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 Kersarge, 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