, which dissolves clots, but tranexamic acid blocks the formation of plasmin and so speeds up clotting.



How TXA Works VIDEO (4.5 minutes)



TXA Background

TXA is an antifibrinolytic that has been used for many years to assist with the management of spontaneous hemorrhage in the hemophilia patient.

The management of hemorrhage in combat wounds has been reported in several papers.

TXA Background

One of the most significant findings in the CRASH-2 study is that the use of TXA is associated with a 1.5 times absolute reduction in death from hemorrhage.

Other studies show that TXA is most effective if given within 3 hours of the injury and may be detrimental if given after that time.

TXA Actions

Anti-fibrinolytic drug and a synthetic equivalent of the amino acid lysine

Helps reduce mortality in the acutely hemorrhaging adult trauma patient if given within three hours of injury.

TXA Considerations

- The side effects of the agent are minimal, and the contraindications are few.
- It is administered as a simple IV infusion, does not require refrigeration or extensive lab studies to allow administration and is relatively inexpensive. (Note: Use for traumatic hemorrhage in an off-label use per the FDA in the US).



Role of TXA in Traumatic Hemorrhage

- The current thinking of International Trauma Life Support (ITLS) with regards to the approach to the management of severe hemorrhage/shock in the prehospital setting is that:
 - There is sufficient evidence to support protocols for severely injured patients which should address the administration of TXA and subsequent infusion for treatment.

TXA Protocol 9-43

**Southeast Michigan Regional Protocol
MEDICATION SECTION
TRANEXAMIC ACID (TXA)(OPTIONAL)**

Initial Date: 10/25/2017
Revised Date: 02/08/2021

Section 9-43

Tranexamic Acid (TXA) (Optional)

Protocols:

1. Shock

Indications (TRAUMATIC CAUSE ONLY):

1. Evidence of marked blood loss
2. Initial systolic BP < 90

Contraindications:

1. Hemorrhagic shock from a non-traumatic cause (massive Gastrointestinal or Gynecological bleeding)

Dosing:

1. Adults
 - a. 1 g of TXA mixed in 100 ml of normal saline
 - b. Administered over 10 minutes

Precautions:

1. Must be administered within 3 hours of injury
2. Do not delay transport for administration of TXA
3. TXA delivered in the field is a loading dose
4. It is very important that the administering provider make note of the time that the loading dose is given

MCA Name: [Click here to enter text.](#)

MCA Board Approval Date: [Click here to enter text.](#)

MCA Implementation Date: [Click here to enter text.](#)

Protocol 9-43

Indications/Use

Protocols

- Shock

Indications

- Evidence of marked blood loss
- Initial systolic BP <90 mmHg

Contraindications

- Hemorrhagic shock from non-traumatic causes (massive GI or gynecological bleeding)

Dosing

- Adults (ONLY)
 - 1 gm TXA mixed in 100 ml of normal saline
 - Administer over 10 minutes

Protocol 9-43 Indications/Use (Continued)

Precautions

- Must be administered within 3 hours of injury
- Do not delay transport for administration of TXA
- TXA delivered in the field by EMS is a loading dose
- It is VERY IMPORTANT that the administering provider make note of the time that the loading dose is given

TXA Adverse Reactions

Gastrointestinal disturbances may occur but disappear when the dosage is reduced.

Hypotension has been observed when intravenous injection is too rapid.

To avoid this response, the solution should not be injected more rapidly than 10mL per minute.

TXA Side Effects

Anaphylaxis

Thrombosis

Nausea, vomiting, diarrhea

Visual disturbances; blurred vision, changes in color

Hypotension with rapid infusion rate
> 100 mg/min

Summary

TXA will be added to the Southeast Michigan Regional Drug Box on June 01, 2021

YOU MUST CONFIRM THAT YOUR MCA HAS ADOPTED THE APPLICABLE PROTOCOL PRIOR TO USE