Uso del sangue in ambito preospedaliero: ha un ruolo?

DOTT. GIACOMO MAGAGNOTTI
C.O. SUEM 118 MESTRE-VENEZIA

Uso del sangue in ambito preospedaliero

- Medico SUEM… sempre alla ricerca di qualcosa di più da fare al paziente

- Non sono un esperto…

- Se cercate evidenze incontrovertibili… passate oltre!

Una novità antica

FIGURE 169.—Official poster of Armed Forces Blood Donor Program instituted September 1951.

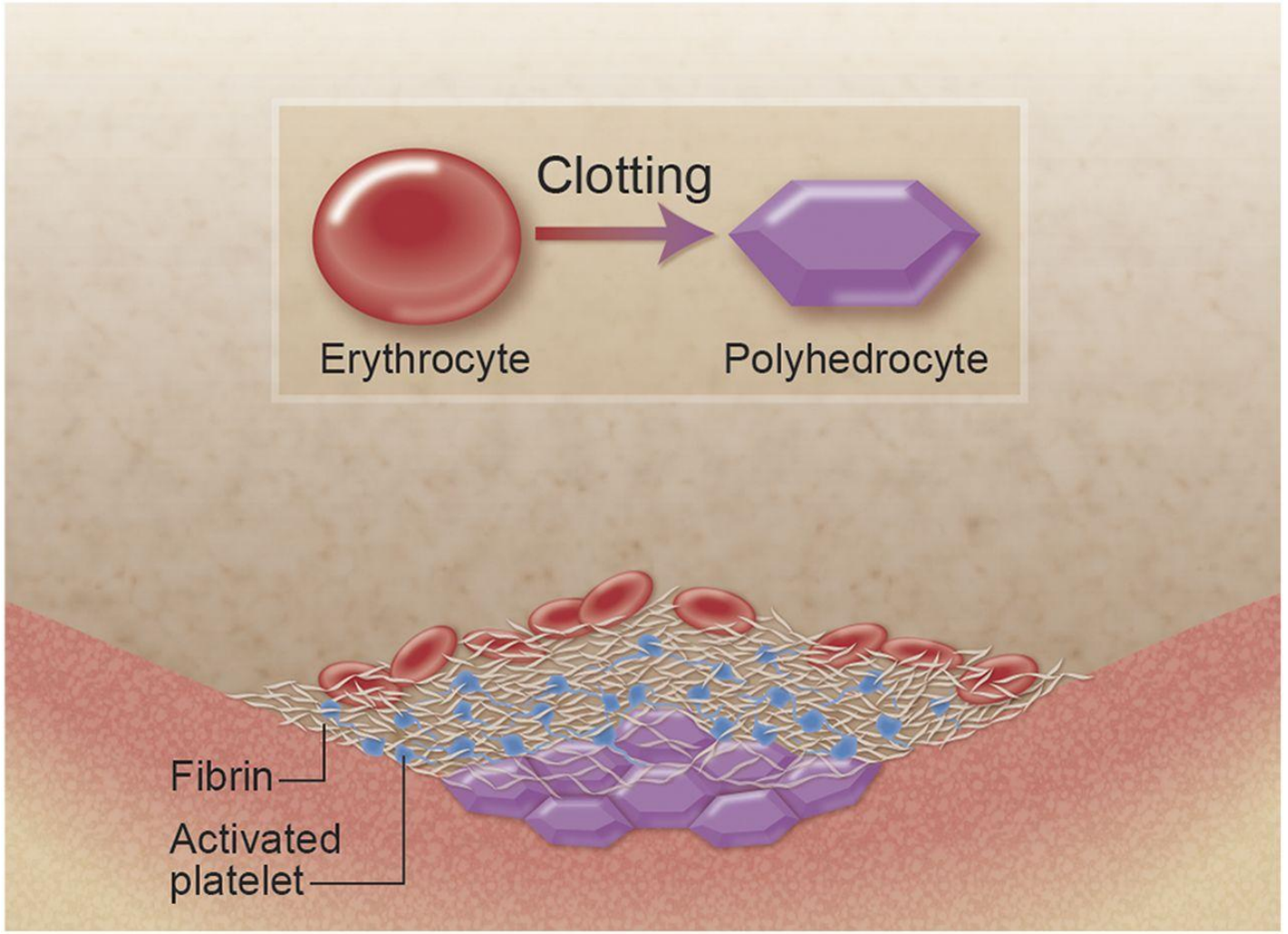

AMBULANCE


Why?


CPDA-1 WHOLE BLOOD
VOLUNTEER DONOR
ANTICOAGULANT
CITRATE
PHOSPHATE
DEXTROSE
ADENINE SOLUTION, USP
PL 146

Non solo ossigeno…

A new shape of the red blood cell helps to seal the clot.



Robert A. S. Ariëns Blood 2014;123:1442-1443

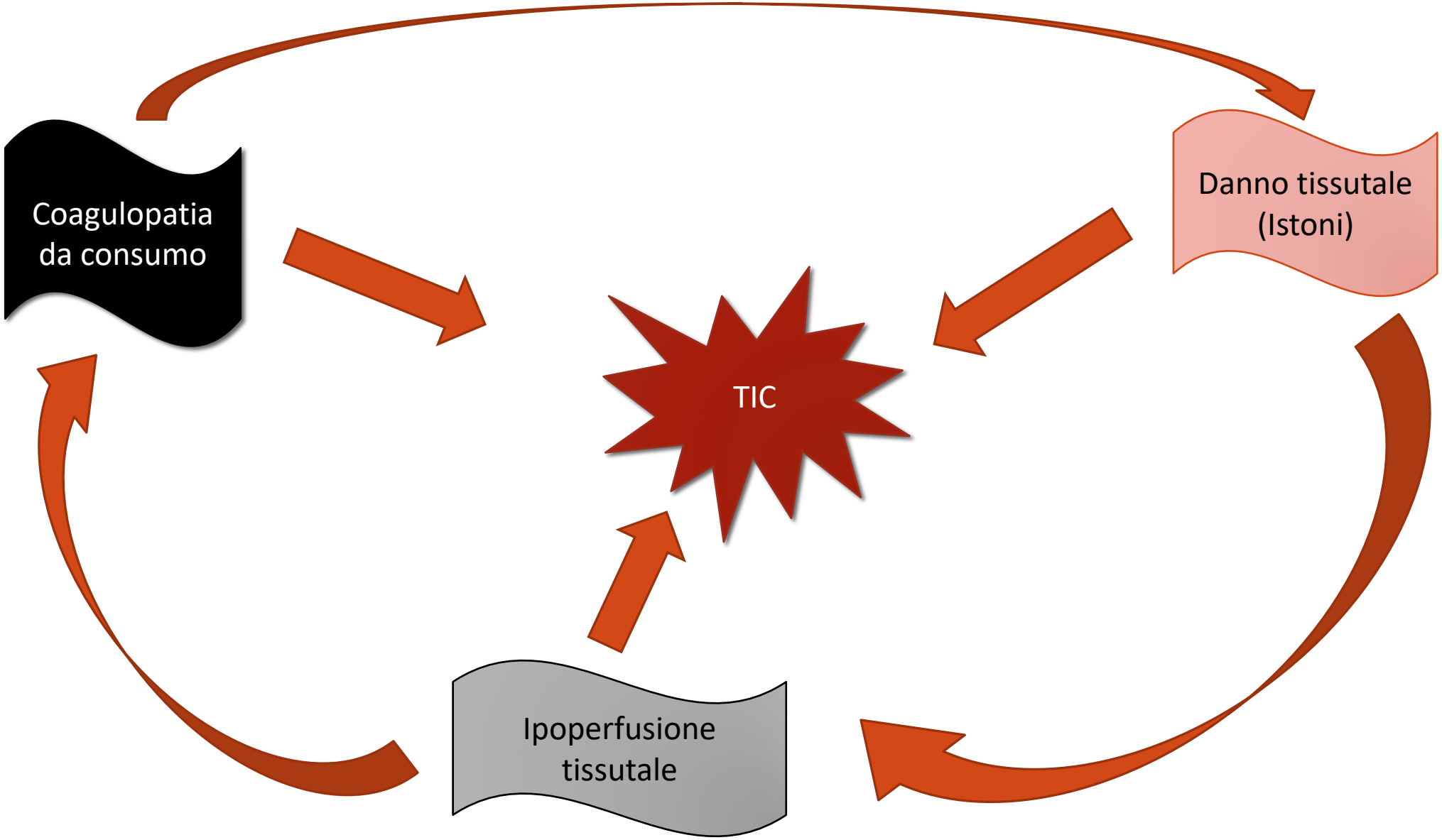
blood

The Journal of TRAUMA® Injury, Infection, and Critical Care

Acute Traumatic Coagulopathy

Karim Brohi, BSc, FRCS, FRCA, Jasmin Singh, MB, BS, BSc, Mischa Heron, MRCP, FFAEM, and Timothy Coats, MD, FRCS, FFAEM

25% dei pazienti traumatizzati afferenti ad un Trauma Center sono affetti da coagulopatia acuta



White NJ. Hematology 2013; 1: 660-663

Acute Traumatic Coagulopathy: Initiated by Hypoperfusion

Modulated Through the Protein C Pathway?

Karim Brohi, FRCS, FRCA, Mitchell J. Cohen, MD,* Michael T. Ganter, MD,†*
Michael A. Matthay, MD,‡ Robert C. Mackersie, MD, and Jean-François Pittet, MD†‡*

(*Ann Surg* 2007;245: 812–818)

- 208 pazienti accettati in un Trauma Center
- Dosaggio protrombina, fibrinogeno, trombomodulina, proteina C attivata, PAI-1, D-dimero all'arrivo (prima di qualsiasi trattamento)
- Forte associazione tra ipoperfusione tissutale (BD) e coagulopatia INDIPENDENTE dalla concentrazione dei fattori

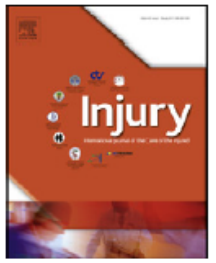
Già in preospedaliero!!!

Injury, Int. J. Care Injured 43 (2012) 26–32

Contents lists available at ScienceDirect

Injury

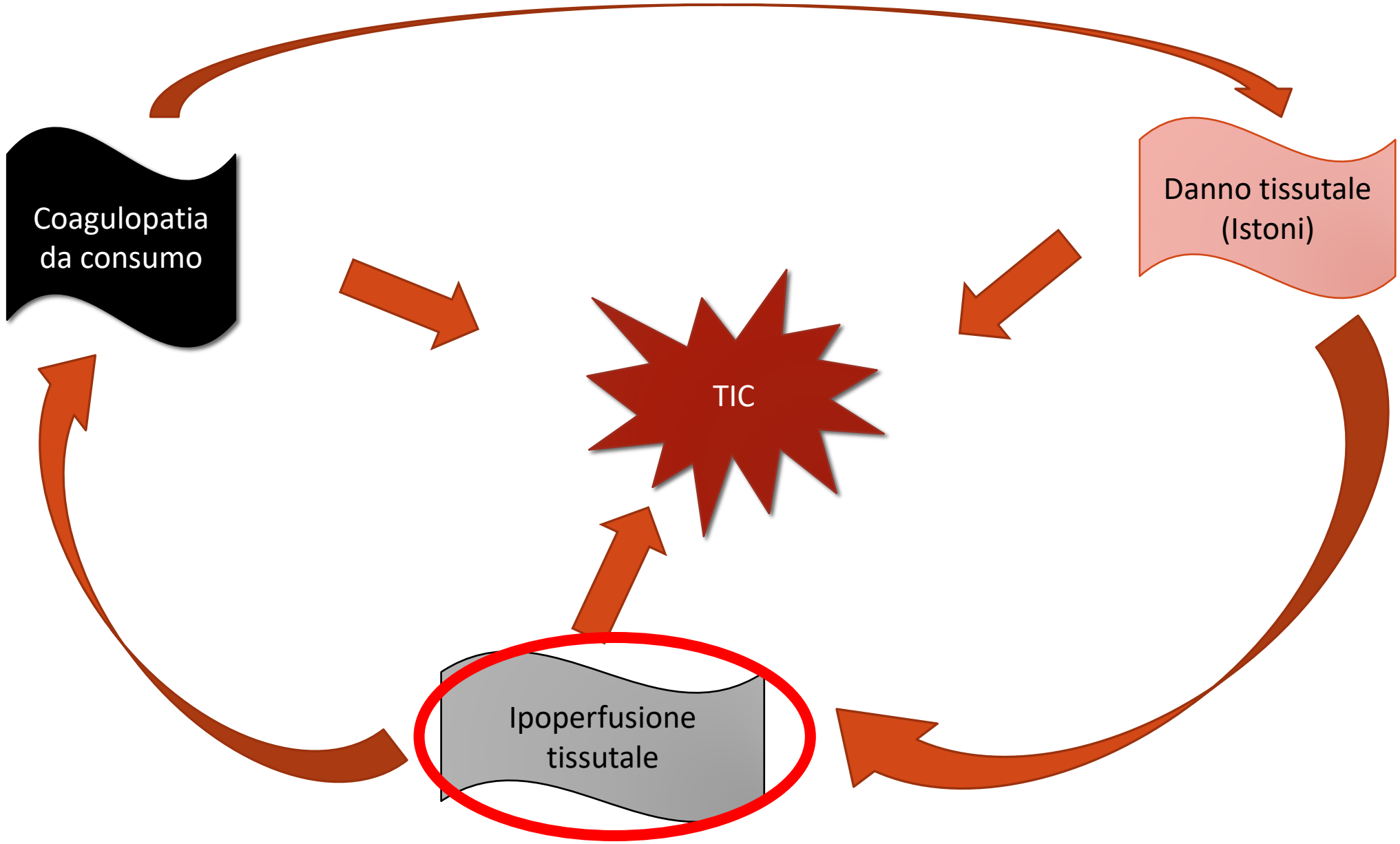
journal homepage: www.elsevier.com/locate/injury



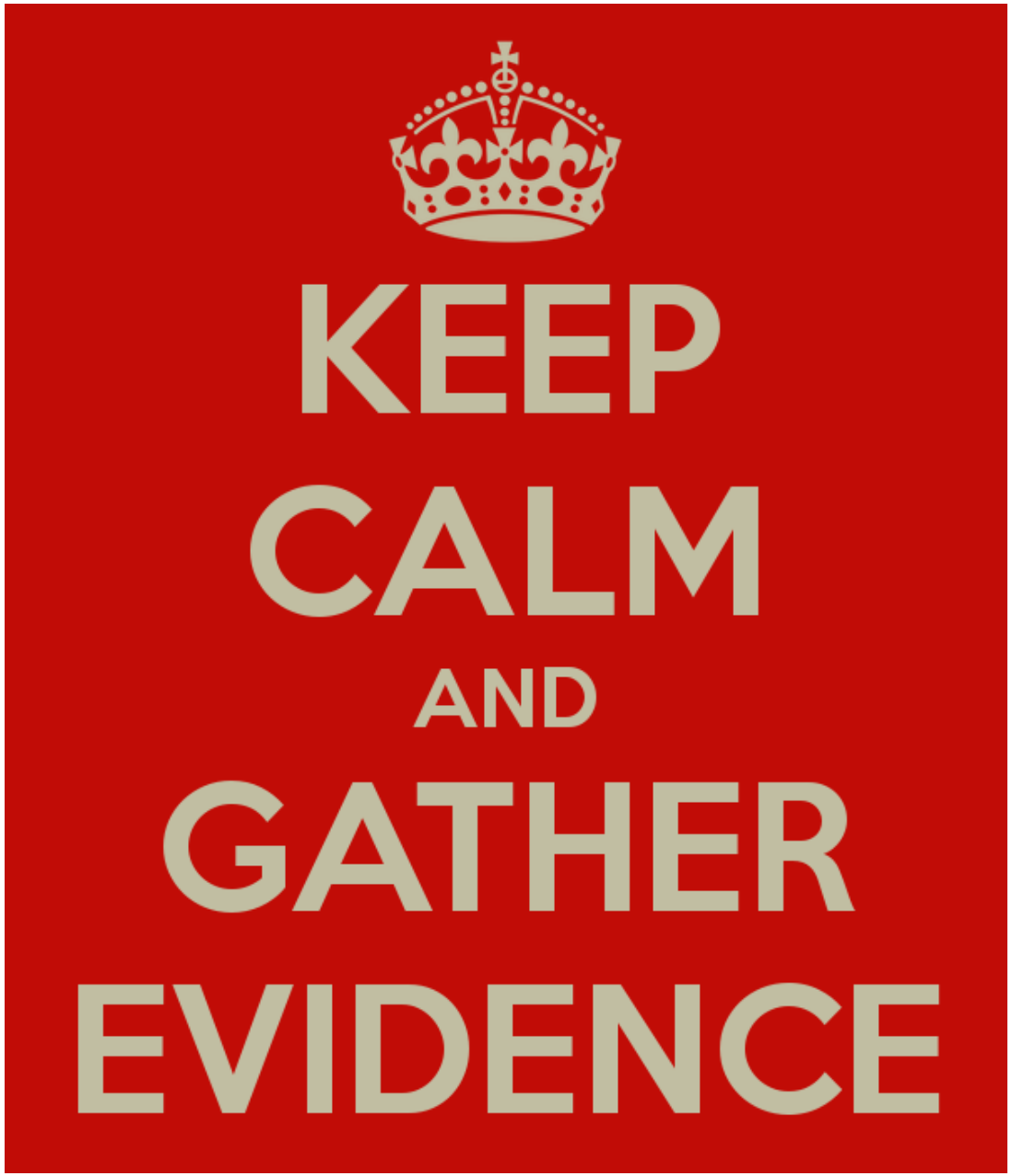
Early coagulopathy in trauma patients: An on-scene and hospital admission study

Bernard Floccard [a,*], Lucia Rugeri [b], Alexandre Faure [a], Marc Saint Denis [a], Eileen Mary Boyle [a], Olivier Peguet [a], Albrice Levrat [a], Christian Guillaume [a], Guillaume Marcotte [a], Alexandre Vulliez [a], Etienne Hautin [a], Jean Stéphane David [a], Claude Négrier [b], Bernard Allaouchiche [a]

[a] *Département d'Anesthésie-Réanimation, Hospices Civils de Lyon, Hôpital Edouard Herriot, Lyon, France*
[b] *Laboratoire d'Hémostase, Hospices Civils de Lyon, Hôpital Edouard Herriot, Lyon, France*



White NJ. Hematology 2013; 1: 660-663


KEEP
CALM
AND
GATHER
EVIDENCE

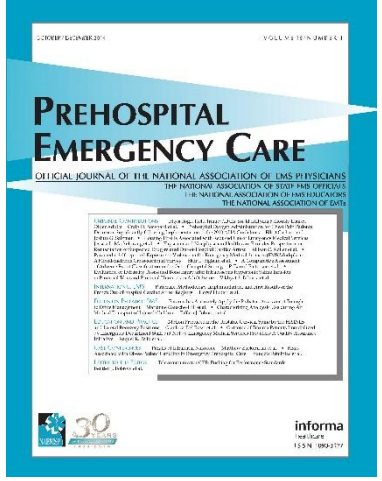
Prehospital blood transfusion in the en route management of severe combat trauma: a matched cohort study

(J Trauma Acute Care Surg. 2014 Jul;77(3):S114-S120)

- Medical Emergency Response Team (MERT) – Afghanistan 2006-2011
- Before and after, matched cohort
- Mortalità dimezzata trasfusi vs non trasfusi se ISS > 15 (8,2% vs 19,6%)

Prehospital blood transfusion in the en route management of severe combat trauma: a matched cohort study

(J Trauma Acute Care Surg. 2014 Jul;77(3):S114-S120)



Prehospital Transfusion of Plasma and Red Blood Cells in Trauma Patients

John B. Holcomb MD, Daryn P. Donathan BS, Bryan A. Cotton MD, Deborah J. del Junco PhD, Georgian Brown RN, Toni von Wenckstern RN, Jeanette M. Podbielski RN, Elizabeth A. Camp PhD, Rhonda Hobbs, Yu Bai MD, PhD, Michelle Brito BS, Elizabeth Hartwell MD, James Red Duke MD & Charles E. Wade PhD

- Houston, TX
- 885 pazienti
- Retrospettivo, matched cohort
- Riduzione della mortalità a 6 ore
- Invariata sopravvivenza alla dimissione

Pretrauma Center Red Blood Cell Transfusion Is Associated With Reduced Mortality and Coagulopathy in Severely Injured Patients With Blunt Trauma

Joshua B. Brown, MD, Mitchell J. Cohen, MD,† Joseph P. Minei, MD,‡ Ronald V. Maier, MD,§ Michaela A. West, MD,† Timothy R. Billiar, MD,* Andrew B. Peitzman, MD,* Ernest E. Moore, MD,‖ Joseph Cuschieri, MD,§ and Jason L. Sperry, MD, MPH *; The Inflammation and the Host Response to Injury Investigators*

Annals of Surgery • Volume 261, Number 5, May 2015

- 1415 pazienti con trauma chiuso e shock trasferiti ad un TC entro 2 ore dall'evento
- Retrospettivo, matched cohort
- Solo 52% sono centralizzazioni primarie
- Riduzione mortalità 24h e 30 gg
- Riduzione coagulopatia

Blood transfusion: In the air tonight?

(J Trauma Acute Care Surg. 2016 Jul;81(1):15-20)

- Nashville, TN
- 231 pazienti
- Retrospettivo, matched cohort
- Nessuna riduzione della mortalità

Review Article

PREHOSPITAL BLOOD PRODUCT RESUSCITATION FOR TRAUMA: A SYSTEMATIC REVIEW

Iain M. Smith,[*†‡] Robert H. James,[§‖¶] Janine Dretzke,[**] and Mark J. Midwinter[*†]

[*]NIHR Surgical Reconstruction and Microbiology Research Centre, University of Birmingham; [†]Academic Department of Military Surgery and Trauma, Royal Centre for Defence Medicine, ICT Centre, Edgbaston, Birmingham; [‡]205 (Scottish) Field Hospital, Govan, Glasgow; [§]Academic Department of Military Emergency Medicine, Royal Centre for Defence Medicine, ICT Centre, Edgbaston, Birmingham; [‖]East Anglian Air Ambulance, Gambling Close, Norwich; [¶]Ministry of Defence Hospital Unit Derriford, Derriford Hospital, Plymouth, United Kingdom; and [**]Institute of Applied Health Research, University of Birmingham, Edgbaston, Birmingham, United Kingdom

SHOCK, Vol. 46, No. 1, pp. 3–16, 2016

Evidence-based conclusions to guide practice cannot be drawn. While PHBP resuscitation appears logical the potential harms of this practice must be recognized. More rigorous evidence of benefit is required to justify universal adoption. Whether PHBPs improve survival despite these competing risks is unknown. The only satisfactory way to answer this outstanding question of benefit from PHBP-based resuscitation for major traumatic haemorrhage is by randomized controlled trials.

SHOCK, Vol. 46, No. 1, pp. 3–16, 2016


Yes
No
Maybe

RePHILL Trial

- Trial multicentrico, open label, randomizzato
- Popolazione esclusivamente preospedaliera, età ≥16 anni, ABC score ≥2
- Salina 2L vs 2 UEC + 2 U Plasma

- Outcome **primario**: lattati venosi all'arrivo in ED
- Outcome **secondari**: sopravvivenza, parametri vitali, coagulazione (ROTEM), fabbisogno trasfusionale

Reynolds et al. Trials (2015) 16:321
DOI 10.1186/s13063-015-0844-5

TRIALS

STUDY PROTOCOL Open Access

Prehospital use of plasma in traumatic hemorrhage (The PUPTH Trial): study protocol for a randomised controlled trial

Penny S. Reynolds[1*], Mary Jane Michael[1], Emily D. Cochran[1], Jacob A. Wegelin[2] and Bruce D. Spiess[1]

PUPTH Trial

- Trial centro singolo, open label, randomizzato
- Popolazione esclusivamente preospedaliera, età ≥18 anni, grave instabilità emodinamica post-trauma (PAS≤70 o PAS 70-90 + FC≥108)
- Salina vs 2 U Plasma (target pressorio 90 mmHg)

- Outcome **primario**: mortalità a 30 giorni
- Outcome **secondari**: parametri vitali, coagulazione (ROTEM), fabbisogno trasfusionale, deficit di basi


SOMEHOW
I DOUBT IT
MemesHappen

Tanto sono vicino all’Ospedale…

Improving outcomes for hospital patients with critical bleeding requiring massive transfusion: the Australian and New Zealand Massive Transfusion Registry study methodology

J. C. Oldroyd[1*], K. M. Venardos[1], N. J. Aoki[1], A. J. Zatta[1], Z. K. McQuilten[1,2], L. E. Phillips[1], N. Andrianopoulos[1], D. J. Cooper[2,5], P. A. Cameron[3,5], J. P. Isbister[4] and E. M. Wood[1]

Oldroyd *et al. BMC Res Notes (2016) 9:457*

Tempo medio tra richiesta emazie concentrate ed <u>effettiva</u> somministrazione: 20 minuti


RICO RAPIDO DISTRIBUITORE

Il sangue inutilizzato va buttato…

Greater Sydney Area HEMS

HELICOPTER EMERGENCY MEDICAL SERVICE

excellence in care

L'esempio di Sydney HEMS

The Pre-hospital & Retrieval Medicine
Team of Ambulance Service NSW

Greater Sydney HEMS

- Circa 3000 missioni all'anno

- Utilizzo di autoambulanza, elicottero, aereo in base alla distanza

- Contenitori termici sigillati contenenti 3 UEC ciascuno, ruotati ogni 3 giorni

- Circa 30 trasfusioni all'anno, media di 3 UEC/paziente

- Nessuna unità perduta