Note: Tranexamic Acid (TXA) is an antifibrinolytic (prevents clot breakdown) amino acid that has been shown to reduce the amount of blood transfusion needed in orthopedic and cardiovascular surgery, when given before surgery starts. It was studied in trauma patients in CRASH 2\textsuperscript{1} and MATTERS I & II, which showed reduction in mortality associated with giving TXA. The CRASH 2 trial showed that for every 67 patients receiving TXA, one additional patient survived. The CRASH 2 trial was very large, but had many flaws which have called into question whether the observed survival effect would be applicable to the United States (90% of patients in CRASH 2 were from developing and poor countries and none of the patients were from the US). Multiple other agents that prevent clot breakdown/promote clot formation have been shown not to reduce mortality (aprotinin, aminocaproic acid, factor VIIa)\textsuperscript{2}. In addition, CRASH 2 did not show any reduction in blood transfusions. Thus, TXA is an allowable medication to be used, but is not mandatory. TXA is optional for Paramedics on the 2022 Wisconsin EMS Scope list and needs additional medical director approved training before it can be used on a service.

TXA did not reduce mortality in post-partum hemorrhage, GI bleeding nor head bleeds. Topical TXA for epistaxis (nosebleeds) did not reduce the need for nasal packing.

**PARAMEDIC**

If a patient with major trauma is anticipated to need significant blood transfusion (any one of the following):

- Setting of significant trauma with HR greater than 110
- Setting of significant trauma with SBP less than 90

- Then may administer 1 gram (20 mg/kg with max 1 gm) of tranexamic acid over 10 minutes IV/IO (in 100 cc NS/LR/D5W or at 100 mg/minute) as soon as possible, but NOT later than 3 hours\textsuperscript{3} after injury. Do not administer as an IV bolus push (may cause hypotension).

**CAVEATS**

Drug should be first administered as early as possible, but NOT initiated beyond 3 hours from injury.

EMS Provider must be trained in drug use and administration.

Drug must be properly maintained between 15-30° Celsius / 59-86° Fahrenheit

\textsuperscript{1} The Crash 2 Contributors (Roberts et al): Effects of tranexamic acid on death, vascular occlusive events, and blood transfusion in trauma patients with significant hemorrhage (CRASH-2): a randomized, placebo controlled trial. Lancet. 2010 Jul 3;376(9734):23-32.

\textsuperscript{2} Other antifibrinolytic agents (aprotinin and aminocaproic acid) which had initial reports showing reduction in bleeding, have shown no reduction in mortality. In addition, activated factor VII (factor VIIa) was shown to reduce bleeding, but had no change in mortality.