

EMS Resuscitations Centers: Bring in your Dead?



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I don't want to go on the cart!



Philadelphia Fire Department



- Sole 9-1-1 response agency
- 36 ALS units, 14 BLS units
- 90 engines and ladders
- 1300 EMTs, 250 medics
- 2007 EMS call volume: 213,779

Philadelphia Fire Department

- 25 receiving EDs
- 8 trauma centers
 - 2 pediatrics only
 - 1 adults only
- 3 burn centers
 - 2 pediatrics only
 - 1 adults only
- 5 EM residencies



The Centrifigation of EMS

- Trauma centers
- Burns centers
- Spinal cord centers
- Hand centers
- Stroke centers
- Chest pain centers
- Pediatric hospitals
- OB hospitals
- Hyperbaric centers
- Bariatric hospitals?



Why Centrifify?

“Because not all hospitals within a community have the personnel and resources to support the delivery of high-level emergency care, critically ill and injured patients should be directed specifically to facilities that have such capabilities...There is substantial evidence that the use of regionalization of services to direct such patients to designated hospitals with greater experience and resources improves outcomes and reduces costs across a range of high-risk conditions and procedures.”

Regionalization

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

Methods Mortality outcomes were compared among patients treated in 18 hospitals with a level 1 trauma center and 51 hospitals non-trauma centers located in 14 states. Patients 18 to 84 years old with a moderate-to-severe injury were eligible. Complete data were obtained for 1104 patients who died in the hospital and 4087 patients who were discharged alive.

Conclusions Our findings show that the risk of death is significantly lower when care is provided in a trauma center than in a non-trauma center and argue for continued efforts at regionalization.

NEJM 2006; 354:366-378

And Non-Trauma?

- Some suggestions that hospitals that see more:
 - Stroke
 - CHF
 - STEMIdo better, but evidence not as clear cut
- Getting pts there seems to be good

EMS Resuscitation Centers?

- Resuscitation is here to stay
 - Resuscitologists
- **Resuscitation Outcomes Consortium**
- Center for Resuscitation Science (Penn)
- Emergency Resuscitation Center (Chicago)
- Safar Center for Resuscitation Research (Pitt)
- The Dallas Center for Resuscitation Research

EMS Resuscitation Centers

Public release date: 10-Jul-2006

UT Southwestern, BioTel system to test methods of improving cardiac arrest, trauma survival

DALLAS – UT Southwestern Medical Center is among 10 institutions selected to oversee innovative clinical trials designed to test life-saving interventions for critical trauma and sudden cardiac arrest.



Drs. Ahamed Idris (right), professor of emergency medicine, and Paul Pepe, chief of emergency medicine, are leading UT Southwestern's oversight of clinical trials designed to test life-saving interventions

What Would They Do?

- Time-dependent, resource-intensive, evidence-based interventions
 - Post-cardiac arrest
 - Spinal cord injury/traumatic brain injury
 - Non-traumatic shock
- Promote ongoing clinical & basic research

Therapeutic Hypothermia

Mild Therapeutic Hypothermia to Improve the Neurologic Outcome After Cardiac Arrest

NEJM. 2002;346(8):549-556

This study involved a European multicenter trial randomizing survivors of sudden cardiac arrest to normothermia and standard care vs hypothermia (32° to 34°C, induced by an external cooling bed and maintained for 24 hours) and standard care followed by passive rewarming.

275 patients were enrolled (137 hypothermia, 138 normothermia). A total of 55% of hypothermia patients had a favorable neurologic recovery compared with 39% of normothermic patients. Mortality at 6 months was 41% vs 55%, respectively.

Cardiac Arrest

Back From the Dead

Doctors are reinventing how they treat sudden cardiac arrest, which is fatal 95 percent of the time. A report from the border between life and death.

By Jerry Adler, NEWSWEEK, JUL 23, 2007



“To Treat the Dead; The new science of resuscitation is changing the way doctors think about heart attacks – and death itself.” Newsweek, May 7, 2007: 56

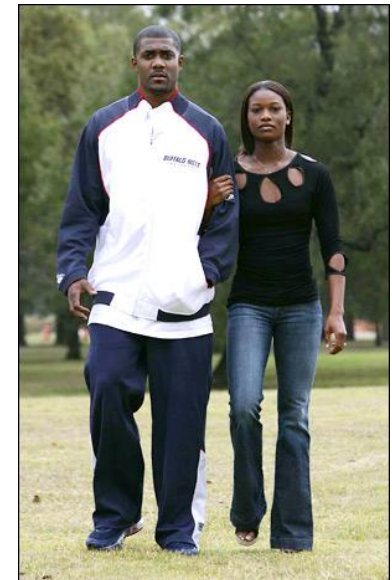


Spinal Cord/Brain Injury

'Cool' New Treatment

NFL uses hypothermia for spinal cord injury
November 2007 JEMS Vol. 32 No. 11

Professional football player Kevin Everett escaped paralysis, likely thanks to a novel cooling treatment that was started in the Rural/Metro ambulance that took him off the field on Sept. 9, after he suffered a cervical fracture (between C-3 and C-4) and spinal cord injury during the Buffalo Bills' opening game.

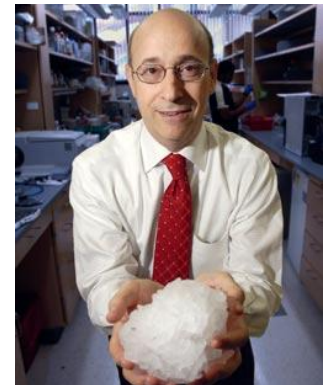


Spinal Cord/Brain Injury

Effects of Hypothermia Upon Outcomes After Acute Traumatic Brain Injury

The University of Texas Health Science Center, Houston

- Randomized clinical trial of patients with severe brain injury, age 16-45.
- Patients will be randomized to standard treatment or to standard treatment with hypothermia (32.5-34C for 48 hours).



Non-Traumatic Shock

- Shock involves inadequate tissue perfusion.
- If not treated early, tissue hypoxia leads to multi-organ failure and death.
- High mortality rates
 - Cardiogenic shock with acute MI: 50-80%
 - Septic shock: 39-60%
- A team approach to the resuscitation of shock may decrease mortality

Non-Traumatic Shock

Early Goal-Directed Therapy in the Treatment of Severe Sepsis and Septic Shock

*Emanuel Rivers, M.D., M.P.H., et al, for the Early Goal-Directed Therapy Collaborative Group
-NEJM, November 8, 2001*

Background Goal-directed therapy has been used for severe sepsis and septic shock in the intensive care unit. This approach involves adjustments of cardiac preload, afterload, and contractility to balance oxygen delivery with oxygen demand. The purpose of this study was to evaluate the efficacy of early goal-directed therapy before admission to the intensive care unit.

Conclusions Early goal-directed therapy provides significant benefits with respect to outcome in patients with severe sepsis and septic shock.

Resuscitation Center Barriers

- Bypassing of hospitals
 - Impact on reputation, financial viability
 - Impact on training/experience of staff in bypassed hospitals
 - Impact on regional preparedness
- Who will identify and credential them?
- Impact on unit hour utilization

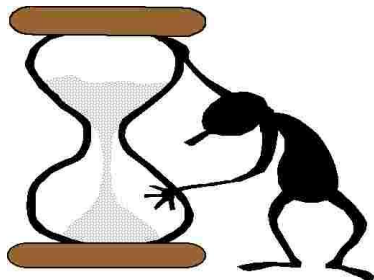
Resuscitation Center Barriers

- Logistic
 - Consensus on protocols and equipment
- Financial
 - Expensive
 - Reimbursement
- Political
 - Cooperation between EMS and hospitals
 - Cooperation between hospitals and within hospitals



Conclusions

- Resuscitation centers may be the next EMS destination
- Barriers to their establishment
- Science in infancy, benefit may be large
- EMS is in a position to drive the science, not just go along for the ride



9:59



HERBERT WEST HAS A VERY GOOD HEAD ON HIS SHOULDERS...
AND ANOTHER ONE IN A DISH ON HIS DESK

H.P. Lovecraft's

Re-Animator

