

# Committee on Tactical Combat Casualty Care



**DHB Brief – Cape Canaveral  
1 March 2010**



# New Items – 13 Nov 2009



- **1. Treatment of Burns in TCCC**
- **2. Battlefield trauma care research priorities**



# Treatment of Burns in TCCC





# U.S. Army Institute of Surgical Research



Thanks to the USAISR Burn Center



# Treatment of Burns in TCCC

## Care Under Fire

**5. Casualties should be extricated from burning vehicles or buildings and moved to places of relative safety. Do what is necessary to stop the burning process.**



# Treatment of Burns in TCCC

## Tactical Field Care

### 15. Burns

- a. Facial burns, especially those that occur in closed spaces, may be associated with inhalation injury. Aggressively monitor airway status and oxygen saturation in such patients and consider early surgical airway for respiratory distress or oxygen desaturation.
- b. Estimate total body surface area (TBSA) burned to the nearest 10% using the Rule of Nines.



# Treatment of Burns in TCCC

## Tactical Field Care

**c. Cover the burn area with dry, sterile dressings. For extensive burns (>20%), consider placing the casualty in the Blizzard Rescue Wrap in the Hypothermia Prevention Kit in order to both cover the burned areas and prevent hypothermia.**



# Treatment of Burns in TCCC

## Tactical Field Care

- d. Fluid resuscitation (USAISR Rule of Ten)**
  - If burns are greater than 20% of Total Body Surface Area, fluid resuscitation should be initiated as soon as IV/IO access is established. Resuscitation should be initiated with Lactated Ringer's, normal saline, or Hextend. If Hextend is used, no more than 1000 ml should be given, followed by Lactated Ringer's or normal saline as needed.**





# Treatment of Burns in TCCC

## Tactical Field Care

- Initial IV/IO fluid rate is calculated as %TBSA x 10cc/hr for adults weighing 40-80 kg.
- For every 10 kg ABOVE 80 kg, increase initial rate by 100 ml/hr.
- If hemorrhagic shock is also present, resuscitation for hemorrhagic shock takes precedence over resuscitation for burn shock. Administer IV/IO fluids per the TCCC Guidelines in Section 6 above.



# Treatment of Burns in TCCC

## Tactical Field Care

- e. Analgesia in accordance with TCCC Guidelines in Section 12 may be administered to treat burn pain.**
- f. Prehospital antibiotic therapy is not indicated solely for burns, but antibiotics should be given per TCCC guidelines in Section 14 if indicated to prevent infection in penetrating wounds.**



# Treatment of Burns in TCCC

## Tactical Field Care

**g. All TCCC interventions can be performed on or through burned skin in a burn casualty.**



# Treatment of Burns in TCCC

## Tactical Evacuation Care

– Same as TFC, plus

h. Burn patients are particularly susceptible to hypothermia. Extra emphasis should be placed on barrier heat loss prevention methods and IV fluid warming in this phase.



# Trauma and Injury Subcommittee Review

- **Both items reviewed on 4 November**
- **Unanimous approval of members present**



# Proposed Actions

- **Core Board approval of proposed burn management strategies in TCCC.**





# Fluid Resuscitation in TCCC

- **Iconic battlefield intervention**
- **Not well supported by human trials**
- **Bickell NEJM 1994: Improved survival by delaying aggressive fluid resuscitation until time of surgical repair**





# Tactical Field Care: Fluid Resuscitation

- **Tactical definition of shock**
  - **Altered mental status from blood loss**
  - **Weak or absent radial pulse**
- **Hypotensive resuscitation with Hextend for shock (500cc – repeat x 1 as needed)**
- **More aggressive resuscitation for TBI and shock**
- **PO fluids OK in casualties if able to take**





# Hextend

## Dr. Ken Proctor - U Miami

**Gentlemen:** Within the constraints of our IRB, we designed our study to directly address the Army's use of **1 liter or less** of Hextend on the battlefield for initial resuscitation. In **1700 patients**, we **unequivocally demonstrated safety** (no increased mortality and no coagulopathy), and possible efficacy (**mortality was reduced by half**), within the caveat that this was an open-label, non-randomized, single center trial. The limitations of this study were presented at ATACCC 09. **Hex is now part of our resuscitation algorithm at Univ of Miami Ryder Trauma Center.** The data will also be presented at Southern Surgical, and published in JACS.

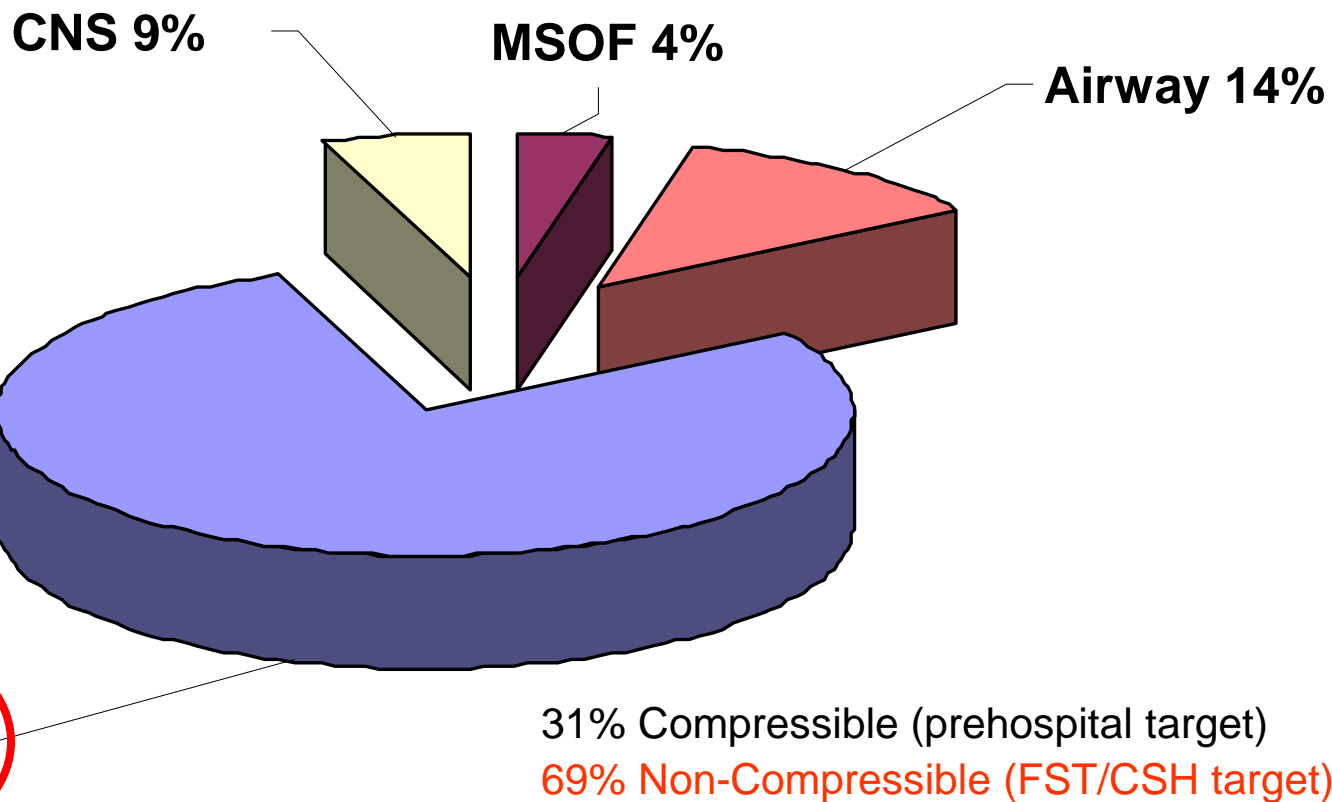


# **USAISR – MRMC Fluid Resuscitation Conference 8-9 January 2010**

- **No evidence that we should change from current TCCC fluid resuscitation plan**
- **No support for large volume resuscitation with crystalloids**
- **Dried plasma studies encouraged**
  - **Top research priority**



# Potentially Survivable Deaths



**Hemorrhage**

**85%**

From evaluation of 982 casualties, and casualties could have more than 1 cause of death. (Kelly J., J Trauma 64:S21, 2008)



# TCCC Research Priorities

- **Non-Compressible Hemorrhage Control**
- **Damage Control Resuscitation**
- **TCCC Care Documentation**
- **TCCC Combat Evaluation Program**
- **Improved Battlefield Analgesia**
- **Electronic TCCC Training**
- **Truncal Tourniquet**
- **Optimal Fluid Resuscitation for TBI**
- **Monitor-Driven Fluid Resuscitation**
- **Surgical Airway Kits**
- **New Tourniquet Testing**
- **New Hemostatic Agent Testing**



# Other TCCC Issues





# Mgt of Suspected Spinal Injuries in TCCC





# Spinal Injuries in TCCC



- Identified during JTTS Trauma Telecons
- JTTR Review: July – December 2009:
- 119 Spinal fractures in theater
- 14 spinal cord injuries
- Time of spinal cord injury?
- Thanks to Ms. Spott and Ms. West - JTTS



# Spinal Injuries in TCCC: Tactical Context

- **Baghdad 29 March 2008**
- **Humvee convoy hit by IED**
- **Driver – shrapnel to arms and back**
- **RF – traumatic left arm amputation – penetrating head trauma**
- **RR – traumatic hand amputation**
- **LR – polytrauma**
- **Turret - polytrauma**
- **Incoming small arms fire**

*David Finkel – The Good Soldiers*





# IED Casualties

- **IED casualties – many have spinal fractures, especially thoracic**
- **Try to maintain spinal alignment in blunt trauma casualties.**





# Questions?

