PERMISSIVE HYPOTENSION

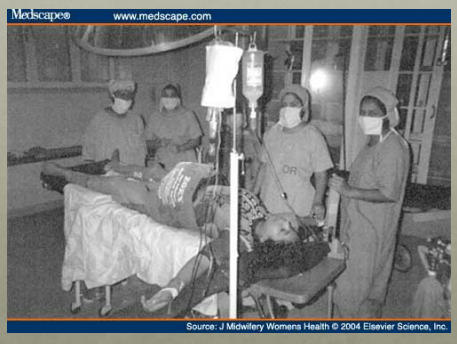
Changing The Tide of Trauma Fluid Resuscitation

Richard Beebe MS RN NREMTP

HISTORY OF FLUID RESUSCITATION IN TRAUMA

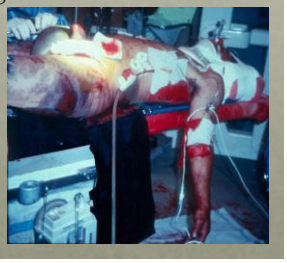
CURRENT APPROACH

- *Remember the saying:*



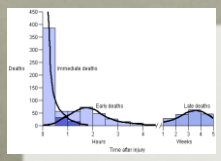
HYPOTENSION IN TRAUMA

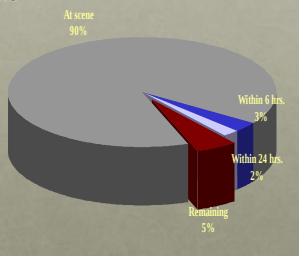
- < 10% trauma victims
  - Blunt & penetrating
  - True civilian rate:
    - 6% – 8%
  - Military rate:
    - 15-18%



EARLY DEATH

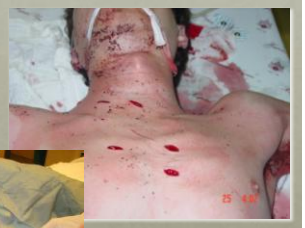
- Aortic Disruption
- Pericardial Tamponade
- Traumatic Asphyxia

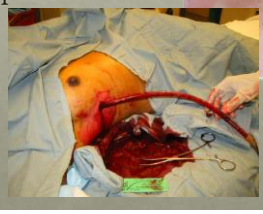




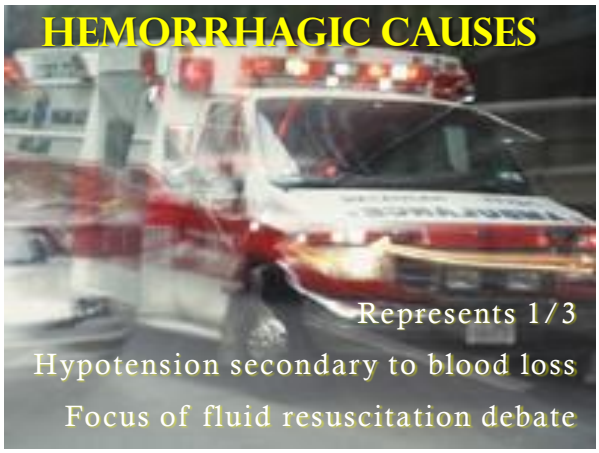
NON-HEMORRHAGIC CAUSES

- Represents 1/3
  - Pneumothorax
  - Pericardial tamponade





HEMORRHAGIC CAUSES



Represents 1/3

Hypotension secondary to blood loss

Focus of fluid resuscitation debate

DAYS OF FUTURE PASSED?

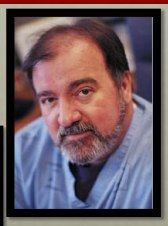
- From Cannon: "Inaccessible or uncontrolled source of blood loss should not be treated with intravenous fluids until the time of surgical control"

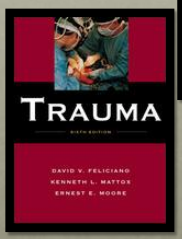
FAST FORWARD…

- Viet Nam
  - Da Nang Lung

PERMISSIVE HYPOTENSION RETURNS

- Concept returns in 1980s
- Bicknell, Wall, Pepe, et. al. 1994





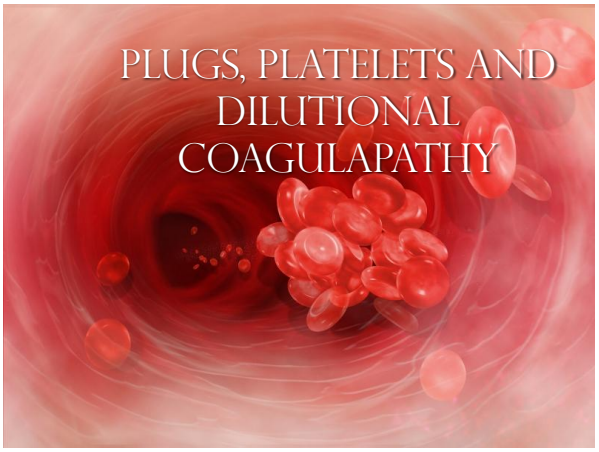
PERMISSIVE HYPOTENSION

- ***Please mark my word. Within no less than 10 years, probably even less than 5 years, any [one] that raises the blood pressure to higher than 3/4 the pre injury level, especially if using crystalloid solutions will be severely criticized as violating one of the indicators, whether the injury be penetrating, blunt, elderly, child, or one's own self or family. Also mark this down on this date. The final target for a prehospital or EC measured BP will be that greater than 80 SYSTOLIC will be the level that the QA moral police will cite that those of you who believe in two large bore IVs, Rapid infusors, interosseous and sternal infursors, the 3 to 1 rule, and cyclic hyper resuscitation as causing unnecessary complications, deaths, and costs.***

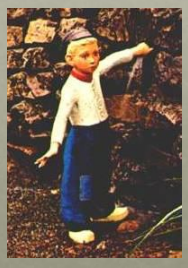
Ken Mattox. Trauma.Org Trauma-List, 30th August 2002

PERMISSIVE HYPOTENSION

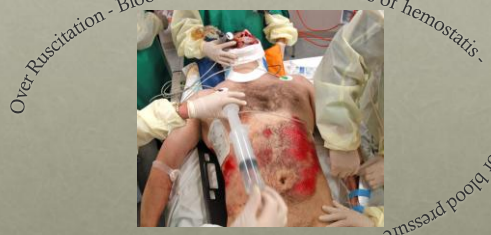
Concept of limited fluid resuscitation



RAISING BLOOD PRESSURE



CONSEQUENCES OF FLUID ADMINISTRATION



WHERE'S THE BEEF?

- Patients:
  - 598 penetrating torso trauma
  - SBP < 90
- Assignment:
  - Standard fluid therapy (Immediate)
  - No fluid until OR (Delayed)

BICKELL, WALL, PEPE, ET.AL.

- **Results**
  - **Immediate**
    - **62% survival to D/C**
    - **30% with complications**
  - **Delayed**
    - **70% survival to D/C**
    - **23% with complications**
    - **Shorter hospitalization**

THE "PH CAMP" RECOMMENDATIONS:

- **No fluids if normotensive**
- **If hypotensive, controlled IVF until goal:**
  - **Radial pulse**
  - **Mentation (non-head injured patient)**
  - **MAP 40–60 mmHg (SBP 80–90 mmHg)**
- **Controlled fluid administration**
  - **Small boluses 25 – 500 ml**

CONTROVERSY REMAINS

- Permissive Hypotension:
  - *Don't pop the clot!*
  - *Hypotension can be tolerated until surgical control*
- Standard Fluid Resuscitation:
  - *Organ ischemia bad!*
  - *Optimize organ perfusion*

CLINICAL ADOPTION

MILITARY ADOPTED RECOMMENDATIONS
- NATO CONSENSUS MEETINGS 2003
- CONFLICT RESEARCH

- ITLS: LIMITED FLUID RESUSCITATION
- ATLS "BALANCED APPROACH"

FUTURE DIRECTION

QUESTIONS?