

Pre-Hospital Buddy Transfusion Registry

Pre-hospital Data



Pre-Hospital Buddy Transfusion

Experience and Case Studies

Why Buddy Transfusion?

79% of Preventable Deaths due to Bleeding

1. Stop blood loss

2. Return to critical oxygen delivery level

Pre-Hospital Transfusion

- Field Transfusion:
 - bringing hospital banked, screened , whole blood to field operations
- Buddy Transfusion:
 - Draw and transfuse blood in the field (out of hospital)

Buddy Transfusion: History

- 1902: Blood typing 1901 (Landsteiner)
- 1917: WWI Field blood storage (Robertson)
- 1925: Blood Institute (Bogdanov)
- 1928: National Blood Storage system (USSR)
- 1937: Modern Blood Banking

Blood Banking: Limitations

- Refrigerated
- Limited shelf life
- Frozen Blood Products
 - Uninterrupted freezer
 - Laboratory reconstitution required

“Walking Blood Bank”

- Navy ships
 - Individuals Blood typed
 - Blood typing capability
- Military Special Operations
 - Buddy Transfusion

Buddy Transfusion

- Actively suppressed after 1990
 - HIV
 - “substandard care”
- Buddy Transfusion Records:
 - Rare
 - Not acknowledged or recorded

Pre-Hospital Buddy Transfusion

Experience and Case Studies

Case Study: Battle of the Black Sea

- Mogadishu, 1993 = “Blackhawk Down”
- Tactically extreme situation
- GSW to groin with femoral bleeding
- Repeated attempts to clamp retracted artery
- Crystalloid resuscitation = 5 l
- Death 12 hours after wounding

Case Study: Italian SF Kosovo

- 21 yo SF with GSW of left mandible / face June 23, 1999
- Immediate advanced life support unable to stop bleeding
- Evac at 30 minutes canceled / replaced by Italian aircraft
- Evac at 60 min after injury
- Loss of pulse = CPR + fluids (crystalloid)
- Arrives at unstaffed medical facility, Death at 2.5

Case Study: Operation Anaconda

- Afghanistan 2002, Robert's Ridge
- Tactically extreme situation
- US Air Force PJ: GSW through and through of flank
- Gradual internal hemorrhage / shock
- Buddy transfusion rejected due to concerns about impact on donor
- Death 6 hours after wounding

“Tactically Extreme Situation”



Case Study: Operation Anaconda

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Case Study: Navy Ship at Sea

- USS Kearsarge, mid-Atlantic
- Stab wound to chest with continuous bleeding
- Improvised surgical intervention controls bleeding
- Post surgery “cardiac arrest” = CPR
- Buddy Transfusion Resuscitation
- Death later from irreversible shock

Case Study: Iraqi Kurdistan

- US soldier IED Injury
- Extended evacuation distance / time
- Progressive shock, despite colloid infusion
- Aid station preparing Buddy Transfusion
- US AF PJ Evacuation, Blood taken onto aircraft
- Transfused during evac, stabilized shock, survives surgery

Buddy Transfusion: Lessons Learned

- “Should have done it earlier”
- Fatalities after transfusion all had 5 l crystalloid prior
- Reluctance to use blood
 - Training
 - Equipment
 - Casualty selection

Buddy Transfusion: Protocol

- Indication
- Training / Equipment
- Risk / Benefit analysis

Buddy Transfusion: Protocol

- Indication
 - TCCC criteria: Loss of Radial pulse
 - Progressive shock (increasing heart rate after treatment)
- C) Loss of Consciousness from hemorrhage

Buddy Transfusion: Protocol

- Training / Equipment
 - Donor bags
 - Filter
 - IO access
 - Donor selection protocol
 - Practice in obtaining donor

Buddy Transfusion: Protocol

- IO Transfusion Experience
 - 32 Medic placed FAST 1 sternal IO
 - Gravity only with standard transfusion tubing
 - Medic drawn donor bag
 - Time for infusion
 - 14.5 min – 29.75 min
 - Mean = 19.2 min

Buddy Transfusion: Next Step

- Consensus recommendation
 - Indication
 - Pre-screen unit personnel
 - Donor selection protocol
- Unit level SOP
- Donor Bags / Filter tubing / sternal IO
- TRAINING (esp. blood collection)
- Documentation and registry

Buddy Transfusion:

Back to the Future

Buddy Transfusion: Protocol

