

Functional Hemostasis Monitoring is not Indicated for TIC

Is time Important?



2024 THOR CONFERENCE

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Disclosures

| | |
|-------------------------|-----------------|
| Decisio Health | Founder and BoD |
| Zibrio | BoD |
| QinFlow | BoD |
| CCJ Medical | BoD |
| WFIRM | Consultant |
| Aspen Medical | Consultant |
| Co-Inventor of the JETT | Royalty from UT |

DoD, NIH, DARPA and CSL Grants

Admission Rapid Thrombelastography Can Replace Conventional Coagulation Tests in the Emergency Department

Experience With 1974 Consecutive Trauma Patients Ann Surg 2012

John B. Holcomb, MD, Kristin M. Minei, BS, Michelle L. Scerbo, BS, Zayde A. Radwan, BS, Charles E. Wade, PhD, Rosemary A. Kozar, MD, PhD, Brijesh S. Gill, MD, Rondel Albarado, MD, Michelle K. McNutt, MD, Saleem Khan, MD, Phillip R. Adams, MD, James J. McCarthy, MD, and Bryan A. Cotton, MD, MPH

1974 consecutive patients admitted between September 2009 and February 2011 who met the highest-level trauma activations were included.

r-TEG values return faster, are cheaper, and are strongly associated with clinical outcomes of interest to clinicians caring for severely injured trauma patients.

Abnormalities of laboratory coagulation tests versus clinically evident coagulopathic bleeding: results from the prehospital resuscitation on helicopters study (PROHS)



Surgery 2018

Ronald Chang ^{a,b,*}, Erin E. Fox ^a, Thomas J. Greene ^c, Michael D. Swartz ^{a,c}, Stacia M. DeSantis ^c, Deborah M. Stein ^d, Eileen M. Bulger ^e, Sherry M. Melton ^f, Michael D. Goodman ^g, Martin A. Schreiber ^h, Martin D. Zielinski ⁱ, Terence O'Keeffe ^j, Kenji Inaba ^k, Jeffrey S. Tomasek ^a, Jeanette M. Podbielski ^a, Savitri Appana ^c, Misung Yi ^c, Pär I. Johansson ^{a,l}, Hanne H. Henriksen ^{a,l}, Jakob Stensballe ^{l,m}, Jacob Steinmetz ^{m,n}, Charles E. Wade ^{a,b}, John B. Holcomb ^{a,b}, and PROHS Study Group

Laboratory-based evidence of coagulopathy (LC) is observed in 25-35% of trauma patients, but clinically-evident coagulopathy (CC) is not well described.

Of 1,019 highest-risk patients,

CC was 4% and mortality was 59%

LC was 39% and mortality was 12%

CC was rare compared to LC.

CC was associated with poor outcomes and impairment of both clotting factor and platelet-mediated coagulation components.

Every minute counts: Time to delivery of initial massive transfusion cooler and its impact on mortality

J Trauma 2017

David E. Meyer, MD, Laura E. Vincent, RN, Erin E. Fox, PhD, Terence O'Keeffe, MBChB, Kenji Inaba, MD, Eileen Bulger, MD, John B. Holcomb, MD, and Bryan A. Cotton, MD, *Houston, Texas*

Among 680 patients, the median time from patient arrival to MT protocol activation was 9 minutes with a median time from MT activation call to delivery of first cooler of 8 minutes

Delays in MT protocol activation and delays in initial cooler arrival were associated with prolonged time to achieve hemostasis and an increase in mortality.

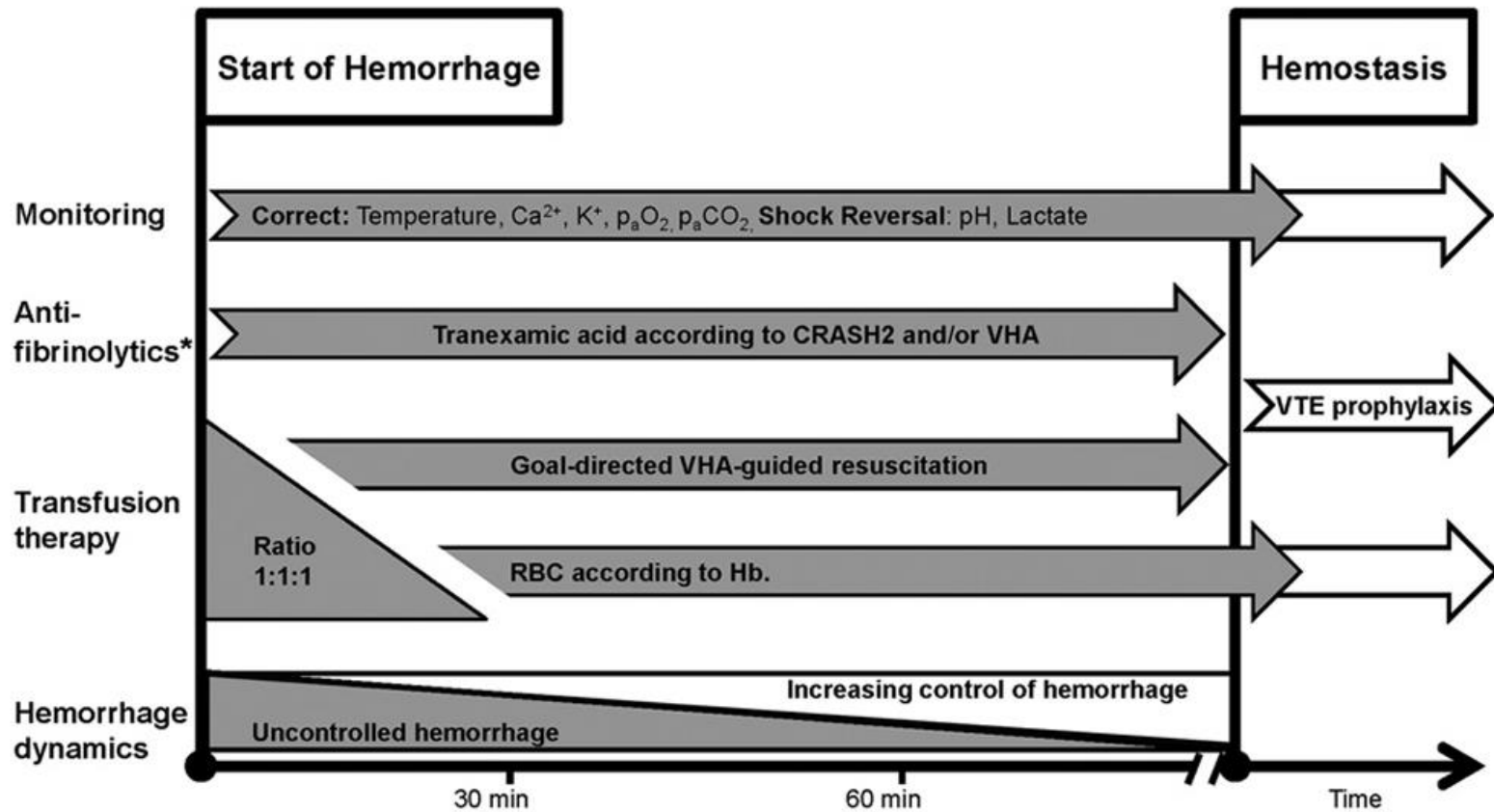
Independent of products ratios, every minute from time of MT protocol activation to time of initial cooler arrival increases odds of mortality by 5%.

How I treat patients with massive hemorrhage

Blood 2014

Pär I. Johansson,^{1,2} Jakob Stensballe,^{1,3} Roberto Oliveri,¹ Charles E. Wade,² Sisse R. Ostrowski,¹ and John B. Holcomb²

¹Section for Transfusion Medicine, Capital Region Blood Bank, Copenhagen University Hospital, Rigshospitalet, Copenhagen, Denmark; ²Department of Surgery, Division of Acute Care Surgery, Centre for Translational Injury Research, University of Texas Health Medical School, Houston, TX; and ³The Trauma Centre, Department of Anesthesia, Centre of Head and Orthopedics, Copenhagen University Hospital, Rigshospitalet, Copenhagen, Denmark



CORRECTION OF TRAUMA-INDUCED COAGULOPATHY BY GOAL DIRECTED THERAPY: A SECONDARY ANALYSIS OF THE ITACTIC TRIAL

Anes 2024

Charlotte Lindsay, MSc, Ross Davenport, PhD, Kjersti Baksaas-Aasen, PhD, Knut Magne Kolstadbråten, MSN, Pål Aksel Naess, PhD, Nicola Curry, MD, Marc Maegele, PhD, Nicole Juffermans, PhD, Simon Stanworth, PhD, Jakob Stensballe, PhD, Per Ingemar Johansson, PhD, Christine Gaarder, PhD, Karim Brohi, MD.

71% were coagulopathic on admission, and 16% developed a coagulopathy during resuscitation.

Only 54% of patients received goal-directed treatment, and only 20% corrected their coagulopathy

Median time to first goal-directed treatment was 68 (53-88) minutes for viscoelastic and 110 (77-123) minutes for standard, $p=0.005$.

Study Conclusions

Goal-directed interventions were delivered to only around two-thirds of patients who needed them.

They took over an hour to deliver regardless of diagnostic approach and did not restore coagulation to normal during bleeding and resuscitation.

The overriding picture is that any improvements in diagnosis provided by point of care viscoelastic testing were negated by a failure of delivery or efficacy of the therapeutic interventions.

Study Conclusions

Overall potential benefits of earlier diagnosis appear to be heavily offset by delayed administration of interventions, which are only partially effective

Future progress in correcting TIC and improving clinical outcome will require focus on the rapid delivery and administration of more effective coagulation therapeutics.

Overall Conclusions

Lab directed (goal) is intellectually attractive...
personalized medicine

However, no data supporting improved outcome

Problem is the time to result lab data used to guide transfusion

Today start with ratios / whole blood and when bleeding slows use
goal (TEG) directed

**Future: Time sensitive and mechanistically relative laboratory
data that can be used to guide early resuscitation**