

# Applicability of treatment recommendations in adverse environment



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ICAR MEDCOM

# Goals of modern pre-hospital emergency medicine:



- ✓ emergency physician to the patient
- ✓ early stabilisation of vital functions:
  - respiration
  - circulation
- ✓ Start of intensive care on the site of accident
- ✓ early fluid replacement
- ✓ sufficient analgesia
- ✓ quick transportation and optimised treatment in hospital



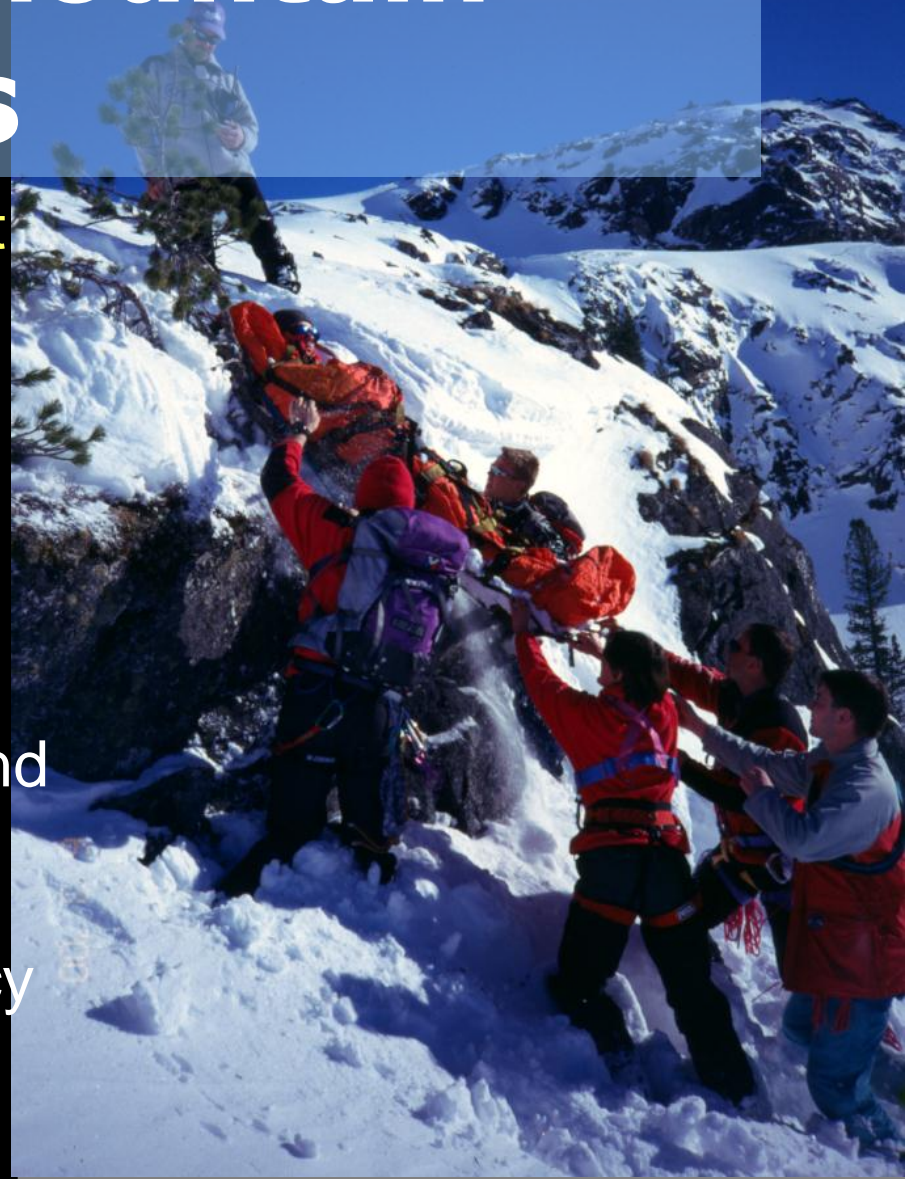
Is the concept of urban  
emergency medicine feasible in  
**mountain rescue ?**



Is emergency medicine at all  
practicable in **mountain rescue ?**

# Limitations in mountain rescue missions

- How much medical equipment is available in remote places? (weight, volume)
- Duration of rescue mission
- extreme temperature  
Electronic devices, silicon tubes, fluids freeze, tape fixations?....
- Handling during evacuation and rescue mission
- Danger
- useful indication for emergency medicine interventions?
- Evidence ??



# Best clinical practice ... & Treatment recommendations



**Best clinical practice ...**

**&**

**Treatment recommendations**

**How can we apply **evidence-based** **medicine** in European mountain areas?**



# International Commission for Mountain Emergency Medicine (**ICAR MEDCOM**)

Official recommendations for issues of mountain rescue medicine,  
since 1996



# ICAR Recommendations 1

- Elsensohn F. **First Aid Training Guidelines for Mountain Rescue Service Members.** In: Elsensohn F (ed) 1996  
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# ICAR Recommendations 2

- Thomas A, Rammlmair G, Wiget U. **Emergency Intubation and Ventilation in the Field**. In: Elsensohn F (ed) 1998  
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# ICAR Recommendations 3

- Jacomet H, Zen Ruffinen G, Winterberger E, Syme D, Ledoux X, Jelk B. **The use of Extrication Devices in crevasse accidents.** Wild Environm Med 2008;19: 108-110 2006
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# Hypothermia and Avalanche accidents

The Medical On-site Treatment of Hypothermia\*  
ICAR-MEDCOM Recommendation

BRUNO DURRER,<sup>1</sup> HERMANN BRUGGER,<sup>2</sup> and DAVID SYME<sup>3</sup>

HAMB 2003

On-Site Treatment of Avalanche Victims  
ICAR-MEDCOM-Recommendation

HERMANN BRUGGER<sup>1</sup> and BRUNO DURRER<sup>2</sup>

HAMB 2002

# Hypothermia, treatment algorithm

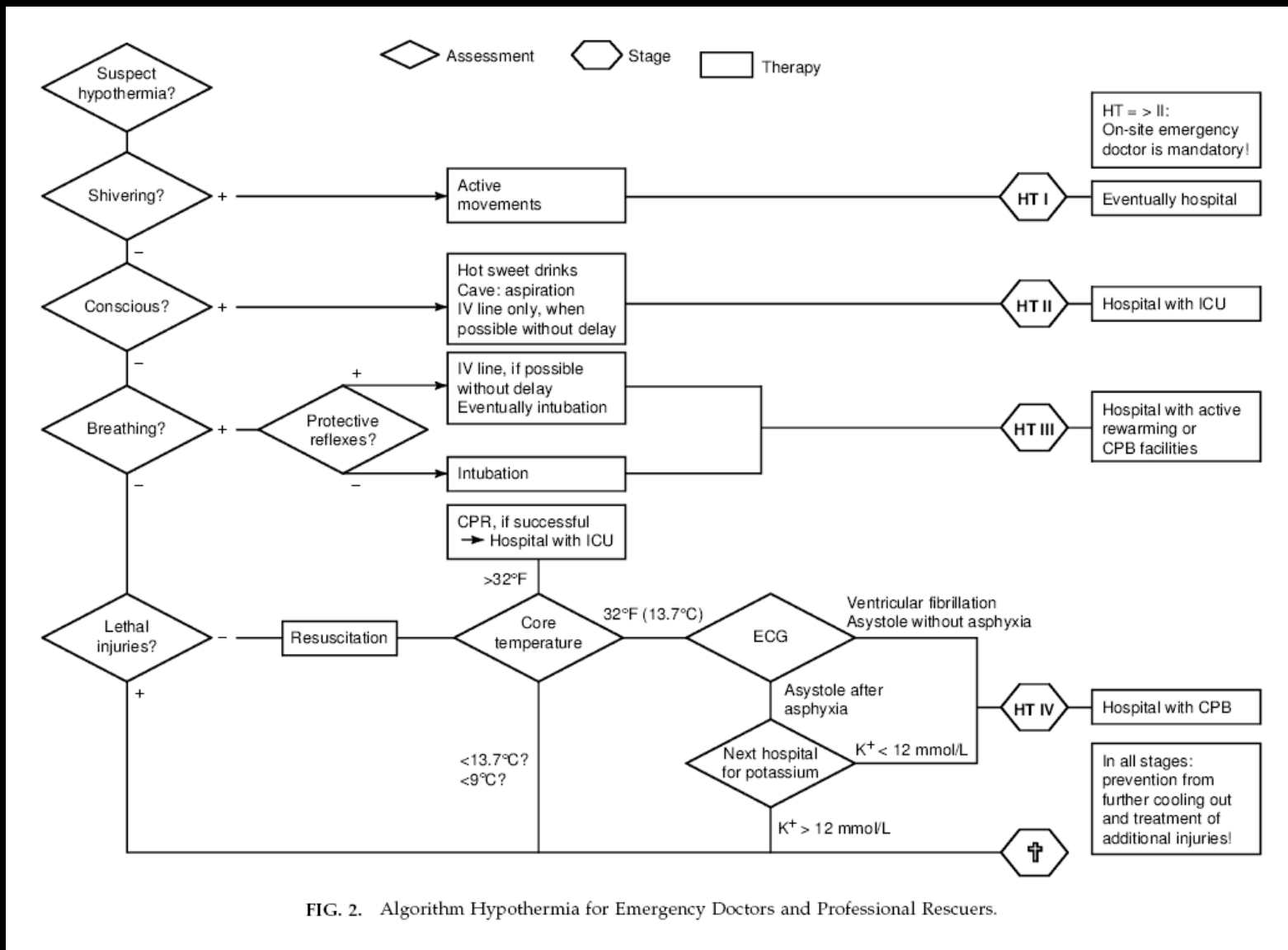
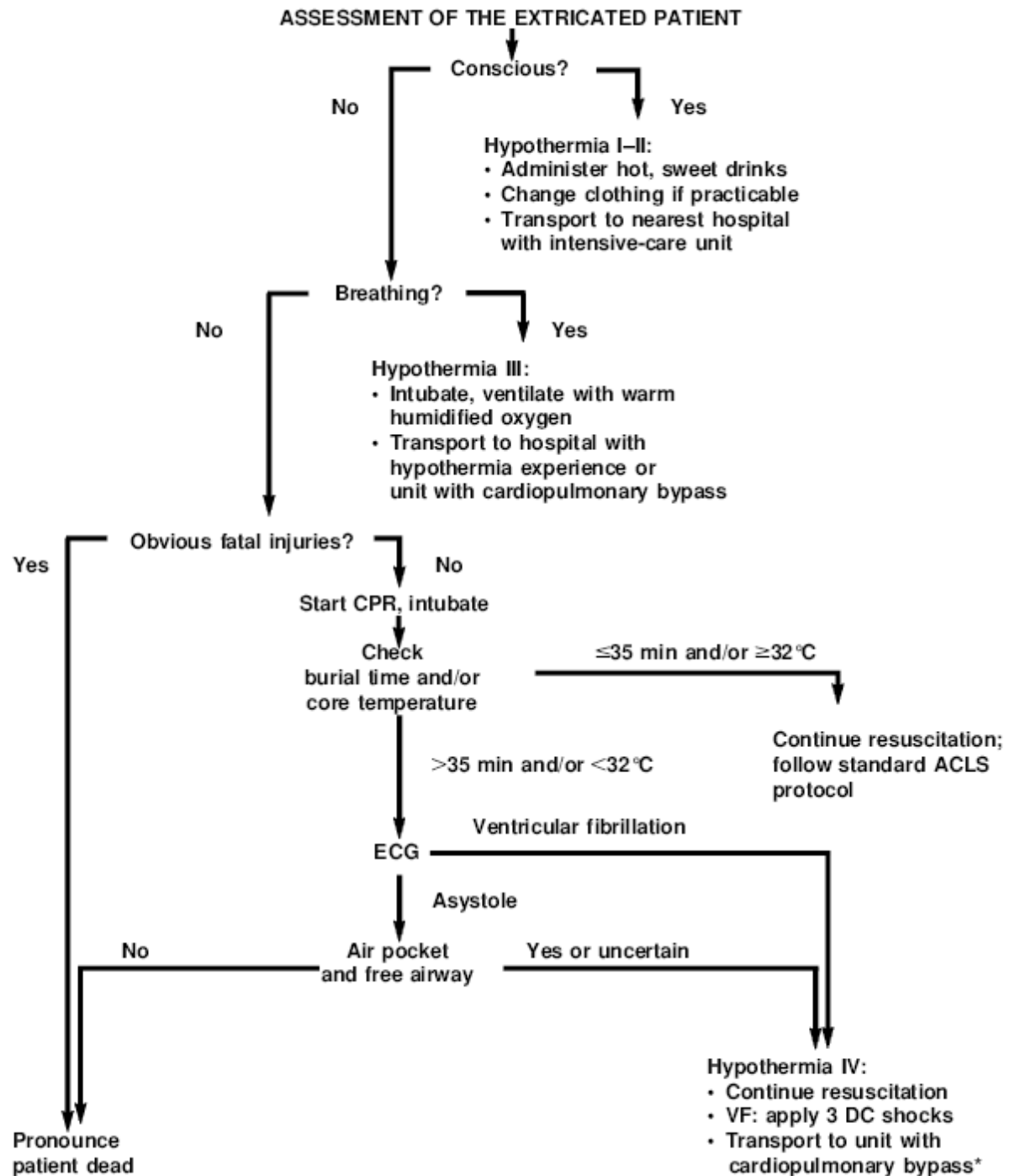
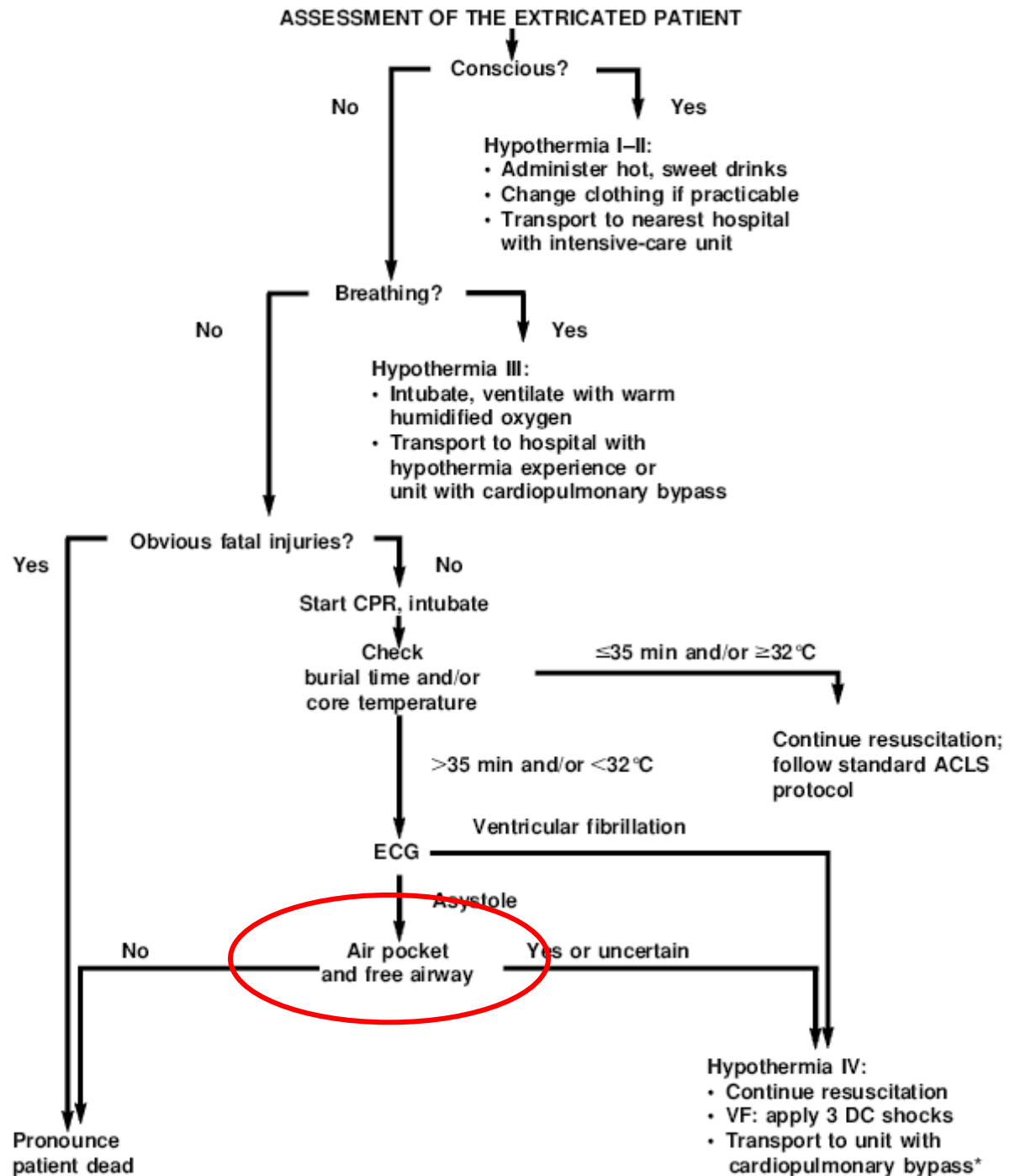


FIG. 2. Algorithm Hypothermia for Emergency Doctors and Professional Rescuers.

# Avalanche, treatment algorithm



# Avalanche, treatment algorithm



# ERC Guidelines 2010

## Part 8d: hypothermia and avalanche burial



# Fluid Management

## Fluid Management in Traumatic Shock: A Practical Approach for Mountain Rescue

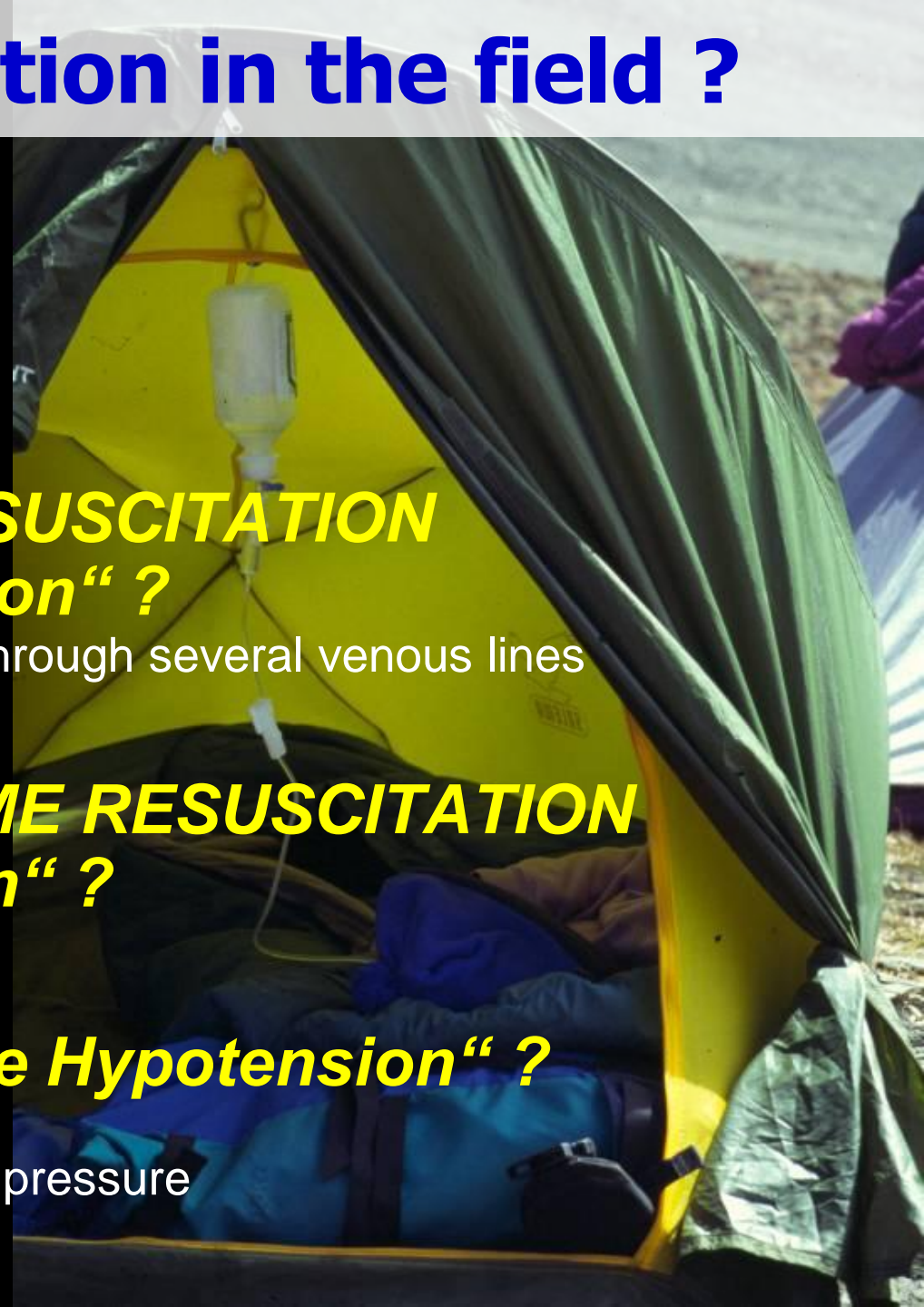
Official Recommendations of the International Commission  
for Mountain Emergency Medicine (ICAR MEDCOM)

Günther Sumann,<sup>1,2</sup> Peter Paal,<sup>2</sup> Peter Mair,<sup>2</sup> John Ellerton,<sup>3</sup> Tore Dahlberg,<sup>4</sup>  
Gregoire Zen-Ruffinen,<sup>5</sup> Ken Zafren,<sup>6</sup> and Hermann Brugger<sup>7</sup>

HAMB 2009

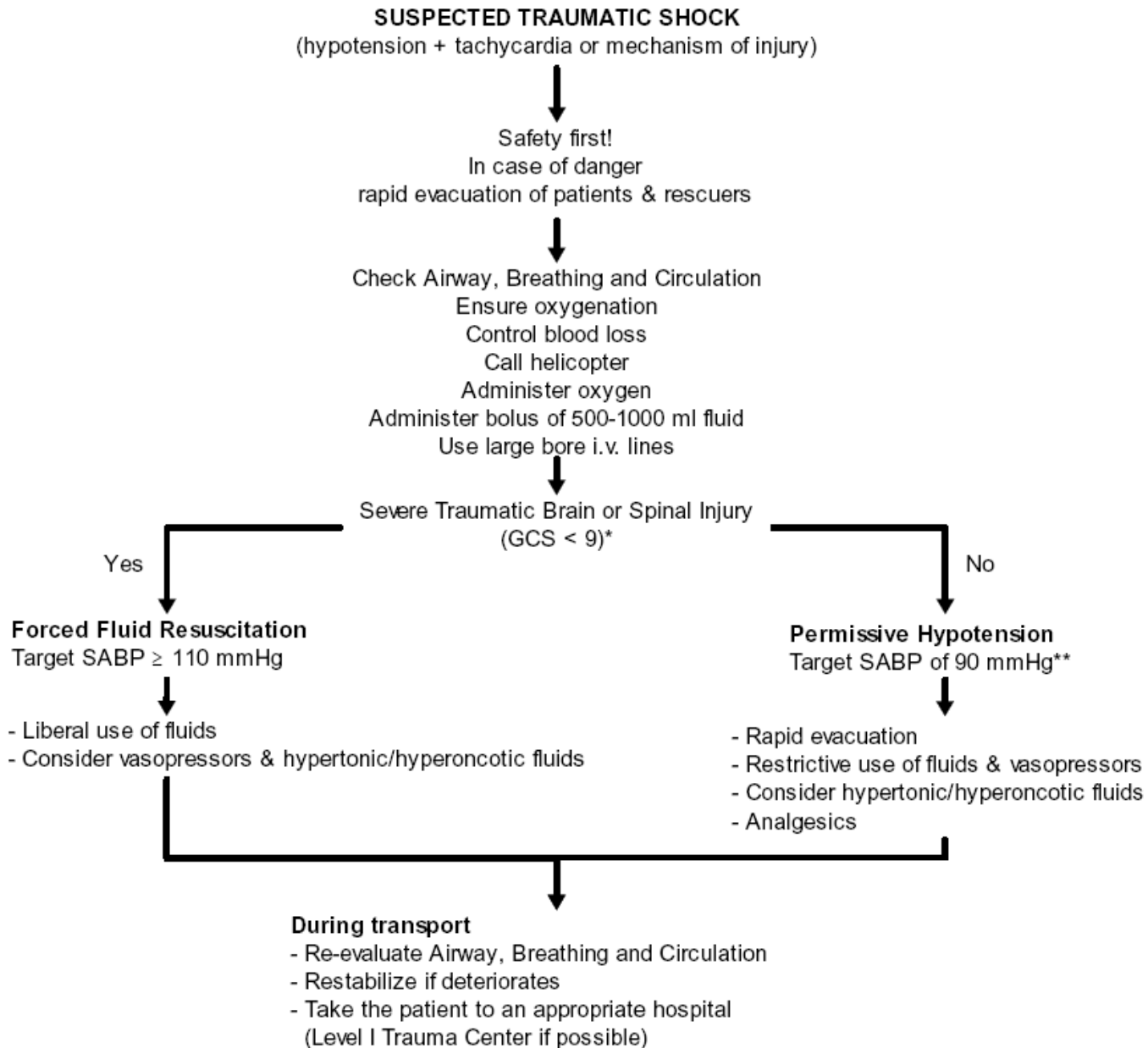


# Volume resuscitation in the field ?



- **FORCED VOLUME RESUSCITATION**  
**„Immediate resuscitation“ ?**  
Aggressive volume resuscitation through several venous lines
- **NO prehospital VOLUME RESUSCITATION**  
**„Delayed resuscitation“ ?**
- **Concept of „permissive Hypotension“ ?**  
Infusion of small volumes  
not in order to reach normal blood pressure

# Algorithm for Fluid Management in Traumatic Shock in Mountain Rescue



# Immobilization and splinting

## Immobilization and Splinting in Mountain Rescue

Official Recommendations of the International Commission  
for Mountain Emergency Medicine, ICAR MEDCOM,  
Intended for Mountain Rescue First Responders, Physicians,  
and Rescue Organizations

John Ellerton,<sup>1,2</sup> Iztok Tomazin I,<sup>2,3</sup> Hermann Brugger,<sup>2</sup> and Peter Paal<sup>2,4</sup>

HAMB 2009

# Immobilization and splinting

- Vacuum mattress
- cervical collar
- external compression with pelvic fracture
- splintage of extremities fractures

*Only in exceptional circumstances, where a time-critical injury or unsafe environment takes priority, should spinal immobilization not be performed prior to evacuation.*



**Are treatment  
recommendations practicable  
in adverse environment?**



**YES**, they are ...

**BUT** not always applicable !







# Conclusion

YES, Treatment recommendations are practicable, when they consider the special conditions in mountain rescue

Recommendations present expert opinions and consensus, supported by some literature, but rarely RCTs. (low level of evidence)

BUT, in certain cases strong limitations

- bad weather
- danger
- difficult and long rescue procedures



Thank you for your attention!