Prise en charge de l'hémorragie massive

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Hospices Civils de Lyon

Hôpitaux de Lyon

Aucun conflit d’intérêt

INTRODUCTION

- 40 % des décès post traumatiques = **Hémorragie**
- Hémorragie = Principale cause de Décès Evitable < 24h
- Coagulopathie : 20 à 30 % des trauma admis au Déchocage

Brohi K et al. Curr Opin Crit Care 2007

Hémorragie massive

Stratégie de Damage Control Resuscitation

« Philosophie »

« The goal of damage control is to restore normal physiology rather than normal anatomy »

NATO Handbook war surgery
(www.vnh.org/EWSurg/EWSTOC.html)

Damage control *(Navy)*

1) réparation des avaries les plus graves, extinction des feux, colmatage des brèches,
2) maintien du bâtiment à flot jusqu'au port,
3) réparations définitives une fois arrivé en sécurité au port.

Changing Paradigm

Traditional

Damage Control

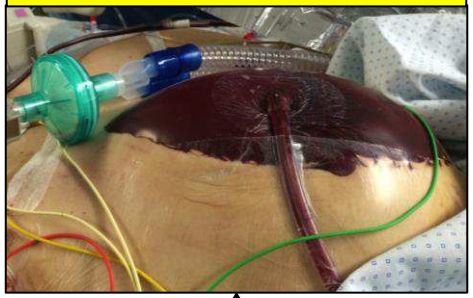
CHOC HEMORRAGIQUE = CIRCUIT PATIENT

TRAUMA CENTER = CIRCUIT ORGANISE !!!!!

Réveil

DECHOCAGE

Débit redon < 50 ml/h
Correction : T° / pH / TIC
Survey : 2-4 h



BLOC OPERATOIRE

< 2 heures !!

12-48 h

SSPI : HEMOSTASIS SURVEY

REANIMATION

ADMISSION DIRECTE BLOC OPERATOIRE

Orthopédiste

Viscéraux

Cell Saver

Bair Huger

Coquille

Choc Hémorragique
Sauvetage

Laparotomie
Thoracotomie
Hémostase Mbre
REBOA

De combien de Temps je dispose ?

CHOC HEMORRAGIQUE

DAMAGE CONTROL RESUSCITATION

TACTICAL DC

Tactical damage control resuscitation in austere military environments

Yann Daniel,[1] S Hoban,[2] L Malan,[1] J Escarment,[2,3] J-S David,[4,5] S Peyrefitte[1]

PREHOSPITALIER

- Identifier
- Evaluer
- Orienter
- Traiter DV

DC SURGERY

- Hemostase
- Coprostase
- Xie < 2 heures

DC HEMATOLOGY

PROTOCOLES / REGLES TRANSFUSION MASSIVE

Eviter « Lady-Di Syndrome »

DCR : OUI mais Quand ? Pour Qui ?

- **When to employ damage control.**
  - Use damage control in patients who present with or are at risk for developing:
    - Multiple life-threatening injuries.
    - Acidosis (pH <7.25).
    - Hypothermia (temperature <34°C).
    - Shock on presentation.
    - Combined hollow viscus and vascular or vascularized organ injury.
    - Coagulopathy (INR >1.4).
    - Mass casualty situation.

Damage Control Resuscitation **6**

Eric J. Voiglio, Bertrand Prunet, Nicolas Prat, and Jean-Stéphane David

6.1 Introduction

Damage control resuscitation (DCR) for trauma, initially described to address the entire lethal triad immediately upon admission to a combat hospital before damage control surgery (DCS) [1], is now accepted as part of an integrated approach DCR-DCS from point of wounding to definitive treatment [2]. Therefore, DCR can be divided in two steps: while bleeding is ongoing and once bleeding has been stopped.

6.1.1 Physiological Bleeding Control

When bleeding occurs, the baroreceptors located in the aortic arch and carotid sinus detect the drop in arterial pressure. This information is transmitted to the brain stem, which immediately increases sympathetic tone [3]. This increased sympathetic tone causes tachycardia (oxygen transportation is ensured by less blood that circulates faster) and vasoconstriction which favours the blood circulation of the heart and brain at the expense of all other organs and tissues (gut, kidney, muscle and skin). Vasoconstriction at the bleeding site decreases bleeding flow and allows platelets and the activated coagulation factors to seal the leak by a vascular clot [4] (Fig. 6.1). Fibrinolysis regulates coagulation [5] and prevents vascular occlusion. In favourable cases, the bleeding has stopped or slowed. In unfavourable

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DAMAGE CONTROL RESUSCITATION

- **Commence dès le Préhospitalier !**
- **Identifier les Patients : Trauma Fermé ou Pénétrant**
  - Evaluation clinique gravité : membre arrachée, plaie sévère …
  - Biologie Déportée :
    - Hemoccue < 110 g/L
    - INR > 1.2
  - Constantes vitales :
    - PAS < 90 / ACR …
    - Shock Index (FC/SBP) > 1.0
  - Intensité réanimation :
    - RV > 1 L et/ou NADN +

David JS et al. Vox Sang 2017

- **Différencier les Patients !**
  - Choc hémorragique, GCS > 9, ventilation ok : **SCOOP AND RUN** !!!!!
  - TCG : Médicalisation ++ : **PLAY AND … RUN** !

David JS et al. Ann Fr Anesth Réanim 2013

DAMAGE CONTROL RESUSCITATION

- **Hypotension Artérielle Permissive (Pas de TCG !!)**
  - **Respect des objectifs tensionnels** : PAS 80-90 mmHg
    - Notion de « rebleeding point » : 90 mmHg
  - **Limitation du Remplissage** :
    - Titration du volume …
  - **Utilisation précoce** des Vasopresseurs :
    - NADN

Agitation ≠ Trauma Crânien

- **Correction Triade Létale**
  - Hypothermie :
    - Diminuer exposition au froids, (réchauffement)
  - Acidose métabolique :
    - Améliorer perfusion tissulaire, CGR PH
  - Coagulopathie

Beekley AC. Crit Care Med 2008
Duchesne JC et al. J Trauma 2010
Le Noel A et al. Ann Fr Anesth Reanim 2011

Hypotensive Resuscitation Strategy

ORIGINAL ARTICLE

Hypotensive Resuscitation Strategy Reduces Transfusion Requirements and Severe Postoperative Coagulopathy in Trauma Patients With Hemorrhagic Shock: Preliminary Results of a Randomized Controlled Trial

C. Anne Morrison, MD, MPH, Matthew M. Carrick, MD, Michael A. Norman, MD, Bradford G. Scott, MD, Francis J. Welsh, MD, Peter Tsai, MD, Kathleen R. Liscum, MD, Matthew J. Wall, Jr., MD, and Kenneth L. Mattox, MD

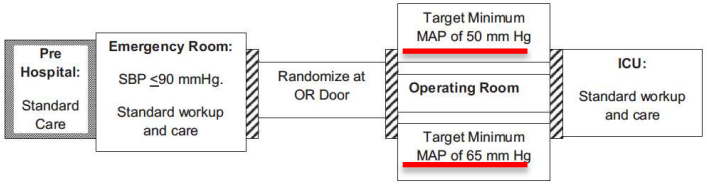

Diagram of the patient flow from left to right.

Results: Patients in the LMAP group received a significantly less blood products and total IV fluids during intraoperative resuscitation than those in the HMAP group. They had significantly lower mortality in the early postoperative period and a nonsignificant trend for lower mortality at 30 days. Patients in the LMAP group were significantly less likely to develop immediate postoperative coagulopathy and less likely to die from postoperatively bleeding associated with coagulopathy. Among those who developed coagulopathy in both groups, patients in the LMAP group had significantly lower international normalized ratio than those in the HMAP group, indicating a less severe coagulopathy.
Conclusions: Hypotensive resuscitation is a safe strategy for use in the trauma population and results in a significant reduction in blood product transfusions and overall IV fluid administration. Specifically, resuscitating patients with the intent of maintaining a target minimum MAP of 50 mm Hg, rather than 65 mm Hg, significantly decreases postoperative coagulopathy and lowers the risk of early postoperative death and coagulopathy. These preliminary results provide convincing evidence

Submitted for publication March 26, 2010.
Accepted for publication January 4, 2011.

From the Department of Surgery, Baylor College of Medicine, Houston, Texas.
Presented at the 40th Annual Meeting of the Western Trauma Association, February 28–March 6, 2010, Telluride, Colorado.
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DOI: 10.1097/TA.0b013e31820e77ea

considerable limitations[4–5] and, unlike many other treatment modalities, have not been extensively tested in prospective, randomized clinical trials.

Hypotensive resuscitation has recently been advocated as an alternative to the current standard of care. In contrast to standard fluid resuscitation, this strategy uses less fluids and blood products during the early stages of treatment for hemorrhagic shock. Although intraoperative hypotensive resuscitation has not been prospectively tested in a surgical trauma setting, it has been successfully used in animal models[6] and has also been safely used in patients undergoing elective operations.[7–11] To our knowledge, this study is the first randomized, prospective study of intraoperative hypotensive resuscitation for trauma in human subjects. The aim of this study is to assess patient outcomes after accrual of 90 patients to establish the safety of a hypotensive resuscitation strategy including its effects on intraoperative fluid administration, bleeding, postoperative complications, and mortality within the trauma population. Our hypothesis is that patients randomized to a hypotensive resuscitation strategy will have decreased transfusion and intraoperative fluid utilization, decreased transfusions, decreased operative blood loss, decreased postoperative coagulopathy, comparable postoperative morbidity, and decreased mortality compared with patients randomized to a standard fluid resuscitation strategy.

TABLE 6. Intraoperative Fluids

	MAP = 50 mm Hg				MAP = 65 mm Hg				
	n	Mean	SD	CI	n	Mean	SD	CI	*p*
IVF									
Crystalloid (mL)	44	2,883	1,921	2,299–3,467	46	3,282	2,010	2,667–3,866	0.34
Colloid (mL)	44	512	469	367–656	46	609	470	469–748	0.33
Blood products									
PRBC (mL)	44	1,335	[illegible]	[illegible]	[illegible]	2,244	2,466	1,512–2,977	0.05
FFP (mL)	44	198	471	54–341	46	528	860	272–783	0.02
Platelets (mL)	44	61	214	3–137	46	114	242	42–186	0.27
Total inputs									
Non-blood products (mL)	44	3,438	2,103	2,791–4,086	46	3,875	2,098	3,252–4,498	0.33
Blood products (mL)	44	1,594	[illegible]	[illegible]	[illegible]	2,898	3,299	1,918–3,877	0.03
Total fluids	44	5,070	3,631	3,952–6,187	46	6,762	4,559	5,408–8,116	0.06
Total outputs									
Estimated blood loss (mL)	44	1,964	2,215	1,290–2,637	46	3,008	2,948	2,132–3,883	0.06
Urine output (mL)	40	272	284	181–363	40	347	353	234–460	0.29
Total fluid balance	40	3,026	2,470	2,225–3,826	40	3,089	2,383	2,327–3,851	0.90

- ↘ Décès Précoce Post Opératoire
  - 1/44 (**2%**) vs. 8/46 (**17%**), p=0.03
- ↘ Décès Précoce (ICU)
- **J30 (p=0.33)**

Carrick MM et al. J Trauma 2016

DUREE HYPOTA PERMISSIVE ?

La Plus Courte Possible !! : hypoperfusion tissulaire, MOF …
Peu de Données Scientifiques / Dépends Terrain, Sévérité Trauma, Type de lésion

HÉMOSTASE

HYPOTENSION PERMISSIVE

NORMOTENSION

LOW VOLUME RESUSCITATION

Remplissage :

- **Correction de l'hypovolémie induite par la perte sanguine**
- **Rétablissement efficacité circulatoire et perfusion organes**

→

- **Déstabilisation caillot par la hausse de pression hydrostatique**
- **Hémodilution**
- **Hypothermie**

Solutés :

Solutés Balancés : RL / Isofundine

HEA : 10-15 ml/kg max

Gélatines : Balancés

> Attempting to achieve normotension during active haemorrhage consistently increased mortality.[28]

Dutton RP. Brit J Anaesth 2012

Rossaint et al. Critical Care (2016) 20:100
DOI 10.1186/s13054-016-1265-x

Critical Care

RESEARCH Open Access

The European guideline on management of major bleeding and coagulopathy following trauma: fourth edition

Rolf Rossaint[1], Bertil Bouillon[2], Vladimir Cerny[3,4,5,6], Timothy J. Coats[7], Jacques Duranteau[8], Enrique Fernández-Mondéjar[9], Daniela Filipescu[10], Beverley J. Hunt[11], Radko Komadina[12], Giuseppe Nardi[13], Edmund A. M. Neugebauer[14], Yves Ozier[15], Louis Riddez[16], Arthur Schultz[17], Jean-Louis Vincent[18] and Donat R. Spahn[19*]

Abstract

Background: Severe trauma continues to represent a global public health issue and mortality and morbidity in trauma patients remains substantial. A number of initiatives have aimed to provide guidance on the management of trauma patients. This document focuses on the management of major bleeding and coagulopathy following trauma and encourages adaptation of the guiding principles to each local situation and implementation within each institution.

Methods: The pan-European, multidisciplinary Task Force for Advanced Bleeding Care in Trauma was founded in 2004 and included representatives of six relevant European professional societies. The group used a structured, evidence-based consensus approach to address scientific queries that served as the basis for each recommendation and supporting rationale. Expert opinion and current clinical practice were also considered, particularly in areas in which randomised clinical trials have not or cannot be performed. Existing recommendations were reconsidered and revised based on new scientific evidence and observed shifts in clinical practice; new recommendations were formulated to reflect current clinical concerns and areas in which new research data have been generated. This guideline represents the fourth edition of a document first published in 2007 and updated in 2010 and 2013.

Results: The guideline now recommends that patients be transferred directly to an appropriate trauma treatment centre and encourages use of a restricted volume replacement strategy during initial resuscitation. Best-practice use of blood products during further resuscitation continues to evolve and should be guided by a goal-directed strategy. The identification and management of patients pre-treated with anticoagulant agents continues to pose a real challenge, despite accumulating experience and awareness. The present guideline should be viewed as an educational aid to improve and standardise the care of the bleeding trauma patients across Europe and beyond. This document may also serve as a basis for local implementation. Furthermore, local quality and safety management systems need to be established to specifically assess key measures of bleeding control and outcome.

Conclusions: A multidisciplinary approach and adherence to evidence-based guidance are key to improving patient outcomes. The implementation of locally adapted treatment algorithms should strive to achieve measureable improvements in patient outcome.

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Recommendation 13

We recommend a target systolic blood pressure of 80-90 mmHg until major bleeding has been stopped in the initial phase following trauma without brain injury. (Grade 1C)

Recommendation 15

We suggest administration of vasopressors to maintain target arterial pressure in the absence of a response to fluid therapy. (Grade 2C)

Recommandations formalisées d'experts

SFAR
Société Française d'Anesthésie et de Réanimation

Recommandations sur la réanimation du choc hémorragique

Guidelines on the treatment of hemorrhagic shock

Jacques Duranteau[a], Karim Asehnoune[b], Sébastien Pierre[c], Yves Ozier[d], Marc Leone[e], Jean-Yves Lefrant[f], et le groupe de travail de la Société française d'anesthésie et de réanimation (Sfar), de la Société de réanimation de langue française (SRLF), de la Société française de médecine d'urgence (SFMU) et du Groupe d'études sur l'hémostase et la thrombose (GEHT)*

DAMAGE CONTROL RESUSCITATION

- **Hypotension Artérielle Permissive (Pas de TCG !!)**
  - **Respect des objectifs tensionnels** : PAS 80-90 mmHg
    - Notion de « rebleeding point » : 90 mmHg
  - **Limitation du Remplissage** :
    - Titration du volume …
  - **Utilisation précoce** des Vasopresseurs :
    - NADN

- **Correction Triade Létale**
  - Hypothermie :
    - Diminuer exposition au froids,
    - Réchauffement patient / solutés
  - Acidose métabolique :
    - Améliorer perfusion tissulaire, CGR PH
  - Coagulopathie

Beekley AC. Crit Care Med 2008
Duchesne JC et al. J Trauma 2010
Le Noel A et al. Ann Fr Anesth Reanim 2011

COAGULOPATHIE TRAUMATIQUE

Fréquente / dépend du RV / sévérité trauma, timing PEC …

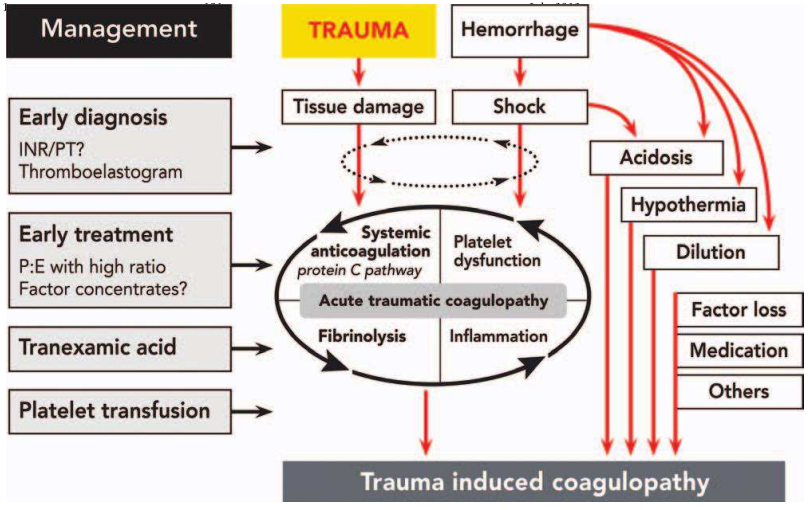
EDUCATION

Bruno Riou, M.D., Ph.D., Editor

Case Scenario: Management of Trauma-induced Coagulopathy in a Severe Blunt Trauma Patient

Jean-Stephane David, M.D., Ph.D.,* Anne Godier, M.D., Ph.D.,† Yesim Dargaud, M.D., Ph.D.,‡ Kenji Inaba, M.D., M.Sc.§

Anesthesiology, V 119 • No

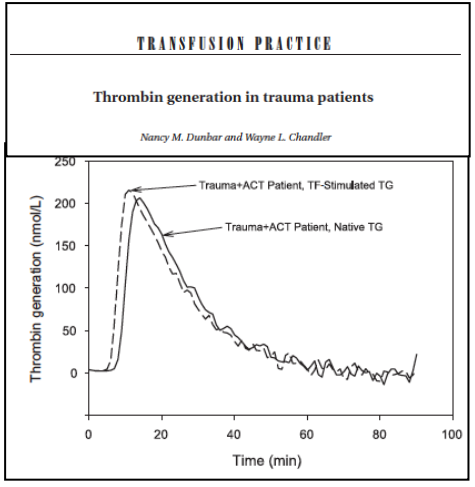


1. **Déficit en Fibrinogène**
2. **Génération de Thrombine**
   - Augmentée (ISS < 40)

     Dunbar N et al. Transfusion 2009

     Davenport RA et al. Anesthesiology 2017
   - Diminuée (ISS > 40, Choc)

     Taverna XJ et al. SFAR 2017
3. **Diminution tardive des Plaquettes**



2 SITUATIONS TRES DIFFERENTES

COAGULOPATHIE

CHOC HEMORRAGIQUE

TRAUMA INDUCED COAGULOPATHY

SITUATION SOUS CONTROLE

Rossaint *et al. Critical Care* (2016) 20:100
DOI 10.1186/s13054-016-1265-x

Critical Care

RESEARCH Open Access

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Recommandations formalisées d'experts

SFAR Société Française d'Anesthésie et de Réanimation

Recommandations sur la réanimation du choc hémorragique

Guidelines on the treatment of hemorrhagic shock

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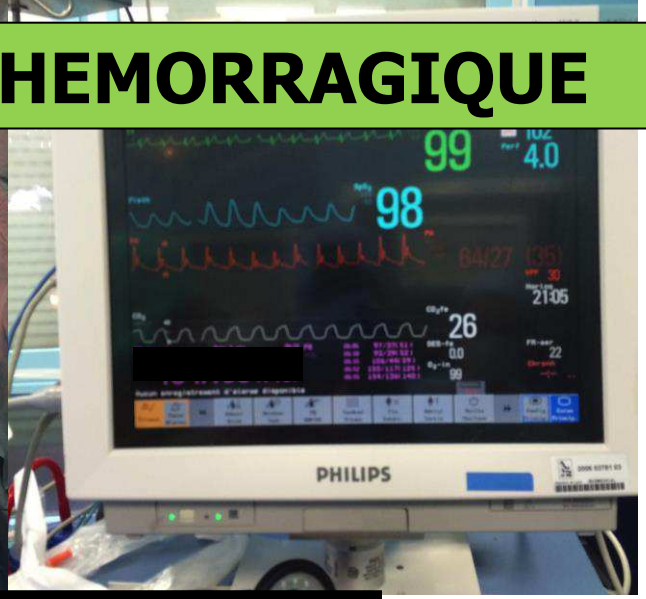
1. **Monitoring**
   - Techniques Viscoélastiques +++ (ROTEM/TEG)
   - Biologie Standard par défaut
2. **CGR** pour : Hgb 7 - 9 gr/dL
3. **Fibrinogène** si : < 1.5 gr/L
   - < 50 kg : 1,5 gr
   - 50-80 kg : 3 gr
   - > 80 kg : 4,5 gr
4. **PFC** si : TP < 40 %
   - PFC : 10-15 ml/kg
   - (PCC : 20-25 UI/kg)
5. **Plaquette** si : < 50 G/L
   - < 100 Hémorragie active/TCG
6. **Répéter Biologie / h – 2h**

CHOC HEMORRAGIQUE

SITUATION CLINIQUE NON CONTROLEE



HGB 68
TP 17
Fibri < 0,5 g

NADN 6mg/h
RV > 5L

CHOC HEMORRAGIQUE

SITUATION CLINIQUE NON CONTROLEE

LABORATOIRE D'HEMATOLOGIE		
HEMOSTASE IMMEDIATE		
TCA malade	*	>180.0
TCA témoin		32.0
Ratio M/T		Non déterminé
Temps de Quick malade	*	>60.0
Temps de Quick témoin		12.4
Taux de prothrombine	*	<10
INR	*	>7.00(1)
Dans la surveillance des traitements AVK, seul		
Zone thérapeutique INR : 2 à 4.5		
Fibrinogène	*	<0.5
HEMATOLOGIE IMMEDIATE		
NUMERATION GLOBULAIRE		
LEUCOCYTES		6.06
Hématies	*	2.00
HEMOGLOBINE	*	5.7
Hématocrite	*	0.18
VGM		89.5
TCMH		28.5
CCMH		31.8
CVG		14.0
PLAQUETTES	*	54
Vol. plaquettaire		9.5

- **ASSOCIE LES PRODUITS !**
- PSL + Concentrés de Facteurs (Fibrinogène …)
- Hypothermie
- Acidose
- **Protocole de Transfusion Massive = RATIO**
  - Composition : CGR/FIB/PFC (PLT dès 6 CGR)
  - **Ratio 1:1:1 (CGR/FIB/PFC)**
    - **+ Ca^{2+}**
- Surveillance Biologique / 1-2h

European Guidelines – Crit Care 2016

RFE SFAR 2014

CHOC HEMORRAGIQUE NON CONTROLE ?

CGR/CP + | **PFC ?!** | **+ FIB**

50 – 75 mg/kg

Ratio 1:1 ?
20-30 ml/Kg

1 PFC = + 2,5 % TP …

TP 10 : 14
TP 20 : 8
TP 30 : 4
TP 40 : 0

STRATÉGIE RATIO = TM

Transfusion ou Confusion Massive !?

ETUDES RATIO

- **PROPPR : Pas de Fib**
- **PROMT : Peu de Fib (cryo)**
- **Fib : Pas de CF US !**

- **PFC : très mx source Fib**

Collins PW et al. Brit J Anaesth 2014

VALIDITE EN EUROPE ??

REVIEW

Fixed ratio versus goal-directed therapy in trauma

Herbert Schöchl[a,b], Marc Maegele[c], and Wolfgang Voelckel[a]

Purpose of review
This article compares the strategy of a fixed transfusion ratio of plasma and platelet concentrates to red blood cells to reconstitute 'whole blood' with the concept of individualized goal-directed coagulation therapy (GDCT).

Recent findings
Current data suggest that an early and high ratio of plasma and platelet concentrate transfusion, predominantly in a fixed 1 : 1 : 1 ratio with red blood cells, is associated with improved outcome. However, the optimal ratio is still under discussion. Moreover, storage time considerably affects the hemostatic competence of these products and no universal standard for the composition of these 'transfusion packages' has been established. Some European trauma centers instituted the concept of GDCT in trauma patients, which is based on early diagnosis of the coagulation deficit using point-of-care viscoelastic tests (VETs). These tests provide rapid information about the underlying hemostatic deficiencies, allowing targeted coagulation therapy according to the individual deficits of the patient. Treatment algorithms have been established for the administration of coagulation factor concentrates, and plasma and platelet concentrate based on VET results.

Summary
Individualized GDCT, guided by VET, offers several advantages over fixed ratio coagulation therapy. Studies comparing both hemostatic strategies are warranted.

Keywords
goal-directed coagulation therapy, ratio-driven coagulation therapy, trauma-induced coagulopathy, viscoelastic tests

INTRODUCTION

Despite substantial improvement in acute trauma care, uncontrolled bleeding remains the primary cause of preventable death [1,2]. Most of these patients die within 3–6 h of hospital admission [3]. Thus, many trauma centers implement massive transfusion protocols to rapidly identify patients at risk for massive transfusion and administer hemostatic agents without substantial time delay [4,5]. Recent data suggest that early transfusion of high ratios of plasma and platelet concentrate, predominantly in a fixed 1 : 1 : 1 ratio with red blood cells (RBCs), is associated with improved outcome in patients with severe bleeding [6••].

Some European trauma units have established a more targeted approach to treat coagulopathic trauma victims. Viscoelastic tests (VETs), most commonly rotational thromboelastometry (ROTEM, TEM International GmbH, Munich, Germany) or thrombelastography (TEG, Haemonetics Corporation, Niles, Illinois, USA], are used to evaluate the hemostatic capacity of trauma patients. Tailored hemostatic therapy, largely consisting of purified coagulation factor concentrates (CFCs), can then be applied [7–13].

FIXED RATIO COAGULATION THERAPY

The concept of damage-control resuscitation has been adopted in many military and civilian trauma centers [14,15], and is essentially based on restricted fluid therapy, permissive hypotension, and consequent maintenance of normothermia [14]. Early and aggressive transfusion of plasma has been

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e-mail: herbert.schoechl@auva.at

Curr Opin Anesthesiol 2016, 29:234–244
DOI:10.1097/ACO.0000000000000278

ETAT DE CHOC HEMORRAGIQUE

- **SOIT ECOLE « US »**
  =Gestion « Ratio Fixé »
  - CGR selon hgb ou à l'aveugle
  - PFC:CGR 1:1
  - (Fib : 3 g puis selon bio)
  - PLT : à partir de 4/6 CGR

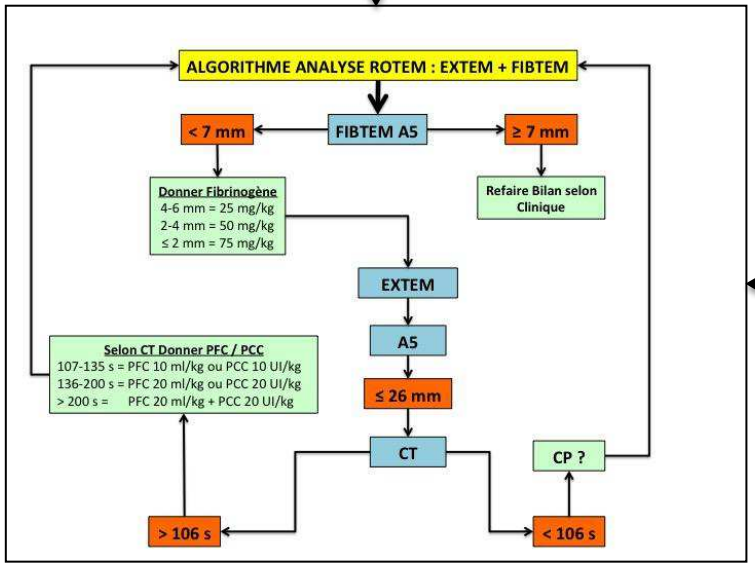
- **SOIT ECOLE « EUROPÉENNE »**
  = Gestion « Guidée »
  - « Mise de Départ » selon :
    - Clinique
    - Hgb
    - CGR + FIB ± PFC
  - Puis :
    - CGR selon Hgb
    - FIB / PFC / PLT selon
      - ROTEM +++
      - Biologie Standard
      - A faire / 1-2 h !!

SUSPICION DE COAGULOPATHIE

Trauma / HPP

SITUATION CLINIQUE SOUS CONTROLE

ROTEM / NFP



SITUATION CLINIQUE NON CONTROLEE

Damage Control Resuscitation

PAS 70-90 mmHg
LVR/NADN
DCS < 2h

CGR 0 : selon HemoCue
Clottafact : 50-75 mg/kg
(PLYO : 2 à 4)
TXA : 1 g / 3h

Plaquette selon Numération
PFC selon CT EXTEM
Fibrinogène selon A5 Fibtem

UN BON EXEMPLE

- Agression arme blanche Lyon
- Plaie = para-sternale gauche
- SMUR : Tachycarde / TA impr / Sueur / Agitation
- VVP / O2 / Début RV …
- **Transport immédiat et rapide**

SMUR < 15 min !

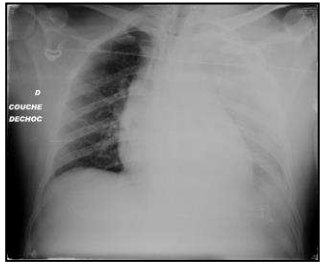
Posé en AC sur Table Opératoire
Sternotomie de Sauvetage
Plaie Tronc AP : Suture en quasi AC
Extubé H36
Total : 2 CGR / 4,5 g FIB / 2g TXA

Transport < 10 min !

DECHOC

- Admission : PAS < 75 mmhg / Fc 100 / Agitation et Sueur
- eFAST + / VVC + K ART
- T + 15 min : 1 AC / RACS puis après 5 min 2ème AC

20 min !



3 g Fib débuté au Déchocage

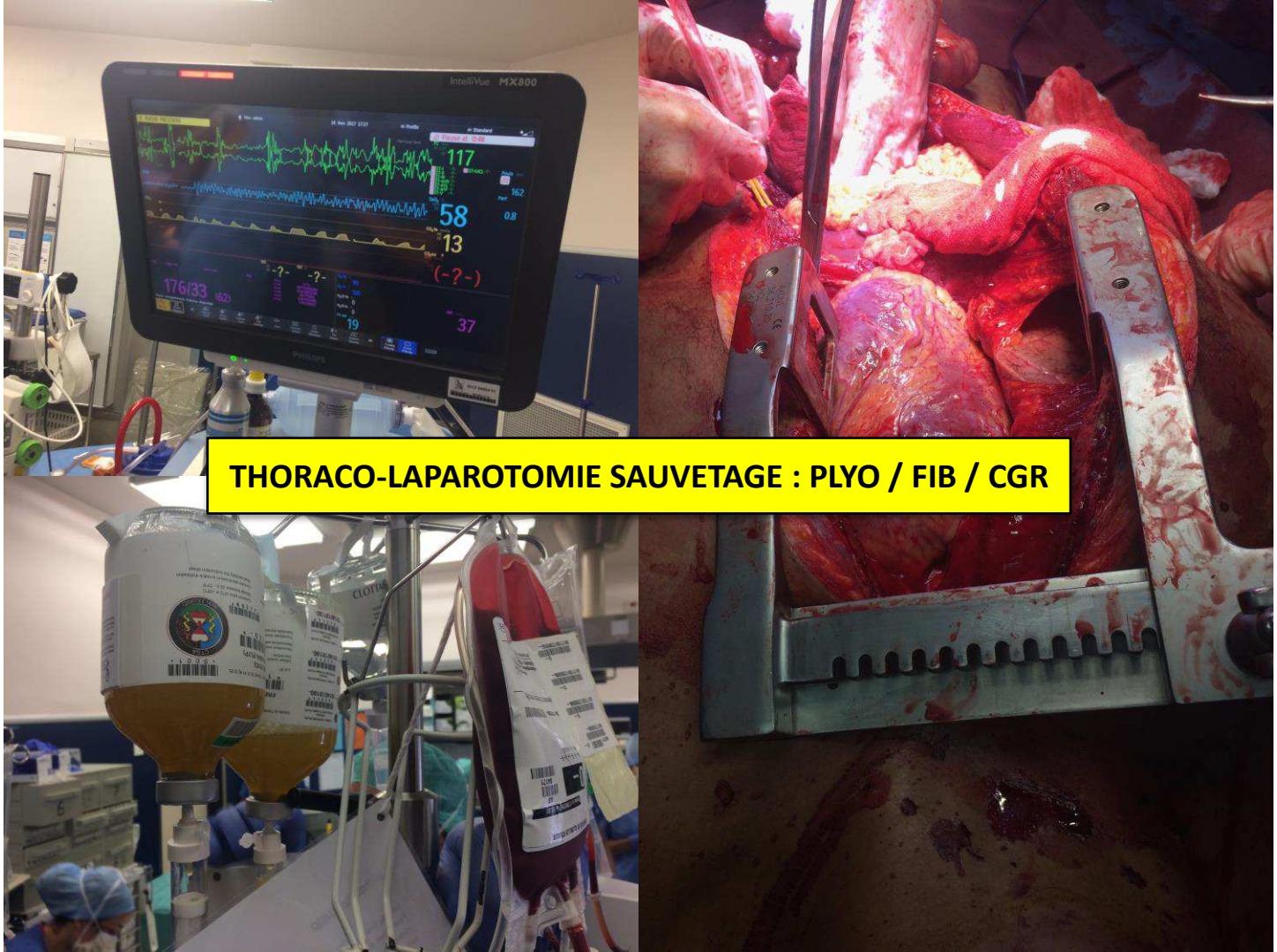
BLOC !!

Durée Bloc 70 min !

Hémorragie massive

- **Choc Hémorragique : Hémostase & DCR**
  - **HypoTA permissive / Low Volume Resuscitation**
  - **Triade Létale**
- **Agir vite en cas de Coagulopathie : !!**
- **EXACYL : Systématique**
- **Algorithme de PEC ++ / Règle de TM**
- **Check List Choc Hémorragique**
- **CIRCUIT PATIENT Identifié**
- **Procédures DCR connues et … appliquées !!**

« The Best Treatment of the Coagulopathy is … Surgery ! »


IntelliVue MX800
117
58
13
176/33
37
19
PHILIPS
THORACO-LAPAROTOMIE SAUVETAGE : PLYO / FIB / CGR