TRAUMA 2016

Novità in Ambito ExtraOspedaliero

Carlo Coniglio

UO Rianimazione-118, Ospedale Maggiore

Bologna

Italian Resuscitation Council

CONGRESSO NAZIONALE IRC 2016

20·21 OTTOBRE

KIDS SAVE LIVES MASS TRAINING

22 OTTOBRE 2016

NH MILANO CONGRESS CENTER ASSAGO

Obiettivi

- News *in ABC*
- Cosa fare in Exra H?
- In quanto tempo?
- Dove Andare?

Evidenze in PreH Trauma Care…

- Difficile fare studi randomizzati
- Studiare effetto di interventi su mortalità difficile (cause multifattoriali)
- Spesso “buone idee” diventano standard di cura, al di la delle “prove” scientifiche
- Ciò che sembra valido in intraH viene esportato in extraH

Considerazioni: cosa fare in PreH?

- Approccio preH tra mito e realtà
- Quale paziente ho davanti?
  - Airway, Breathing, Circulation Problem(s)?
- Cosa è utile fare?
- Cosa so fare?
  - Skills: Basic, Intermediate, Advanced
- Dove sono?
  - Urban Vs Rural

In 20'…

D1: Trauma, cosa fare in preH?

- Damage Control dall'intra verso l'extra-ospdaliero
- Dall' ABCD al C- ABCD

“Remote” Damage Control…
PreH Trauma Care…ABC

Ovvero…

PRIMUM
NON
NOCERE

Dall' ABC... al

<CmH>ABCDE

Control Massive Haemorrage

Stop the Bleeding!!!!

CmH -ABCDE

Massive exsanguinating haemorrhage	Cm*ABCDE
Non-exsanguinating significant bleeding	ABCDE
Lesser bleeding	ABCDE
Minor wounds	Secondary survey

*Control of massive haemorrhage.

Stop Massive Critical Bleeding

⇒ emorragie esterne massive: se tamponate in ritardo, dopo la valutazione Airway & Breathing, comportano alto rischio di morte per emorragia…

AN EVIDENCE-BASED PREHOSPITAL GUIDELINE FOR EXTERNAL HEMORRHAGE CONTROL: AMERICAN COLLEGE OF SURGEONS COMMITTEE ON TRAUMA

Eileen M. Bulger, MD, FACS, David Snyder, PhD, Karen Schoelles, MD, FACP, Cathy Gotschall, ScD, Drew Dawson, BA, Eddy Lang, MD, CM CCFP (EM) CSPQ, Nels D. Sanddal, PhD, NREMT, Frank K. Butler, MD, FAAO, FUHM, Mary Fallat, MD, FACS, Peter Taillac, MD, Lynn White, MS, CCRP, Jeffrey P. Salomone, MD, FACS, NREMT-P, William Seifarth, MS, NREMT-P, Michael J. Betzner, MD, FRCPC, Jay Johannigman, MD, FACS, Norman McSwain, Jr., MD, FACS, NREMT-P

Received January 21, 2014 from the University of Washington, Seattle, Washington (EB), ECRI Institute of Health Technology Assessment, Washington DC (DS, KS), Office of Emergency Medical Services National Highway Traffic Safety Administration, Washington DC (CG, DD), University of Calgary, Alberta, Canada (EL, MJB), American College of Surgeons, Chicago, IL (NDS), Committee on Tactical Combat Casualty Care, Joint Trauma System (FKB), University of Louisville, Louisville, Kentucky (MF), University of Utah, Salt Lake City, Utah (PT), American Medical Response, Inc. (LW), Maricopa Medical Center, Phoenix, Arizona (JPS), Department of Homeland Security, Office of Health Affairs (WS), University of Cincinnati, Cincinnati, Ohio (JJ), and Tulane School of Medicine, New Orleans, Louisiana (NM). Revision received February 12, 2014; accepted for publication February 13, 2014.

The systematic review of the evidence used for the development of these guidelines was conducted by ECRI Institute with funding provided by the National Highway Traffic Safety Administration, DTNH22-11-C-00223.

This publication was developed in part with funding from the National Highway Traffic Safety Administration (NHTSA) of the U.S.

ABSTRACT

This report describes the development of an evidence-based guideline for external hemorrhage control in the prehospital setting. This project included a systematic review of the literature regarding the use of tourniquets and hemostatic agents for management of life-threatening extremity and junctional hemorrhage. Using the GRADE methodology to define the key clinical questions, an expert panel then reviewed the results of the literature review, established the quality of the evidence and made recommendations for EMS care. A clinical care guideline is proposed for adoption by EMS systems.
Key words: tourniquet; hemostatic agents; external hemorrhage

PREHOSPITAL EMERGENCY CARE 2014;18:163–173

INTRODUCTION

External hemorrhage has been increasingly recognized as a major cause of potentially preventable death following severe injury. This issue has been thor-

Prehospital External Hemorrhage Control Protocol

Apply direct pressure/pressure dressing to injury

Direct pressure effective (hemorrhage controlled)

Direct pressure ineffective or impractical (hemorrhage not controlled)

Wound amenable to tourniquet placement (e.g. extremity injury)

Wound not amenable to tourniquet placement (e.g. junctional injury)

Apply a tourniquet*

Apply a topical hemostatic agent with direct pressure#

*Use of tourniquet for extremity hemorrhage is strongly recommended if sustained direct pressure is ineffective or impractical; Use a commercially-produced, windlass, pneumatic, or ratcheting device, which has been demonstrated to occlude arterial flow and avoid narrow, elastic, or bungee-type devices; Utilize improvised tourniquets only if no commercial device is available ; Do not release a properly-applied tourniquet until the patient reaches definitive care

#Apply a topical hemostatic agent, in combination with direct pressure, for wounds in anatomic areas where tourniquets can not be applied and sustained direct pressure alone is ineffective or impractical; Only apply topical hemostatic agents in a gauze format that supports wound packing; Only utilize topical hemostatic agents which have been determined to be effective and safe in a standardized laboratory injury model

FIGURE 2. Protocol for prehospital external hemorrhage control.

Tourniquet "Revival"

Falsi Miti:

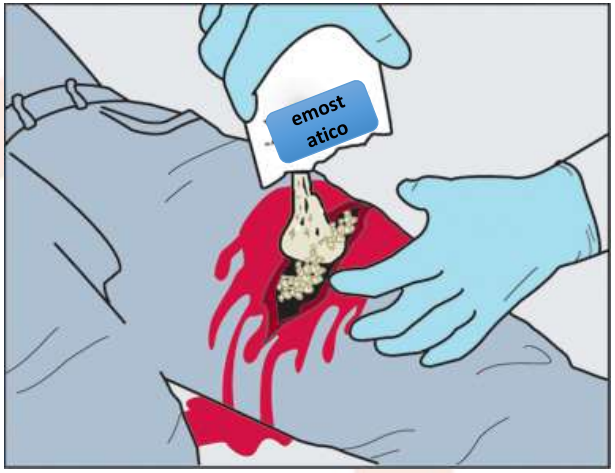
- Compressione diretta è sufficiente
- Tempi di trasporto sono brevi
- Rischio di amputazione / lesioni neuro periferiche aumenta

- **Tourniquet use**
- *Recommendation 2*
- **We recommend adjunct tourniquet use to stop life-threatening bleeding from open extremity injuries in the presurgical setting. (Grade 1B)**

Management of bleeding and coagulopathy following major trauma: an updated European guideline

Critical Care 2013, **17**:R76 doi:10.1186/cc12685

Garze/polveri compressive ed emostatiche



Indicazioni

- Zone non comprimibili con Tourniquet
- Emostasi difficile
- Ferite penetranti/destruenti
- Ambito militare> civile

Azione

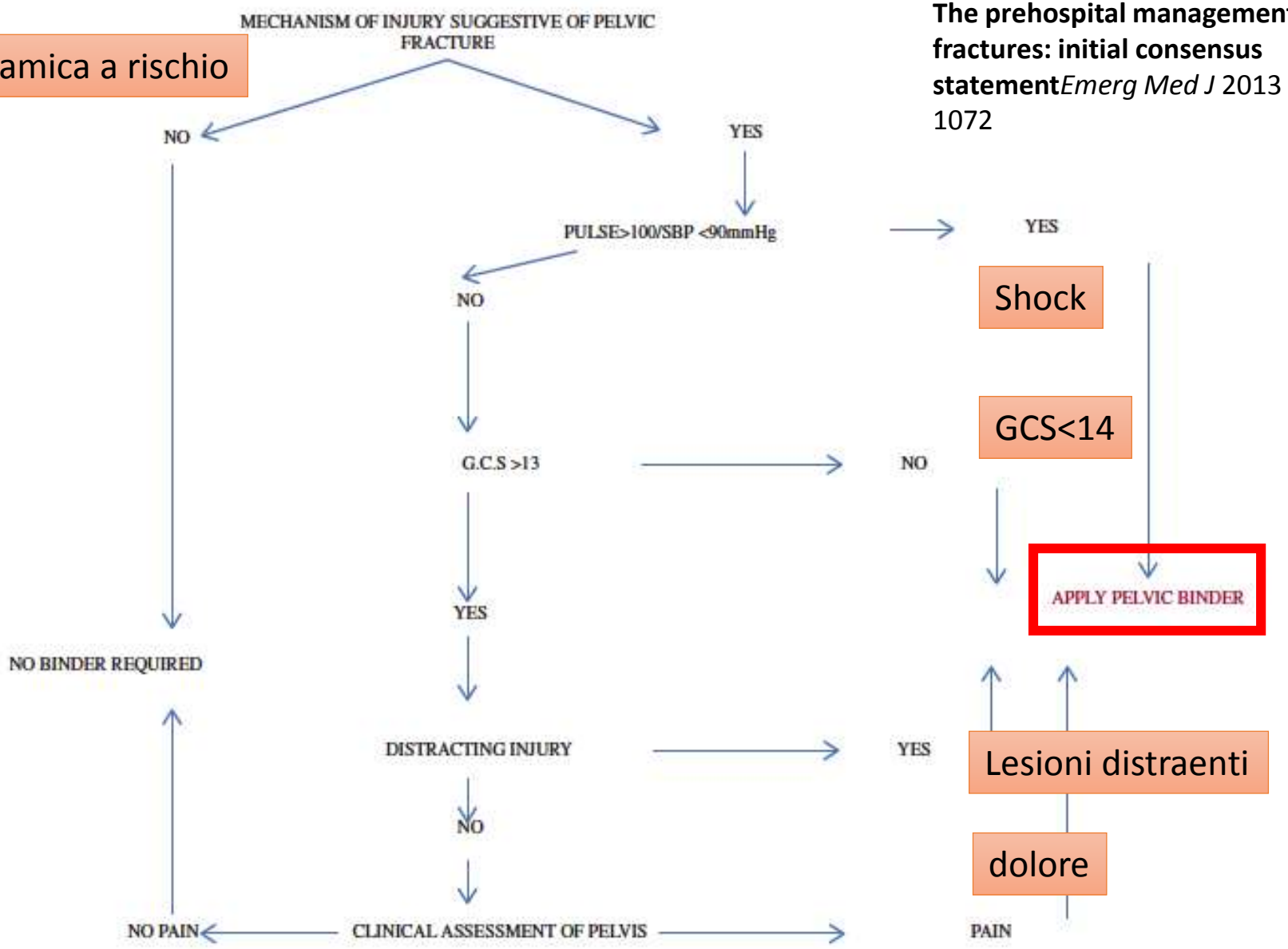
- Concentrati di fibrina
- Concentrati procoagulanti (chitosano)
- Adsorbenti e concentratori di piastrine e fattori locali
- Necessità di ulteriori studi

Fascia Pelvica: indicazioni preH

1. Paziente in shock
2. Segni obiettivi di fratture pelvica:
   1. Ispezione: ecchimosi, abrasioni, ematoma pelvico, lacerazione esposizione
   2. Palpazione: pelvi instabile solo se ispezione negativa

Dinamica a rischio

The prehospital management of pelvic fractures: initial consensus statement*Emerg Med J* 2013 30: 1070-1072



Airway nel Trauma: mito

- BTF - Brain Trauma Foundation guidelines recommend prehospital endotracheal intubation in all patients with traumatic brain injury(TBI) and a GCS <8 *(JNeurotrauma2007;24(Suppl. 1)*

- EAST 2003 *(J Trauma. 2003;55:162–179)*

  a. Ostruzione delle vie aeree
  b. Ipoventilazione (□CO2)
  c. Ipossiemia grave (spO2<90% in O2 tx)
  d. Coma (GCS<9)
  e. ACR
  f. Shock emorragico grave

A… letteratura

- IOT preH > mortality (Davis, Murray, Bochicchio)
- GL Scandinavian:
  - IOT if skill/competence Anesthesiology-like
  - PEG / basic ventilation if BLS/ILS
- Cochrane 2009 -->” In trauma and paediatric patients, the current evidence base provides no imperative to extend the practice of prehospital intubation in urban systems.”

Airway: real world

- Sucess → Skills & Training
- Time on scene: 5-12min
- Airway where? "Urban" Vs "Rural" …

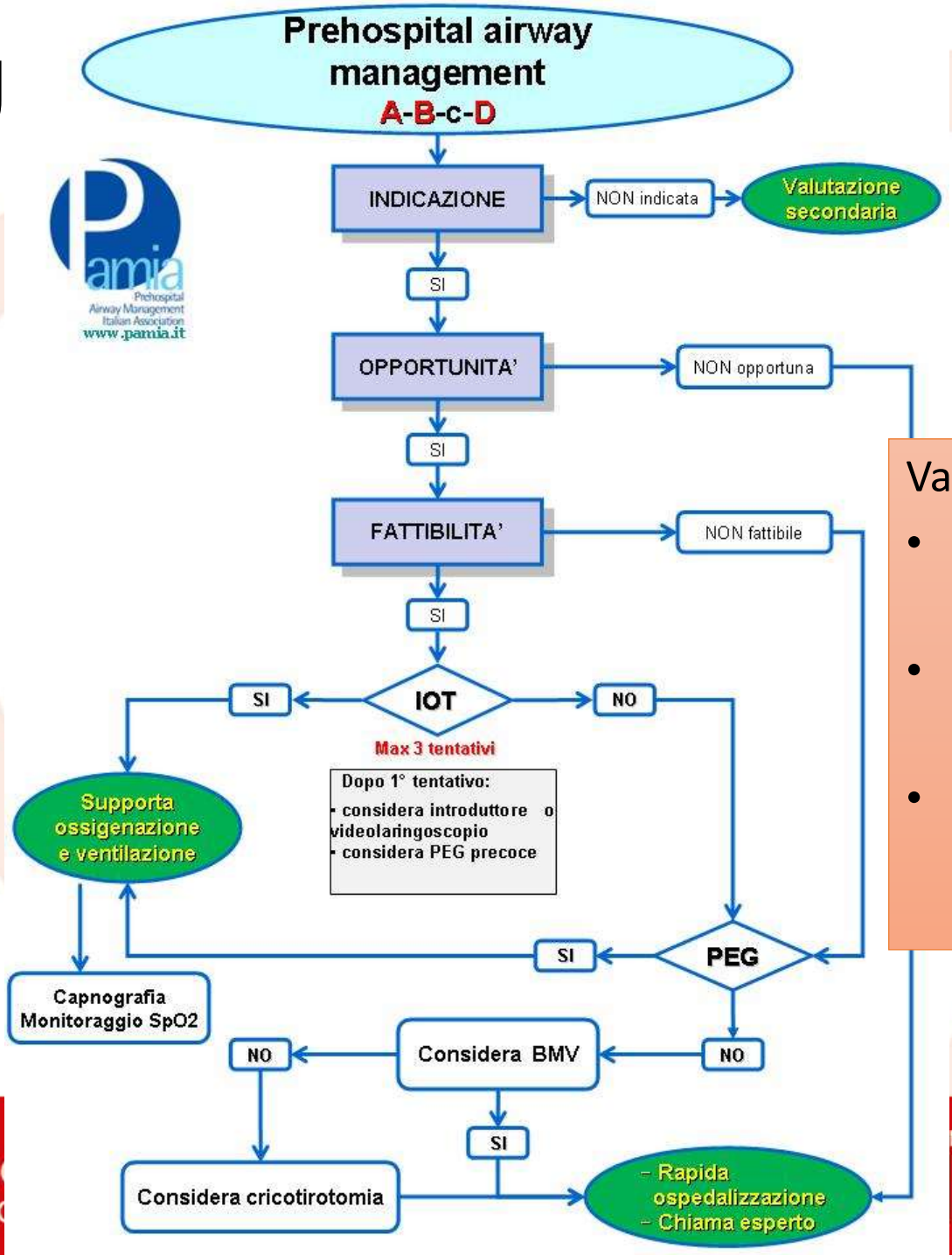
- Low evidence of benefit & "More Damage"Risk…
- …

~~Intubazione~~… Gestione Vie Aeree

- Quando?
- Come?

Alg

LG SIAARTI



Variabili:

- Chi c'è?
  - Skill degli operatori
- Quale paziente?
  - case-mix
- Dov'è il paziente?
  - tempi "Urban Vs Rural"

Indications?

- **A & B failure → Immediate Management (RSI?)**
- **Valutare:**
  - **Indicazione**
  - **Opportunità (Opportunity)**
  - **Fattibilità (feasibility)**

Other…

- **C failure** → bleeding identification & management
- **D failure** → O2, Ventilation, Perfusion

Skills & Competence

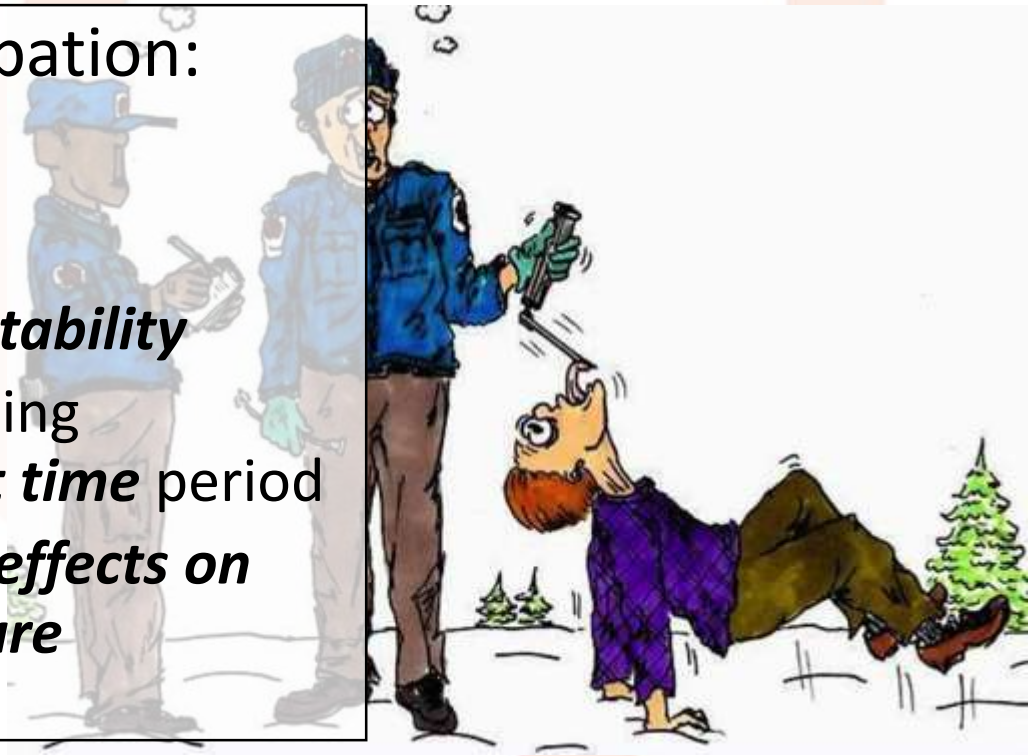
- **Gold:** anestesia-like, elevato volume e skills
- **Silver:** meno esperienza
- **Bronze:** gestione occasionale delle vie aeree

- RSI, Drug Assisted Intubation
- Presidi alternativi: PEG/SGD
- Pallone- Maschera + strumenti di base

von Goedecke A, Herff H, Paal P, Dorges V, Wenzel V. Field airway management disasters. Anesth Analg 2007;104:481–3

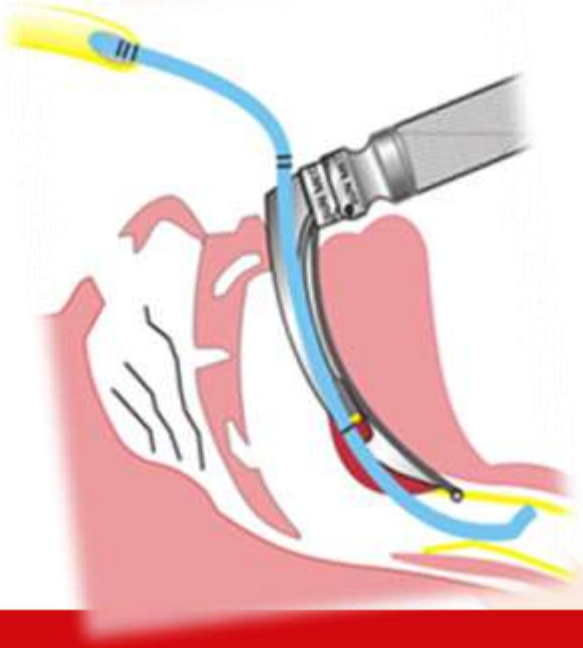
A. Intubazione preH: "Damage Control …NOT… More Damage"

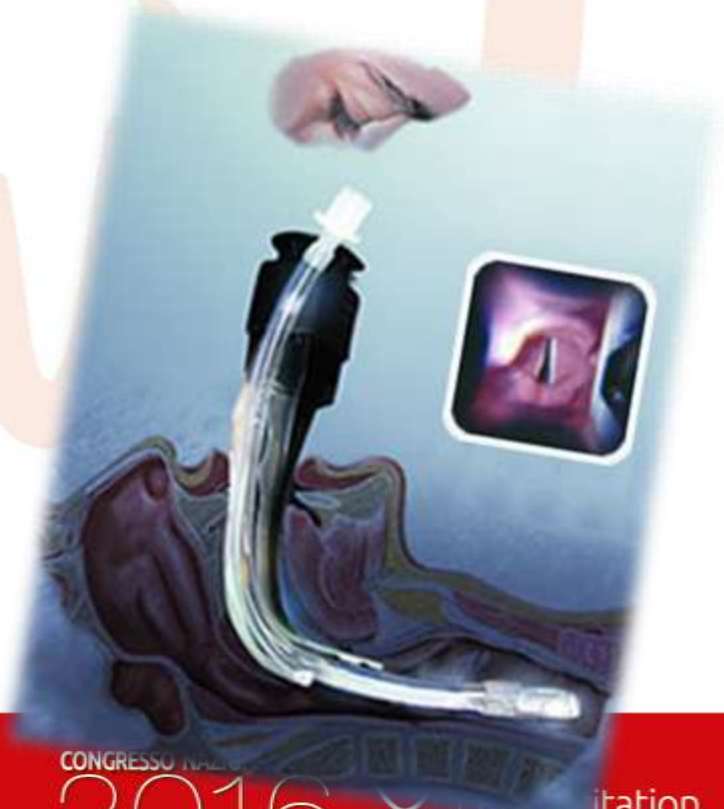
- RSI or Drug Assisted Intubation: ***Goals***
  - maintain ***hemodynamic stability***
  - provide adequate intubating conditions in the ***shortest time*** period
  - do **not** have ***detrimental effects on cerebral perfusion pressure***



PIANO "B"

- ✓Ambu + Sellick
- ✓EGD: Tubo Laringeo, Maschera laringea, mandrini lunghi, video-laringo…..





Airway when & where?

Major trauma: assessment and initial management

NICE guideline — National Institute for Health and Care Excellence

Published: 17 February 2016

nice.org.uk/guidance/ng39

Airway management in pre-hospital settings

1.2.3 Aim to perform **RSI as soon as possible *and within 45 minutes*** of the initial call to the emergency services, ***preferably at the scene*** of the incident.

within 45 minutes…
preferably at the scene

If RSI cannot be performed at the scene

Major trauma: assessment and initial management

NICE guideline
Published: 17 February 2016
nice.org.uk/guidance/ng39

Airway when & where?

If RSI cannot be performed at the scene

journey time is 60 minutes or less?

y → Trauma Center

n → Local Trauma Unit

transport the patient to a major trauma centre for RSI ***provided the journey time is 60 minutes or less; only divert*** to a trauma unit for RSI before onward transfer if a patent airway cannot be maintained or the journey time to a major trauma centre ***is more than 60 minutes***.

A…. THM

- Comandamenti
  - I - IT non sempre benefica
    - (ipossia, ipotensione, ipercapnia..)
  - II - valuta il tuo livello: gold-silver-bronze
- Urban: scoop & run & allerta Tr. Team
- Rural: mantenere la pervietà Vs controllare la via aerea
- Considera precocemente PEG

Circulation : preH myths

- 2 large IV lines
- Fluid Bolus (2L… 1L …ATLS®…) in shock
  - two large bore IVs followed by the rapid administration of saline or Ringers lactate if the blood pressure is below 90 systolic

Circulation: real world

- A. difficult IV access in shock
- TIME consuming: 8-12min
- More need of Intra-Oss. device
- Fluid Bolus → "pop the clot" effect

Guidelines for Prehospital Fluid Resuscitation in the Injured Patient

Bryan A. Cotton, MD, MPH, Rebecca Jerome, MLIS, MPH, Bryan R. Collier, DO, Suneel Khetarpal, MD, Michelle Holevar, MD, Brian Tucker, DO, Stan Kurek, DO, Nathan T. Mowery, MD, Kamalesh Shah, MD, William Bromberg, MD, Oliver L. Gunter, MD, and William P. Riordan, Jr., MD; EAST Practice Parameter Workgroup for Prehospital Fluid Resuscitation

(*J Trauma.* 2009;67: 389–402)

C. Damage Control Resuscitation in PreH

- Emostasi
- Riconoscimento dello Shock
- Limited Fluid resuscitation
- Haemostatic Resuscitation

Riconoscimento dello shock

- Dinamica del Trauma
- Emorragie esterne
- ABC: FC, Refilli Cap, PA (110 Vs 90)
- US (?)

Shock… quando?

<110mmHg

Nuovo limite?

observational evidence from large datasets in the UK and United States - **mortality increases** in trauma pz blunt and penetrating trauma, while

systolic **blood pressure falls** **below 110 mm Hg.**

A US review of 870 634 sets of trauma records identified that

for every 10 mm Hg below 110 mm Hg, mortality increased by 4.8%.

Limited Fluid Resuscitation

Don’t Pop The Clot

Come?

→Strategia Small Volume

→Boli 250ml per mantenere perfusione

→Accesso venoso preH: obiettivo principale analgesia/sedazione

→IO se fail (max 2 tentativi)

1 x ***250 ml***

PreH Fluid Resuscitation: Target

Yes?

NO FLUID!

No?

250ml Bolus

Trauma Cranico… quale endpoint?

Injury, Int. J. Care Injured 45 (2014) 612–617

Contents lists available at ScienceDirect

Injury

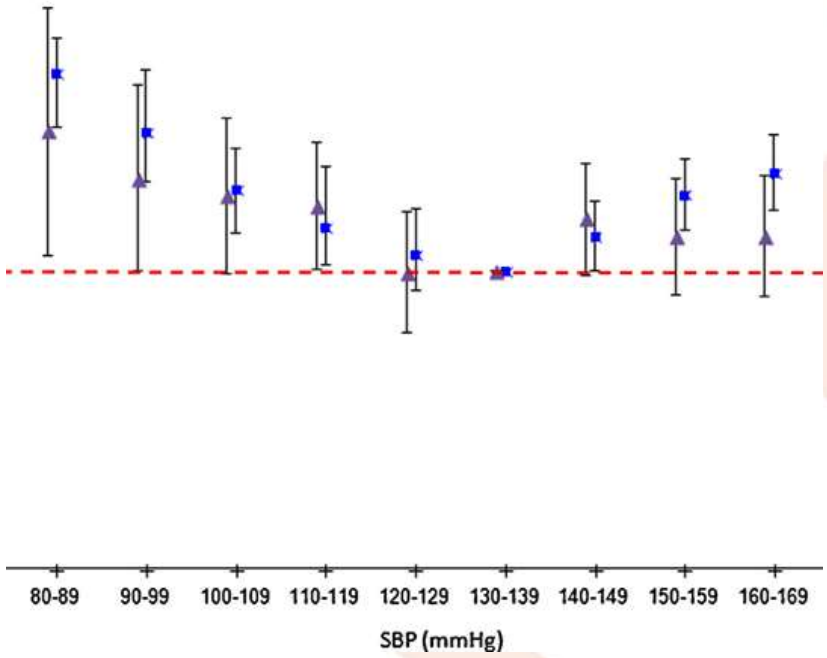
journal homepage: www.elsevier.com/locate/injury

The association between admission systolic blood pressure and mortality in significant traumatic brain injury: A multi-centre cohort study

Gordon Fuller [a,1,*], Rebecca M. Hasler [b,1], Nicole Mealing [c], Thomas Lawrence [a], Maralyn Woodford [a], Peter Juni [c], Fiona Lecky [d]

[a] Trauma Audit and Research Network, Health Sciences Research Group, Manchester Academic Health Sciences Centre, Mayo Building, Salford Royal Hospital,

PAS e mortalità nel Tr. Cranico



Case-mix adjusted odds of death were

- 1.5 times greater at <120 mmHg
- ***doubled*** at <100 mmHg
- ***tripled*** at <90 mmHg
- ***six*** times greater at SBP < 70 mmHg ($p < 0.01$)

G. Fuller et al. / Injury, Int. J. Care Injured 45 (2014) 612–617

“Early Goal” Emodinamici

new

PAS 80- 90 mmHg

→ Trauma Chiuso/Penetrante

… perfusione d’organo…

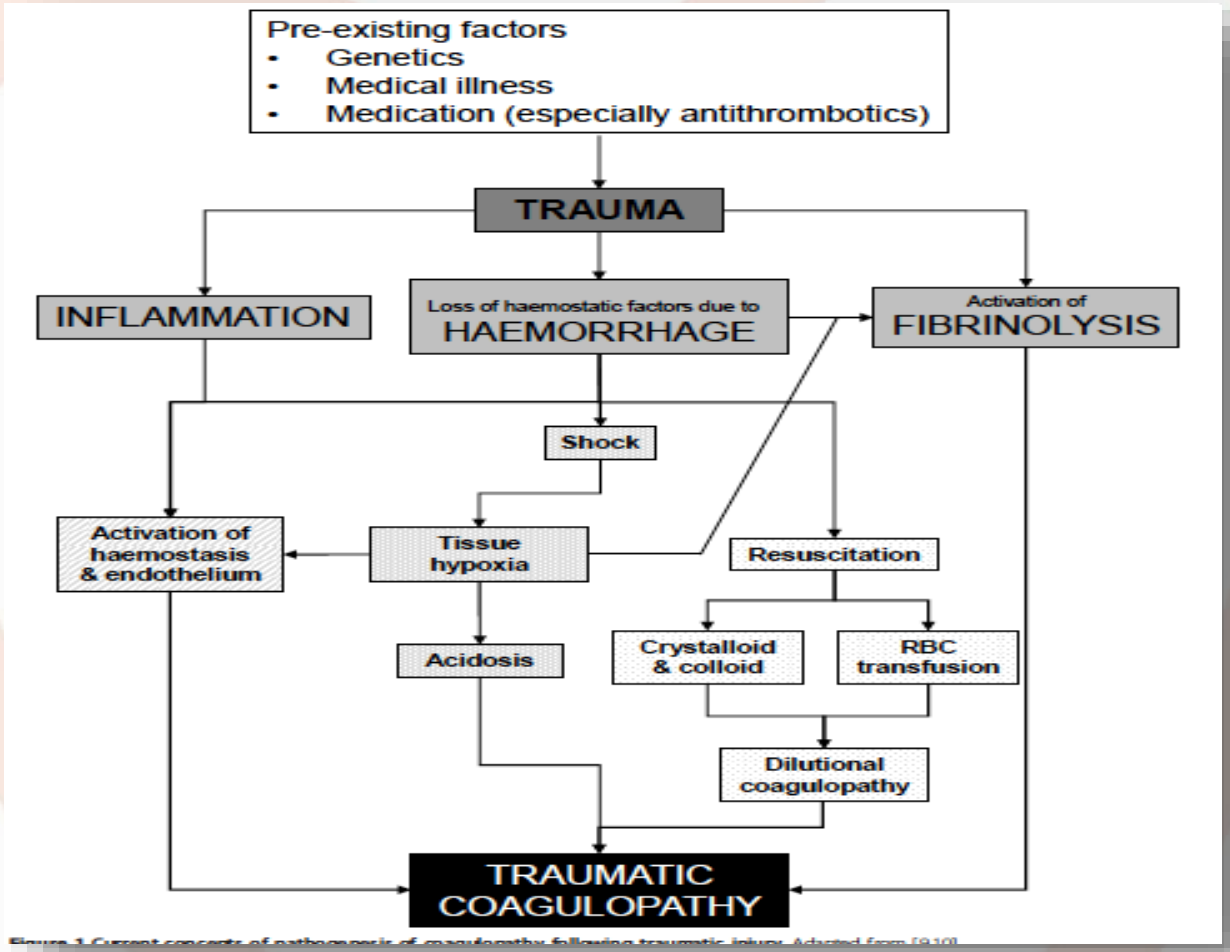
No “pop the clot” prima dell’emostasi

PAS 100-110 mmHg

→ Trauma Cranico

PAM >80-90 … perfusione cerebrale…

Haemostatic resuscitation in preH?



Data from one trial involving 20,211 patients found that TXA **reduced the risk of death due to bleeding by 15%** (RR=0.85, 95% CI 0.76 to 0.96; P=0.0077). There was evidence that early treatment (≤ 3 hours) was more effective than late treatment (>3 hours). There was no evidence that TXA increased the risk of vascular occlusive events or need for surgical intervention. There was no substantial difference in the receipt of blood transfusion between the TXA and placebo groups. The two trials of aprotinin provided no reliable data.

Acido Tranexamico

"Box" Emostatico

Ugurol fl 500mg/5ml

Quando?	Dose	Diluizione/velocità
Carico (<3h…)	1g (2fl)	100ml/10min
Mantenimento (entro 8h)	1g (2fl)	1g → 8h

preH/ER

ER /inH

Wafaisade *et al. Critical Care* (2016) 20:143
DOI 10.1186/s13054-016-1322-5

Critical Care

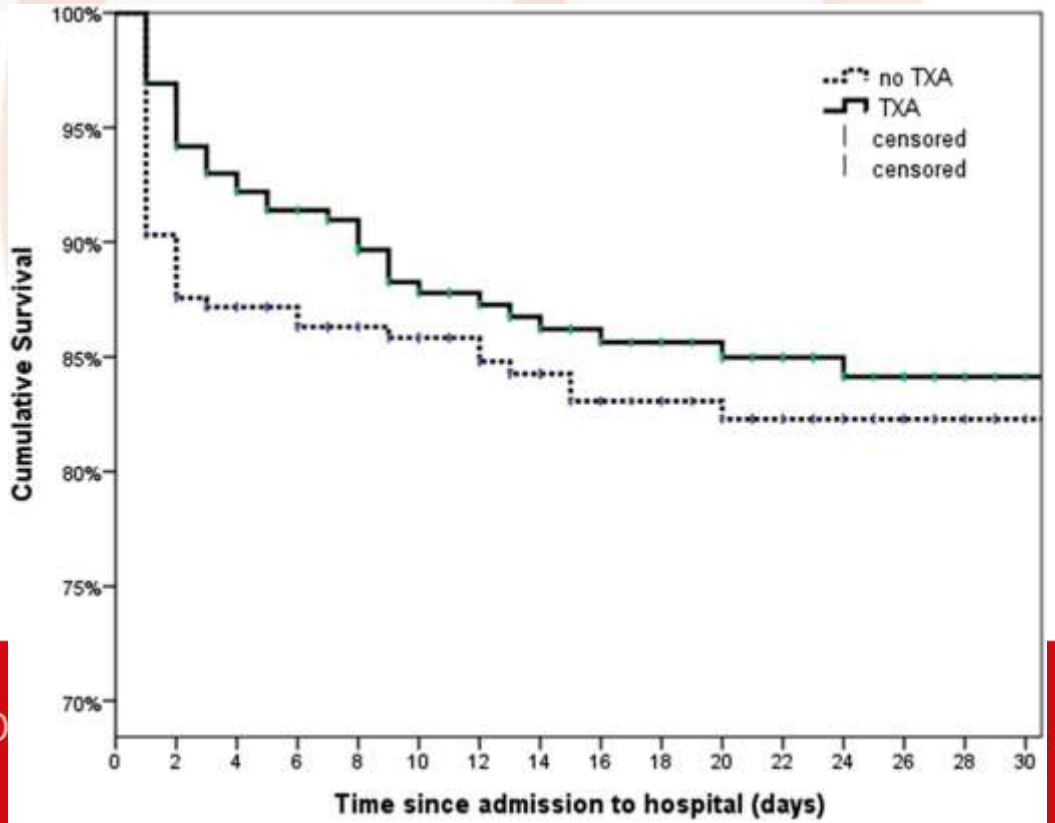
RESEARCH Open Access

Prehospital administration of tranexamic acid in trauma patients

Arasch Wafaisade[1*], Rolf Lefering[2], Bertil Bouillon[1], Andreas B. Böhmer[3], Michael Gäßler[4], Matthias Ruppert[4]

prehospital German database of the ADAC: 258 Tranex Vs 258 No Tranex

Early mortality was significantly lower in the TXA group (e.g., 24-h mortality 5.8 % [TXA] vs. 12.4 % [control]; p = 0.01),



Injectable hemostatic adjuncts in trauma: Fibrinogen and the FlinTIC study

Marc Maegele, MD, Max Zinser, MD, Christoph Schlimp, MD, Herbert Schöchl, MD, *and* Dietmar Fries, MD, *Cologne, Germany*

For adequate hemostasis, sufficient amounts of thrombin and coagulable substrate are fundamental prerequisites. In addition to platelets, on whose surfaces most of the thrombin is generated, fibrinogen can be considered as the substrate of the coagulation process.[1–4] If sufficient thrombin is formed, it converts fibrinogen into stable fibrin, which determines the firmness of the developing clot in the presence of activated coagulation factor XIII[5,6] (Fig. 1).

Under physiologic conditions, fibrinogen availability is regulated through dynamic changes in synthesis and breakdown to preserve coagulation function. As a consequence of blood loss, consumption of coagulation factors, dilutional coagulopathy, hypothermia and acidosis, as well as profibrinolytic activation, fibrinogen may reach critical levels earlier than any other procoagulant factor and also platelets even before packed red blood cell concentrate administration becomes necessary.[7,8] Floccard et al.[9] have described even significant drops in fibrinogen levels to occur already during the ultra early prehospital phase of care when comparing blood samples obtained from bleeding trauma patients at the scene and at the time point of arrival to the trauma bay (fibrinogen median, 2.6 g/L; interquartile range [IQR], 2.3–3.1; 95% confidence interval [CI], 2.4–2.9 vs. 2.1 g/L; IQR, 1.4–2.5; 95% CI, 1.7–2.3) (changes, −0.6 g/L; IQR, −1.1 to −0.3; 95% CI, −0.9 to −0.3; $p < 0.001$). In this study, fibrinogen levels decreased substantially as a function of injury severity reflected by Injury Severity Scores (ISSs). Recently, Kimura et al.[10] have reported similar results when searching retrospectively for predictors of hypofibrinogenemia in 290 blunt trauma patients upon admission to a Level I trauma center during a 3-year period. Their multivariate regression analysis identified patient's age (odds ratio [OR], 0.97; $p < 0.001$), Triage Revised Trauma Score (T-RTS including Glasgow Coma Scale [GCS] score, respiratory rate, and systolic blood pressure; OR, 0.81; $p = 0.003$), and prehospital volume therapy (OR, 2.54; $p = 0.01$) as independent predictors for early hypofibrinogenemia.

In contrast to disseminated intravascular coagulopathy, there is no generalized intravascular microcoagulation with increased consumption in trauma-induced coagulopathy.[11] Instead, there is hemorrhage-related loss of coagulation factors and platelets with subsequent dilution of procoagulant factors due to (uncritical) volume resuscitation with direct effect on fibrinogen polymerization.[12] Dilution of fibrinogen by crystalloid fluids and additional reduced fibrin interlinkage by synthetic colloids has been discussed.[2]

Recently, experimental data confirmed significant fibrinogen breakdown by acidosis following hypoperfusion with no effect on fibrinogen synthesis,[13] while hypothermia decreased fibrinogen synthesis with no effect on fibrinogen degradation.[14] Furthermore, synthesis and degradation seem to be regulated through different mechanisms, and a potential deficit in fibrinogen availability during hypothermia has been suggested.[2]

Fibrinogen Levels During Trauma-Hemorrhage and Outcome

Low concentrations of fibrinogen on admission and during initial management are frequently observed in trauma patients and have strongly been associated with the severity of injury and the degree coagulopathy.[9,10,15,16] Coagulopathic civilian trauma patients had a median fibrinogen concentration of 0.9 g/L (IQR, 0.5–1.5) together with a maximum clot firmness (MCF) of 6 mm (IQR, 0–9), whereas only 2.5% of healthy volunteers had an MCF of 7 mm or less.[17] An MCF of 7 mm was associated with a fibrinogen level of approximately 2 g/L. Hagemo et al.[18] identified a fibrinogen concentration of 1.5 g/L or less in 8.2% (n = 93) and less than 2 g/L in 19.2% (n = 211) of their 1,133 patients

Submitted: October 1, 2014, Accepted: February 2, 2015.

ClinicalTrials.gov. Fibrinogen Concentrate (FGTW) in trauma patients presumed to bleed (FI in TIC). Available from: http://clinicaltrials.gov.show/NCT0145344

Fibrinogeno in preH: FI in TIC Study

Studio prospettico multicentrico in corso (Austria, Germania, Rep Ceca)

Pazienti emorragici in preH
30 pz Fibrinogeno 30mg/kg Vs
30 pz **Placebo**

Outcome:
- 1° Effetto sulla coagulazione : MCF al FIBTEM
- 2°
  - richieste trasfusionali
  - emorragia
  - Compl. Tromboemboliche
  - LOS in ICU
  - mortalità

C. PreH Emoderivati?

SHOCK, Vol. 46, No. 1, pp. 3–16, 2016

OPEN

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

Received 6 Nov 2015; first review completed 16 Nov 2015; accepted in final form 12 Jan 2016

ABSTRACT—**Introduction:** Administration of high ratios of plasma to packed red blood cells is a routine practice for in-hospital trauma resuscitation. Military and civilian emergency teams are increasingly carrying prehospital blood products (PHBB) for trauma resuscitation. This study systematically reviewed the clinical literature to determine the extent to which

Blood in preH?

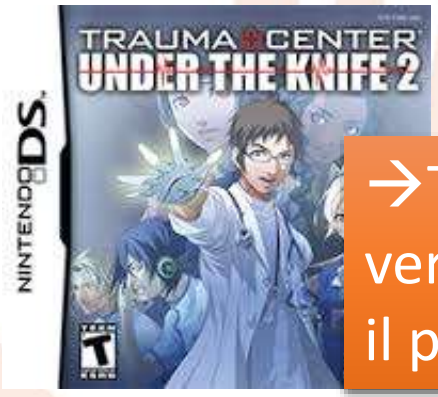
- Twenty-five of 27 studies; low quality evidence
- No association between PHBP and survival
- No consistent physiological or biochemical benefit

- PHBP resuscitation appears logical
- poor quality evidence
- not demonstrate improved outcomes.

C…. THM

- Stop the Bleeding
- Ipotensione permissiva
- Pochi fluidi
- Analgesia

Il "fluido" migliore in pre-ospedaliero (G. Nardi)



→Trasporto **Fast & Clean** verso l'Ospedale Giusto … Non il più vicino

PreH US in Trauma?

Injury, Int. J. Care Injured 46 (2015) 2093–2102

Contents lists available at ScienceDirect

Injury

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

Review

Prehospital ultrasound of the abdomen and thorax changes trauma patient management: A systematic review

D. O'Dochartaigh [a,*], M. Douma [b]

PreH US in Trauma

Advantage:

- **Better** than physical exam
- Dx: intra-abdominal bleeding, pericardial effusion, PNX
- ***Negative scan + hypotension*** = decreases the chance of a pneumothorax or cardiac tamponade as cause
- ***Patient destina*****tion:** identification & transfer directly to a trauma center (improve outcomes)

Limits & Conclusion

- moderate evidence that supports prehospital US physician use
- heterogeneity and small number studies
- Evidence is lacking if affects trauma patient morbidity and mortality

A&C- Spine … Still True?

JOURNAL OF NEUROTRAUMA 31:531–540 (March 15, 2014)

DOI: 10.1089/neu.2013.3094

Review

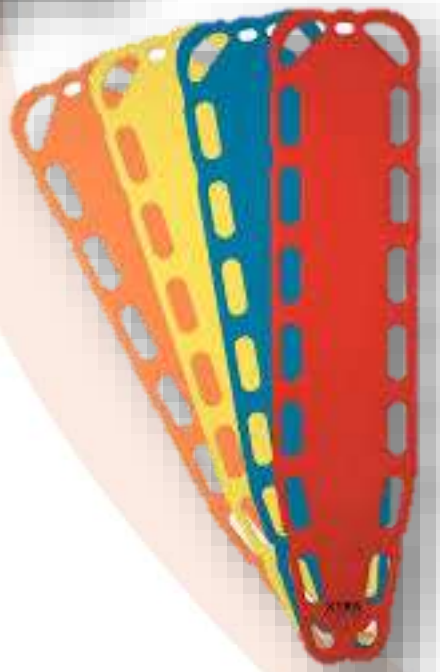
Prehospital Use of Cervical Collars in Trauma Patients: A Critical Review

Terje Sundstrøm,[1–3] Helge Asbjørnsen,[4,5] Samer Habiba,[3] Geir Arne Sunde,[4–6] and Knut Wester[2,3]

Abstract

The cervical collar has been routinely used for trauma patients for more than 30 years and is a hallmark of state-of-the-art prehospital trauma care. However, the existing evidence for this practice is limited: Randomized, controlled trials are largely missing, and there are uncertain effects on mortality, neurological injury, and spinal stability. Even more concerning, there is a growing body of evidence and opinion against the use of collars. It has been argued that collars cause more harm than good, and that we should simply stop using them. In this critical review, we discuss the pros and cons of

Myth: Backboards are Helpful



- Incidenza Traumi Vertebrali 2%–5%
- Lesioni Midollari > 2%
- Lesione Vertebrale richiede alta energia
- Movimenti a bassa energia (es. mobilizzazione paz) bassa probabilità di creare lesioni
- Paz cosciente: lesione midollare = dolore e limitazione funzionale

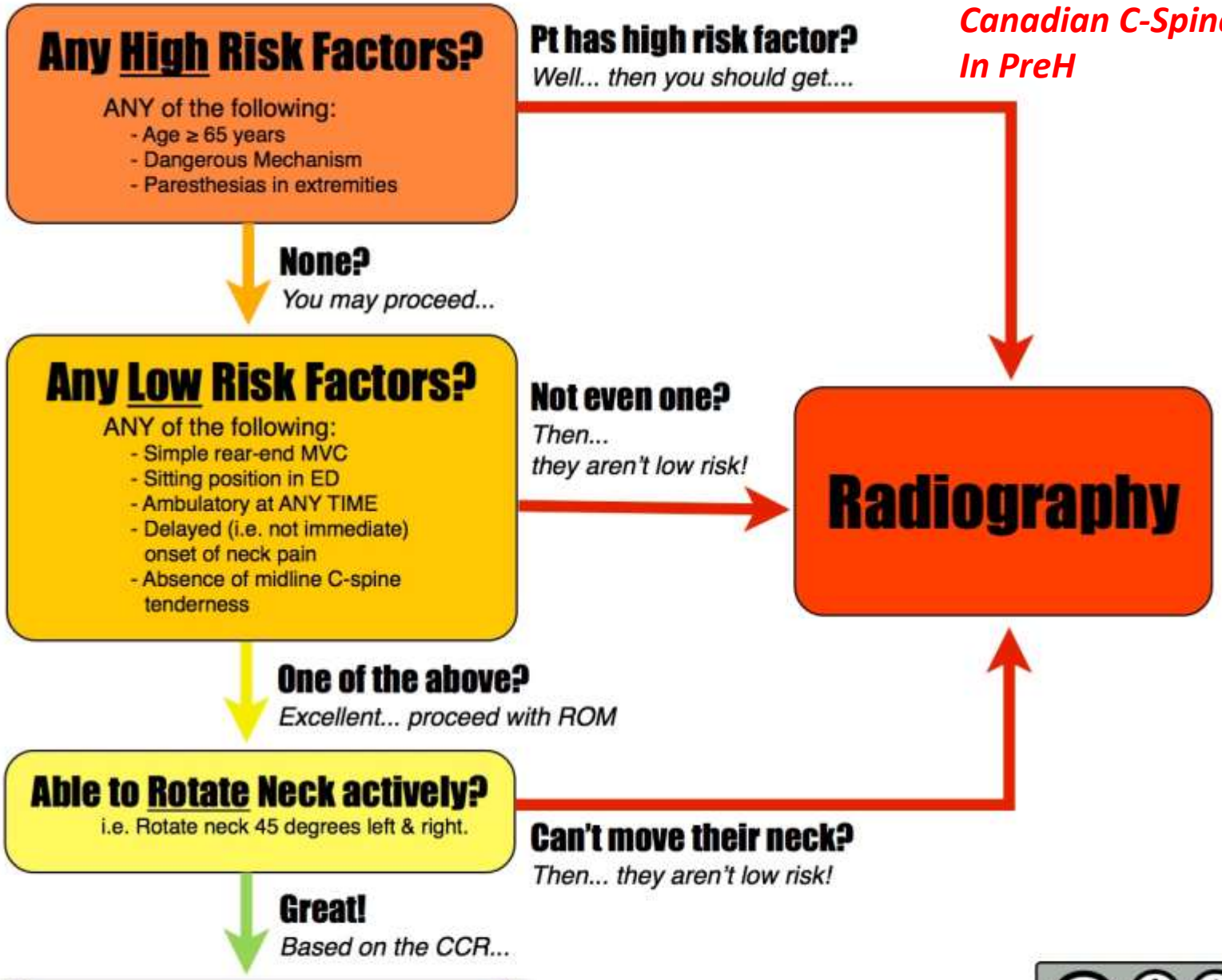
Spinal Assessment and management

- Valutare fattori ad ***Alto o Basso Rischio*** (cervical spine injury → ***Canadian C-Spine Rules)***
- Individualizza l'approccio alle specifiche circostanze: (collo corto, deformità, paz non collaboranti, bambini…)

- Estricazione rapida se ABCD' life Threath
- Considera "Self Extrication"
- Pain management (morfina, ketamina, EV o alterantive)

NICE guideline - February 2016
nice.org.uk/guidance/ng41

Canadian C-Spine Rules In PreH



Self Extrication ?

In assenza di:

- significant distracting injuries
- abnormal neurological symptoms (paraesthesia or weakness or numbness)
- spinal pain
- high-risk factors for cervical spine injury as assessed by the Canadian C-spine rule.

Self Extrication

In assenza di:

- **Self Extrication**
  - Assist the patient as needed to exit the crash setting
  - The patient's effort and collar are used for cervical stabilization
  - Addition manual stabilization is not needed

D2: in quanto tempo?

PreH Time: la “Golden Hour” non esiste!

The “golden hour…”: which pz?

- ***TBI*** : the time of arrival at the hospital was less important than the ***quality of prehospital resuscitation*** (often need not so much a surgeon as a team capable of quickly initiating appropriate resuscitation).
- Arrival at the hospital as soon as possible for ***severe hemorrhagic lesions*** necessitating a full technical platform

Update on prehospital emergency care of severe trauma patients.
Tazarourte. Annales Franc¸aises d’Anesthesie et de Reanimation 32 (2013) 477–482

PreH Time: Magic Question?

Non focalizzarsi sui 60’

Magic Question: “***Ho gli strumenti per stabilizzare il paz***?

Si?
ok Stay and play

No?
Corri in H
(in quello giusto, non nel più vicino!!)

D3: PreH Trauma : dove andare?

Il Trauma Center e la rete… servono?

The NEW ENGLAND JOURNAL of MEDICINE

SPECIAL ARTICLE

A National Evaluation of the Effect of Trauma-Center Care on Mortality

Ellen J. MacKenzie, Ph.D., Frederick P. Rivara, M.D., M.P.H., Gregory J. Jurkovich, M.D., Avery B. Nathens, M.D., Ph.D., Katherine P. Frey, M.P.H., Brian L. Egleston, M.P.P., David S. Salkever, Ph.D., and Daniel O. Scharfstein, Sc.D.

N Engl J Med 2006; 354:366-378

National Study on the Costs and Outcomes

of Trauma (NSCOT)

18 TrC Vs %1 non TrC (18 stati)

Setting: Area urbana e suburbana

Conclusioni:

- **Rischio di morte in TC <20% rispetto ai non TC (7.6% Vs 9.5%)**
- **> vantaggio per pz <55aa e più gravi (ISS >)**
- **La centralizzazione è cost-effective**

Integrazione Sistemi – creazione della "rete"

PreOspedaliero←→IntraOspedaliero ←→ InterOspedaliero

→ Continuità Diagnostica → Continuità Terapeutica

Quale strategia ideale?

	Area Urbana	**Area Extra-Urbana (Rural)**
Skills Base	*Trasporto Rapido?*	*?*
Skills Advanced	*?*	*Stay & Play?* *Scoop & Play!*

Conclusioni – news?

- Identificare il paziente critico e il problema principale (… in ABCD)
- Damage Control preH Care: limitare il danno, interventi temporanei, secondo skill e distanza

- Identificare l'ospedale "giusto" (Trauma Center) per il paziente
- Trasportare Rapidamente

Preospedaliero del paziente instabile. Cosa fare?

European Trauma Course

Bologna
10-11-12 Novembre'
2016

Info: www.ircouncil.it

Grazie

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