



# IMPLEMENTING A TEG® 6S ALGORITHM FOR TRAUMA SURGERY AT A MILITARY TREATMENT FACILITY: AN EVIDENCE-BASED PROJECT



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## BACKGROUND

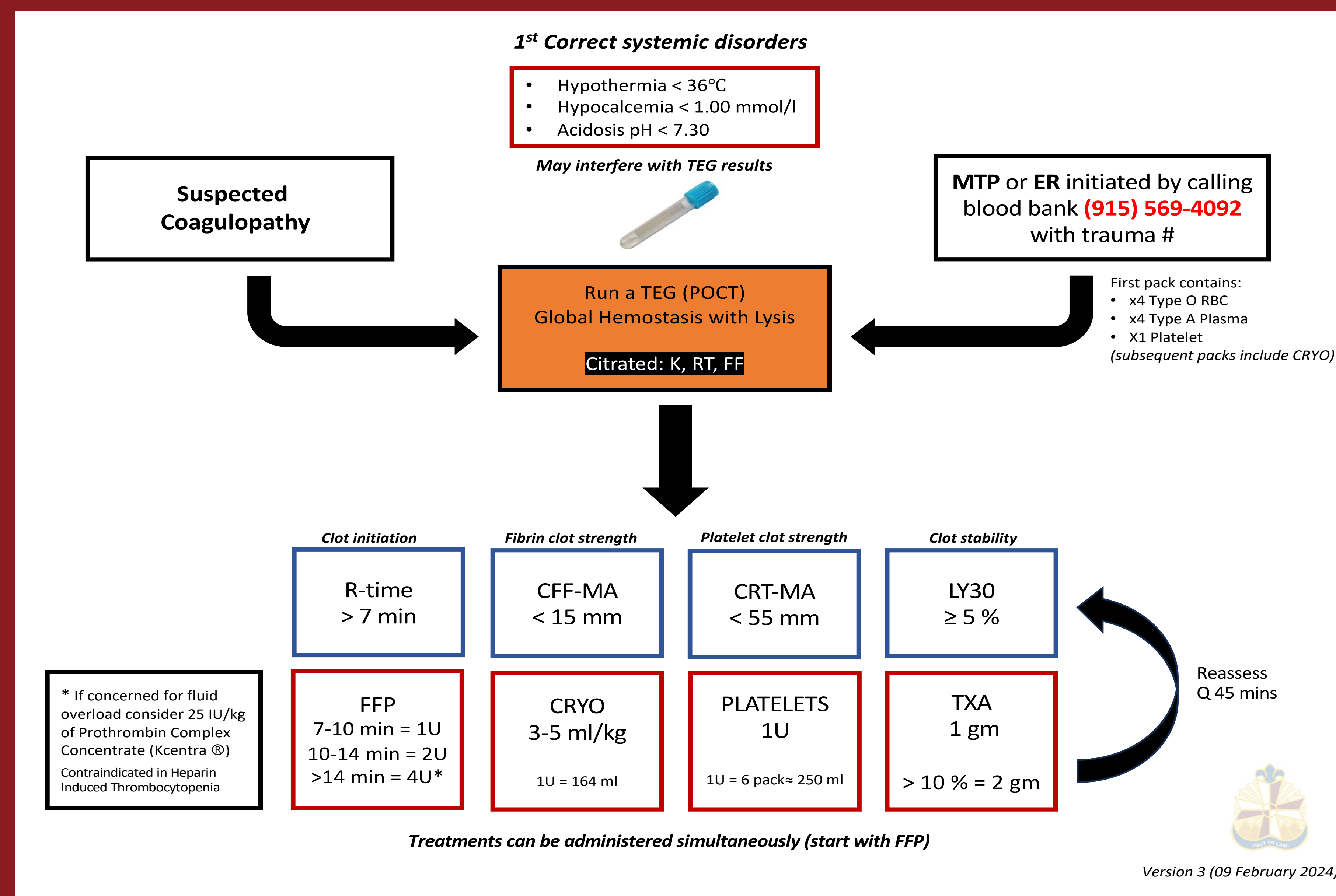
- Modern thromboelastography (TEG) technology quickly and accurately identifies fatal coagulopathies in trauma patients
- TEG-guided resuscitation protocols are shown to decrease morbidity, mortality, and minimize the waste of blood products
- Clinical practice guidelines have not been established for the TEG® 6s device at William Beaumont Army Medical Center (WBAMC)
- The intent of this project is to create an evidence-based goal-directed hemostatic resuscitation algorithm for patients experiencing either surgical trauma or trauma-induced coagulopathies

## METHODS

- Systematic literature searches were conducted in PubMed, Embase, and Google Scholar (n=16)
- Selected literature was then synthesized into a clinical interpretation algorithm tailored to the available resources at WBAMC
- A convenience sample of WBAMC anesthesia providers (n=30) were provided pre-and post-implementation questionnaires
- The questionnaires were completed anonymously and assessed providers' confidence, general perceptions, and TEG® 6s utilization frequency
- A Mann-Whitney U Test was used to compare responses between pre- and post-implementation questionnaires (P < 0.05 significant)
- Institutional Review Board exemption was obtained from the WBAMC Department of Clinical Investigations before project implementation and was determined to be non research

## REVIEW & SYNTHESIS

- Selected literature was used to identify and create transfusion triggers for the global hemostasis lysis cartridge
- Two RCTs were identified as the highest quality literature with the greatest impact to this project; both evaluating primary outcome measures related to mortality
- Additional articles consisted of one systematic review, one prospective study, five retrospective studies, four narrative reviews, and three expert opinions
- Refer to QR code under "References" for complete Evidence Table
- A TEG® 6s clinical interpretation algorithm was created using the best available evidence, and was incorporated into an educational in-service for the Department of Anesthesia Services at WBAMC



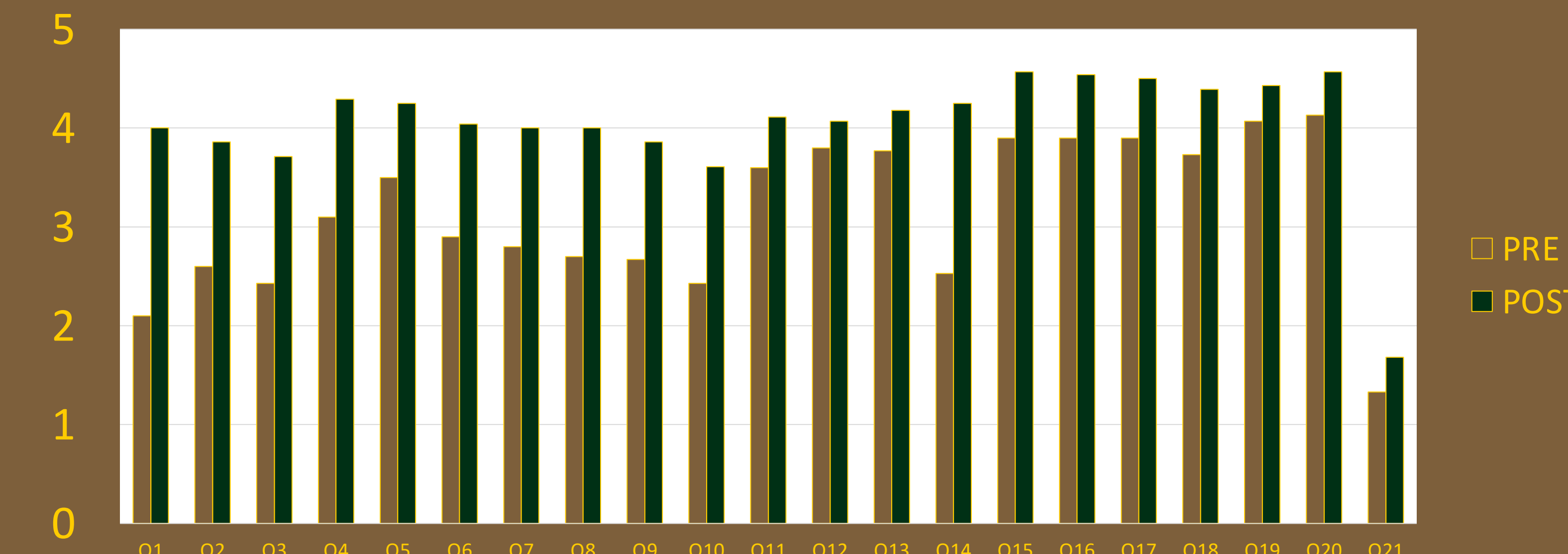
## Global Hemostasis with Lysis

	Clot Rate	Clot Strength	Clot Strength	Clot Stability
Hemostatic Activity	Thrombin generation	Fibrin clot strength	Platelet-Fibrin clot strength	Clot breakdown
Measurement Units	Time (minutes)	Amplitude (mm)	Amplitude (mm)	Amplitude reduction (%)
Hypo-coagulable	↑ R <sub>CK</sub>	↓ MA <sub>CFF</sub>	↓ MA <sub>CRT</sub>	↑ LY30 <sub>CK</sub>
Hyper-coagulable	↓ R <sub>CK</sub>	↑ MA <sub>CFF</sub>	↑ MA <sub>CRT</sub>	NA
Ref. Range	4.6 - 9.1	15 - 32	52 - 70	0 - 2.6
<b>ACTION</b> for hypo-coagulable state	FFP 7-10 min = 1U 10-14 min = 2U >14 min = 4U*	CRYO 3-5 ml/kg 1U = 164 ml	PLATELETS 1U 1U = 6 pack = 250 ml	TXA 1 gm > 10% = 2 gm

Treatments can be administered simultaneously (start with FFP)

Version 3 (09 February 2024)

## RESULTS



- 15/21 questions achieved a statistically significant increase in responses relating to both confidence and perceptions using TEG® 6s
- Post implementation reported TEG utilization increased (P = .041), which achieved statistical significance

## DISCUSSION

- Lack of high-quality evidence has led to non-standardized TEG goal-directed hemostatic resuscitation algorithms
- This algorithm may not be generalizable to other Military Treatment Facilities due to non-standardized blood component allocation
- Future TEG® 6s projects may investigate transfusion triggers for pediatric trauma, postpartum hemorrhage, and open-heart surgery requiring cardiopulmonary bypass
- Future prospective research is recommended to determine the TEG® 6s clinical interpretation algorithm impact on patient outcomes

## CONCLUSION

- The authors established institutional clinical practice guidelines by creating an evidence-based, goal-directed hemostatic resuscitation algorithm for adult trauma patients
- The developed algorithm positively influenced WBAMC anesthesia providers' confidence, perceptions, and reported device utilization

## REFERENCES

Scan QR code for Evidence Table and associated appendices



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