

Solutions hypertoniques pour la médecine de l'avant où en est l'OTAN ?

G. Mion, S. de Rudnicky, N. Libert,
J.L. Daban, J.P. Tourtier

HIA du Val-de-Grâce

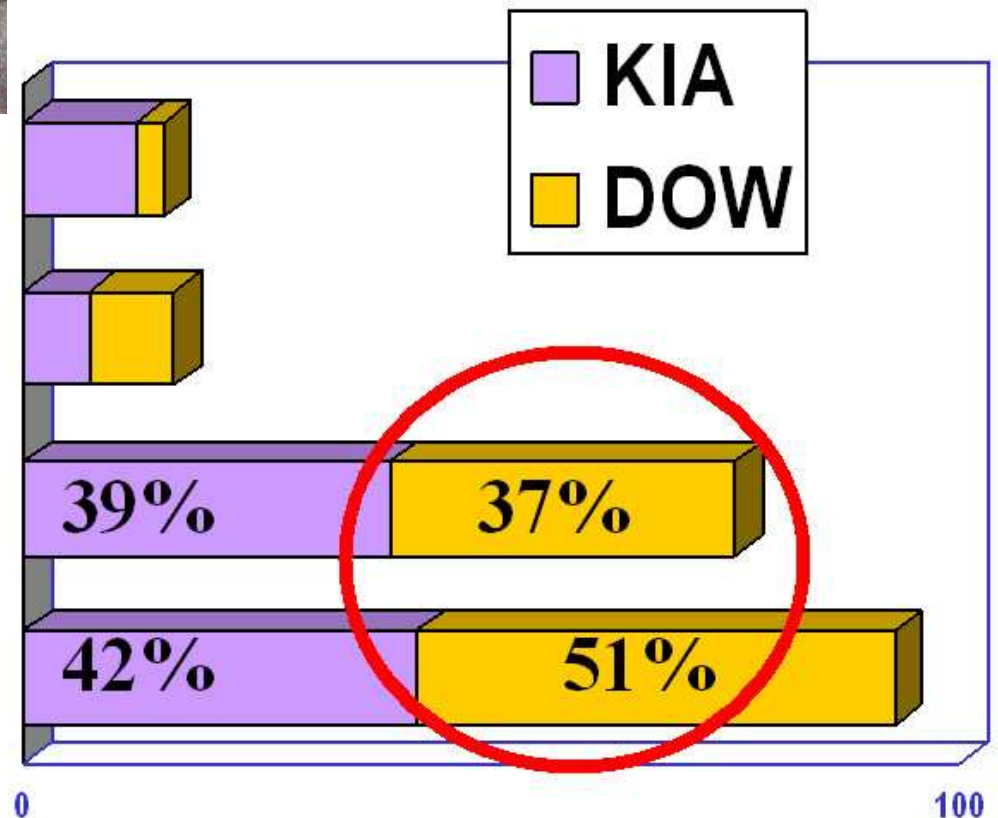




« Killed In Action »

« Died Of Wounds »

hémorragie



Damage Control Resuscitation

COL John B. Holcomb, MD, FACS

Damage Control Resuscitation Exsanguinating Injuries Product Utilization

Bryan A

Anesthesiology 2008; 108:71-7

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John A.

The Effects of Mild Perioperative Hypothermia on Blood Loss and Transfusion Requirement

Suman Rajagopalan, M.D.,* Edward Mascha, Ph.D.,† Jie Na, M.S.,‡ Daniel I. Sessler, M.D.§

Methods: The authors conducted a systematic search of published randomized trials that compared blood loss and/or transfusion requirements in normothermic and mildly hypothermic

Research

Recommendations on the use of recombinant activated factor VII as an adjunctive treatment for massive bleeding – a European perspective

Jean-Louis Vincent¹, Rolf Rossaint², Bruno Riou³, Yves Ozier⁴, David Zideman⁵ and Donat R Spahn⁶

Open Access

Permissive hypotension

NATO Handbook war surgery

Combat Fluid Resuscitation: Introduction and Overview of Conferences

Howard R. Champion FRCS (Edin), FACS

Fluid resuscitation of injured combatants in a tactical setting has special challenges which standard civilian protocols do not address. Over a period of a year, four conferences on combat fluid resuscitation were held. The purpose of these conferences was **to develop a consensus** regarding contemporary practice and to identify and energize a research agenda.

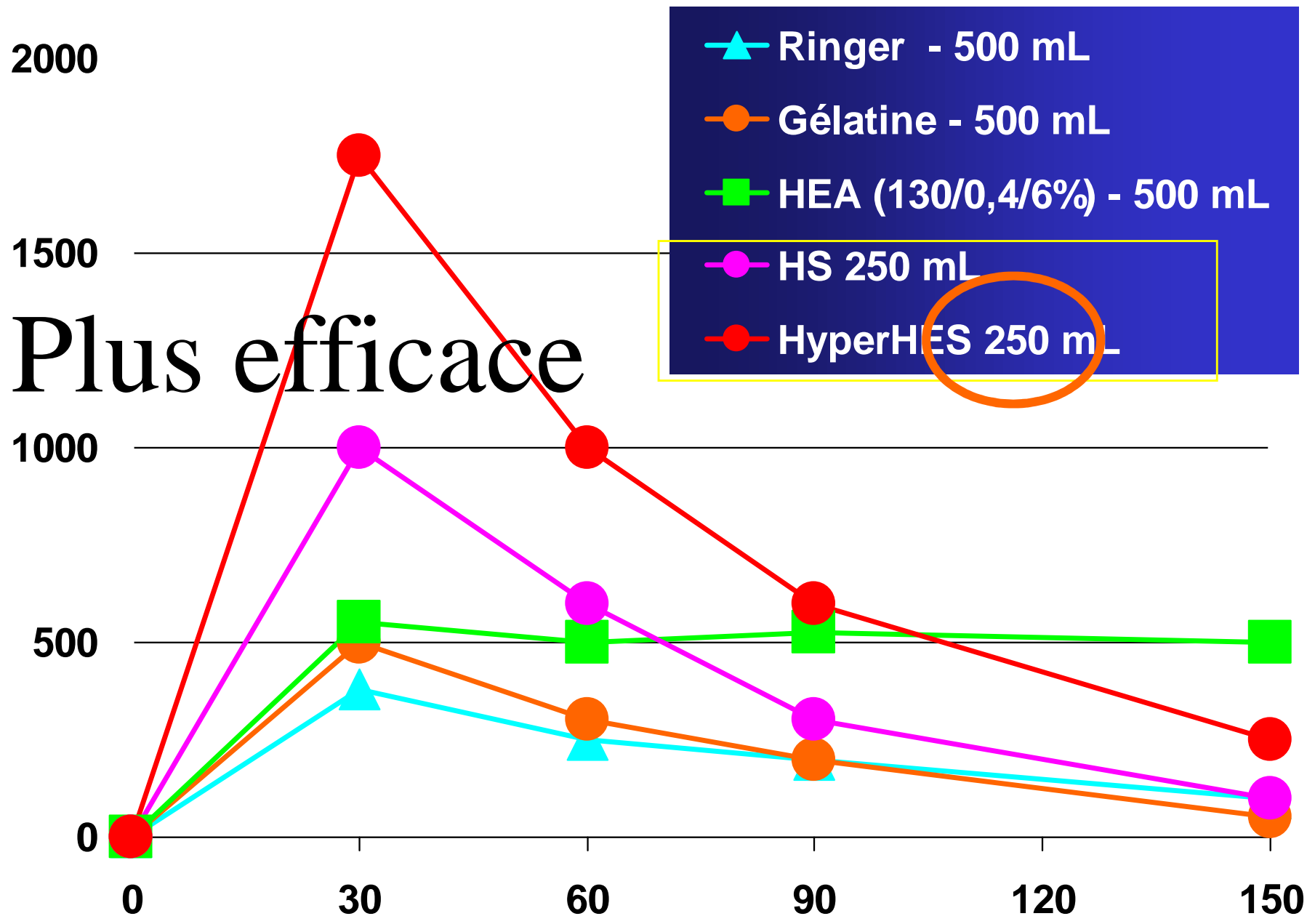
The conferees made specific recommendations for institution of, and endpoints for, resuscitation in the combat setting. They recommended that combat fluid resuscitation in these settings should be initiated with low volume colloid (for U.S. Forces) and **hypertonic saline** dextran (for those not constrained by U.S. Food and Drug Administration regula-

tions). A specific research agenda was defined.

Since that time, these recommendations have been implemented **in many North Atlantic Treaty Organization (NATO) forces** and a variety of other activities have served to provide expert support and research focus for the special needs of injured combatants.

J Trauma. 2003;54:S7-S12.

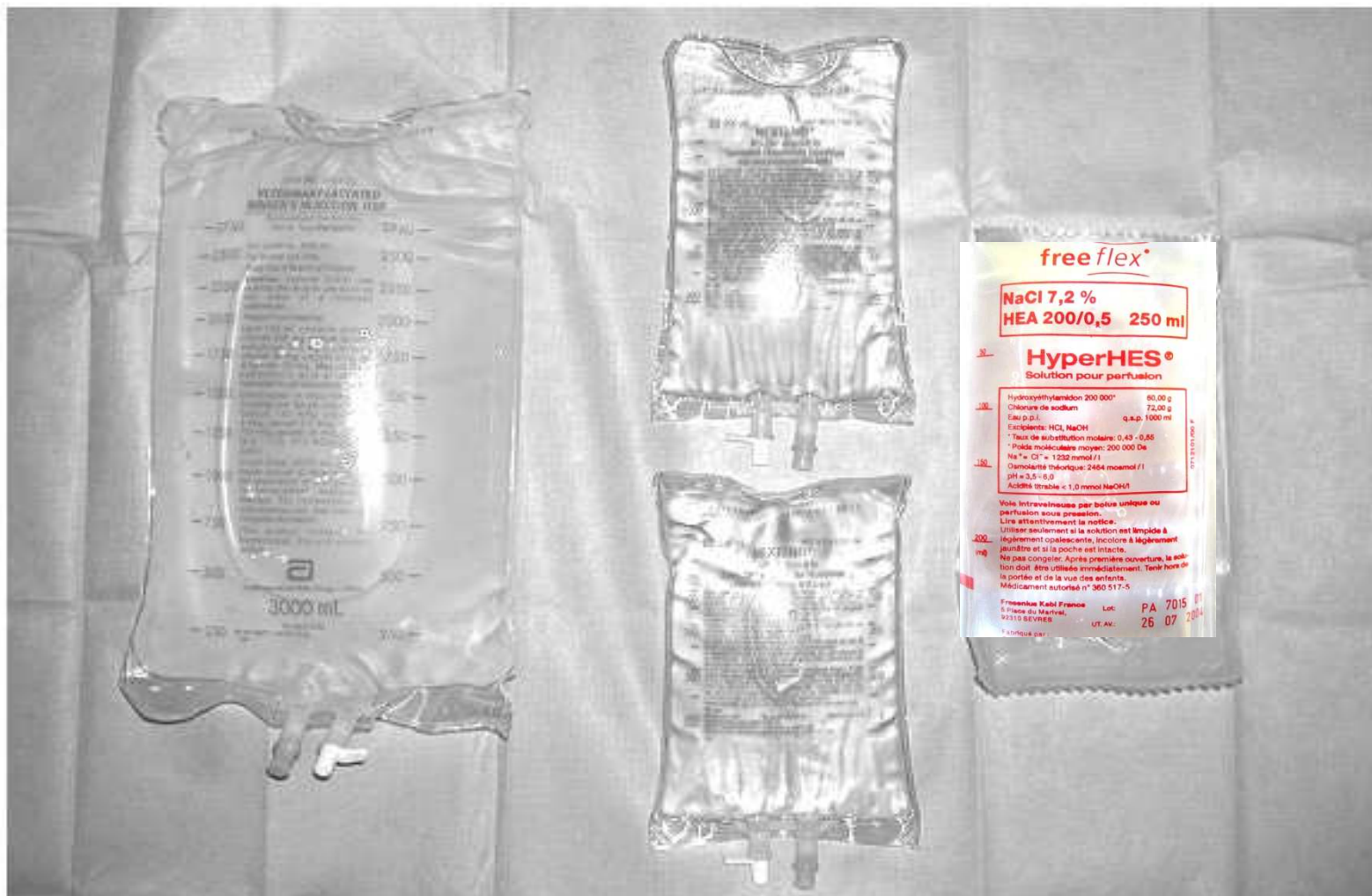




Kröll. Perfusion 1991 ; 7 : 286-299.

Permissive Hypotension Strategies for the Far-Forward Fluid Resuscitation of Significant Hemorrhage

Moins Lourd



RINGER

HEA

Hypertonique

Figure 1: Theoretical fluid volume requirements to achieve equal resuscitation after a 1L blood loss. Pictured are a 3L bag of LR, 2-500 ml bags of Hextend and a 250 ml bag of HSD.

moins d'œdème

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Mild Traumatic Brain Injury in Returning from Iraq

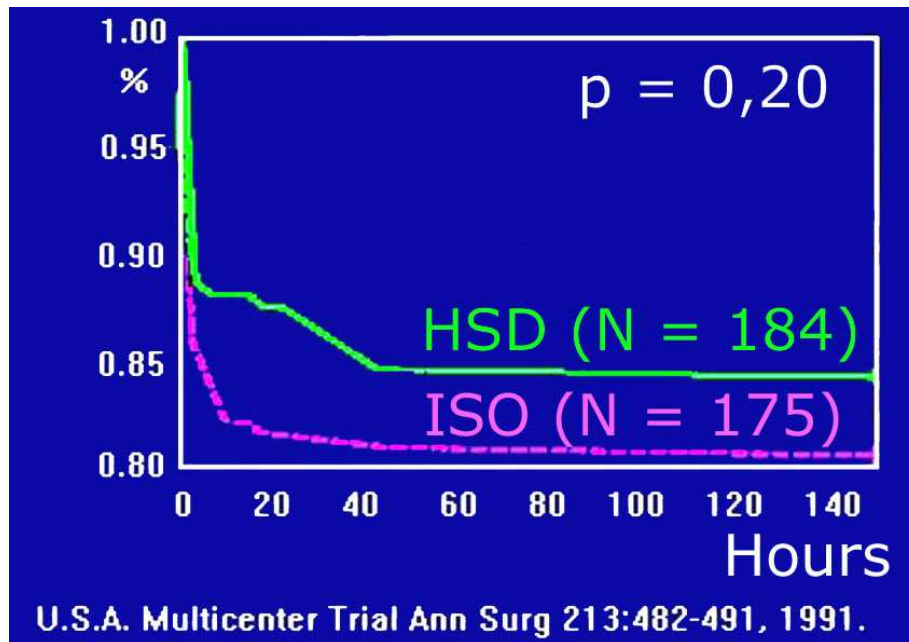
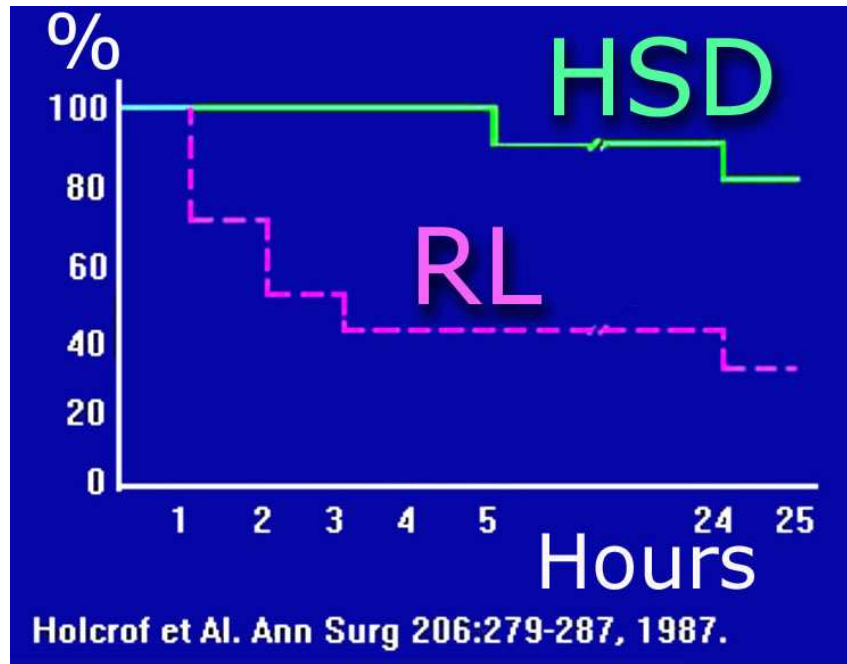
Charles W. Hoge, M.D., Dennis McGurk, Ph.D., Jeffrey L. Thomas, Charles C. Engel, M.D., M.P.H., and Carl A. C.



THÀNH PHỐ ĐÀ NẴNG 4

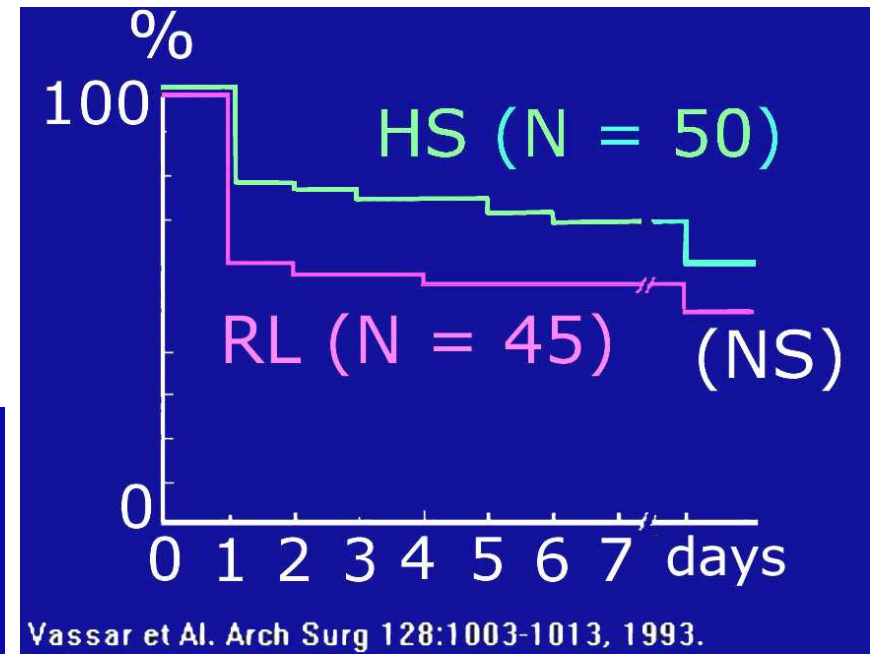
J Trauma 2006 ; 60 : 64-71.

Holcroft 1987



Survive ?

Vassar 1993



USA
multicenter
1991

Prehospital Hypertonic Saline Resuscitation of Patients With Hypotension and Severe Traumatic Brain Injury

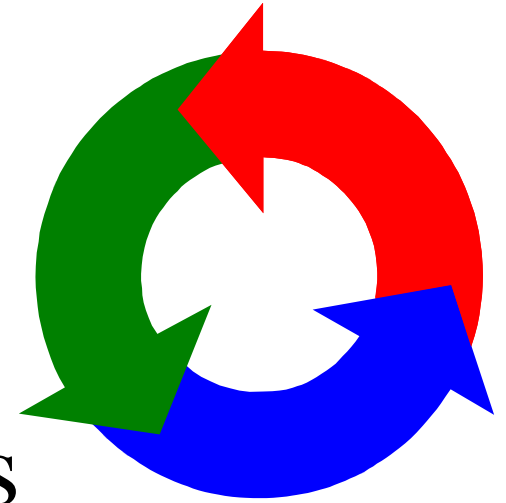
A Randomized Controlled Trial

D. James Cooper, BMBS, MD

Conclusion In this study, patients with hypotension and severe TBI who received prehospital resuscitation with HTS had almost identical neurological function 6 months after injury as patients who received conventional fluid.

JAMA. 2004;291:1350-1357

Wade 1997



- *Surgery 1997 ; 122 : 609-616.*
 - Méta-analyse > 1000 patients
 - **HSD meilleure survie 7/8** - $p = 0,07$
- *Acta Anaesthesiol Scand 1997 ; 110 : 77-79.*
 - 8 études 250 mL HSD vs standard
 - **trauma pénétrant : OR = 2**
- *J Trauma 1997 ; 42 : S61 - S65.*
 - 223 patients : TA, GCS, trauma pénétrant
 - analyse multivariée : **OR = 2 (p < 0,05)**



Permissive Hypotension Strategies for the Far-Forward Fluid Resuscitation of Significant Hemorrhage¹



Hypertonic Saline Resuscitation Restores Inflammatory Cytokine Balance in Post-Traumatic Hemorrhagic Shock Patients

Shawn G Rhind¹, Sandro B Rizoli², Pang N. Shek¹, Kenji Inaba², Dennis Filips²,
Homer Tien², Fred Brenneman² & Ori D Rotstein³

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reduces the fluid requirement such that only a 250 ml bag of HSD (illustrated) would provide similar resuscitation as the 3L bag of LR. The implication of this research strategy on reducing the logistic burden on the battlefield is obvious and potentially offers a wider range from hypotensive resuscitation to full restoration of baseline blood pressure, but with much smaller volumes.

Paper presented at the RTO HFM Symposium on "Combat Casualty Care in Ground Based Tactical Situations: Trauma Technology and Emergency Medical Procedures", held in St. Pete Beach, USA, 16-18 August 2004, and published in RTO-MP-HFM-109.

Dubick MA, Atkins JL

Small-volume fluid resuscitation for the far-forward combat environment: current concepts.
J Trauma. 2003 ; 54(5 Suppl):S43-5.C

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Hemorrhage remains the primary cause of death on the battlefield in conventional warfare. With modern combat operations leading to the likelihood of significant time delays in air evacuation of casualties and long transport times, the immediate goals of the Army's Science and Technology Objectives in Resuscitation are to develop limited- or small-volume fluid resuscitation strategies, including permissive hypotension, for the treatment of severe hemorrhage to improve battlefield survival and prevent early and late deleterious sequelae.

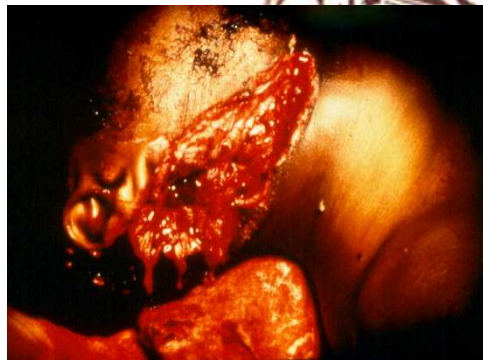
As an example, the U.S. Army has invested much effort in the evaluation of hypertonic saline dextran (HSD) as a plasma volume expander, at one tenth to one twelfth the volume of conventional crystalloids, in numerous animal models of hemorrhage. These studies have identified HSD as a potentially useful field resuscitation fluid.

In addition, preliminary studies have used HSD under hypotensive resuscitation conditions, and it has been administered through intraosseous infusion devices for vascular access. This research suggests that many of the difficulties and concerns associated with fluid resuscitation

logistique

18g NaCl
3 Kg

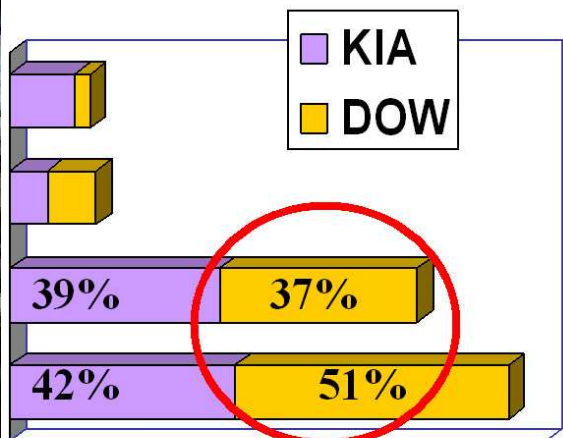
18g NaCl
250 g



Gain de temps



Ragaller, Shock 2000



SFAR
2008
75 ans de Progrès
50 ans de Congrès