Use of Blood Products at a US Army Forward Surgical Team in Afghanistan, Feb 2010-Feb 2011

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Disclaimer

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Agenda

• Introduction
• What is a Forward Surgical Team
• My Afghanistan Experience
  – Protocols and Clinical Practice Guidelines
  – Our Operating Environment
  – Our Challenges and Limitations
  – New Ideas
  – Cases
• Conclusions
Introduction

• Army Nurse since Dec 2000
• Married with four children
• Two combat deployments
  – 2003-2004 in support of Operation Iraqi Freedom (combat support hospital)
  – 2010-2011 in support of Operation Enduring Freedom (forward surgical team)
• Currently a student at the U.S. Army Command and General Staff College, Fort Leavenworth, KS
What is a Forward Surgical Team?

• Called a “FST”
• 20-person team trained in resuscitative trauma surgery
• Placed close to the battlefield to improve chances of survival after traumatic injury
• Idea born in Vietnam*

• 3 general surgeons
• 1 orthopedic surgeon
• 5 RNs (2 CRNA, 2 ER/ICU, 1 OR)
• 3 OR techs
• 3 LPN/LVN
• 4 EMT-Bs
• 1 administrative officer

* USN and USAF have developed similar type units
Not Much Room, Huh?

Source: Army Field Manual 4-02.25, Employment of a Forward Surgical Team
Standard FST Equipment
Standard FST Equipment
FST Blood Capabilities

- 50 units of product
  - O-type PRBCs
  - Type-specific FFP

- I-Stat for labs

- Eldon Card-based type and cross
  - For plasma (if available) and whole blood
  - Dog tags are wrong ≈20% of the time
Standard FST Blood Equipment
Standard FST Blood Equipment
My Afghanistan Experience

• Clinical Practice Guidelines
  – Based on combat data since 2001

  – Effects at the FST
    • Only O-type PRBCs and Type-specific FFP available
    • Fresh whole blood transfusions in mass transfusion scenario (>10 products expected need)
    • Only American blood except in extremis

Keep these in mind as we go on...
My Afghanistan Experience

Previous location (Qalat)

Role III (German) & US FST

Role III (US), TFME, 62nd

Role II (German)

Pol-e-Khumri

Orgun-E
My Afghanistan Experience
The FST
Our Emergency Room
The OR
In the Middle of a Trauma
My Afghanistan Experience

• Our Challenges and Limitations
  – Blood storage
    • Had to monitor refrigerators
    • Manual q4 hour checks, 24/7/365
  – Blood warming
  – Blood delivery to our location (regular and emergent delivery)
  – Blood disposal after expiration
  – German vs American blood products
Our Plasma Thawing Tool
My Afghanistan Experience

• Our Challenges and Limitations
  – Blood disposal after expiration
    • Burn-pit
    • Regularly destroyed 5-10 units unused PRBCs
      – FRUSTRATING!?!?
  – Delivery to our location
    • German products
      – Freeze-dried plasma
      – German PRBC from Mazar-e-Sharif
    • Emergency deliveries
    • Whole Blood Drives (physician approval needed)
Blood Delivery Route

Role III (German) & US FST

Role II (German)

Pol-e-Khumri

Role III (US), TFME, 62nd

Orgun-E

Previous location (Qalat)
My Afghanistan Experience

• Cases where Whole Blood may have helped
  – Uncontrollable bleeding from chest wound
    • GSW to R. lateral chest
    • Holes in major vessels sealed
    • Nearly exhausted blood products
    • “Leakage” from smaller vessels along spine
    • Expired upon arrival to next higher level of care
      – Should we have evacuated?
My Afghanistan Experience

• Cases where Whole Blood may have helped
  – Uncontrollable bleeding from liver laceration
    • Non-combat related MVC
    • Incoming 2 combat casualties
    • Nearly exhausted blood products
    • Had to triage to prepare for combat related soldiers coming
    • Expired while preparing patients with combat injuries for surgery
Conclusion

• Blood products in combat are surprisingly available

• When shortages exist, we have “work arounds”

• Military healthcare pushes the envelope of policy at times, along the way discovering new and exciting ways to treat patients
Personal Bibliography

• Vanfosson, C. A. (2010, September 23). Fort Bragg based forward surgical team saves Hungarian working dog. *The Paraglide (Fort Bragg, NC)*, 1B and 3B.

*A blog of my journal while deployed can be read at: [http://perpetualpontifications.blogspot.com/](http://perpetualpontifications.blogspot.com/).*

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