Call of Duty

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Defence School of Healthcare Education
■ Massive haemorrhage is the most immediate threat to the injured person.
■ The mortality rate is high unless actively managed from Point of Injury.
■ The changing nature of operations and exercises may require the isolated practitioner to plan for transfusion support.
■ This presentation aims to provide an overview of transfusion support.
Expeditionary and contingency operations

- Remote location
- Austere environment
- Casualties with severe and complex trauma
Major Haemorrhage scenarios

**Gunshot**
- Low calibre
- High calibre

**Blast**
- Shock wave
- Fragmentation
- Amputation

**Blunt trauma**
- Vehicle vs Soldier

**Other**
- Burn
- Medical
Casualty Care

- Need early care
- Need rapid evacuation
- Need a trauma hospital

However:

- Delayed care
- Delayed evacuation
- Limited medical facilities
Stop the bleeding

Emergency treatment pathway:

1. Cardiac Arrest (trauma and medical)
2. Catastrophic Haemorrhage (trauma and medical)
3. Airway Compromise
4. Cervical Spine Trauma
5. Difficult/Abnormal Breathing
6. Shock
7. Chest Pain
8. Peri-arrest Rhythms
9. Reduced Response
10. Electrolytes & Environment (includes poisoning and CW)
Uncontrolled Haemorrhage

Coagulopathy
- Loss of factors
  - Bleeding
  - Depleted

Hypothermia
- Blood loss
- ‘Cold’ fluids
- Exposed

Acidosis
- Tissue damage
- Restricted airway

Action
- Oxygenation
  - Circulation
  - Airway / Oxygen
  - Retain red cells

Stabilise the Clot
- Tranexamic Acid

Correct coagulopathy
- Keep warm
- Correct acidosis
- Replenish factors
Pre-Hospital Emergency Care

Integration of
- (First responder)
- Pharmaceutical
- Transfusion
- Surgical

A - Cricothyroidotomy
B - Thoracostomies
C - CAT / FFD
C - Swan Introducer
   IO Access
   Drugs/Blood
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Transfusion is an integrated part of Damage Control Resuscitation (DCR)

Aims of DCR include:
- Minimise blood loss
- Maximise tissue oxygenation
- Optimise outcome
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Diagnostic Support

Biochemistry
- Blood Gas
- K, Ca, Mg, Lactate

Full Blood Count
- Hb, Hct, Plt

Coagulation
- PT, APTT, Fibrinogen

ROTEM
Transfusion support options

Risk Assessment

- C’ABC/DCR
- Alternatives to blood
- UK Blood Services
- Coalition Partners
- Contractors
- Host Nation Support
- Emergency Donor Panel
UK Blood Services
Freedom from Frozen

LyoPlas N-w (DRK)

- Plasma
  - Single donor
  - Quarantined
  - Freeze dried
  - Reconstituted

Freeze dried
- Plasma
- Fibrinogen

Whole Blood

Platelets
Whole Blood

FWB requires an Emergency Donor Panel (EDP)
- Volunteers
- Pre-screened
  - Donor questionnaire
  - Life-style advice
  - Pre-deployment testing
- Donor matrix
- Point of care and retrospective testing
  (+/- Platelet sparing leucodepletion)

Nov 2010. Master Gunnery Sgt. Gary Teicher, G-4, Headquarters and Support Company, 1st Marine Division (Forward), watches as British Army Majs. Rozalind P. Qaranc (center) and Pauline Dorrington (right), nurses with Camp Bastion Hospital, draw blood during the Walking Blood Bank pre-screening at the Combined Aid Station, Camp Leatherneck, Afghanistan.
An example of transfusion support

TXA

Red Cell Concentrate
  • Supply and storage

Plasma
  • FFP / LP

Fibrinogen
  • Cryoprecipitate
  • Fibrinogen Concentrate
  • Calcium iv

Platelets
  • Whole Blood
  • Apheresis
Storage and Supply constraints
Storage and mobility
Movement - strategic
Movement - tactical
Storage Solutions

Active refrigeration

Any environment
- -10°C
- +40°C

Multiple power supplies

Forward supply
- PHEC
- MERT
Delivery Solutions

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1. CD Path
2. BZZ
3. K+N (LHR)
4. Cape Verde
5. Ascension
6. MPA
7. KEMH
Future blood products

- Cold Platelets
- LD Whole Blood
- Clotting Factor Concentrates
- ‘Universal’ blood cells
- TXA auto injector
Moving Transfusion Forward

Medical Treatment Facility

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Thank you for listening