

Blood on Board

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NBCUG Presentation

May 2015

Introduction

Huge Thank You to:

Dr Rachel Hawes

Northern Trauma Network

GNAAS

Blood Bikes

Henry Surtees Foundation

RVI ED & Blood Transfusion Staff

What's it all about?

Management of Major Haemorrhage

- Military experience in Iraq and Afghanistan

Blood on Board

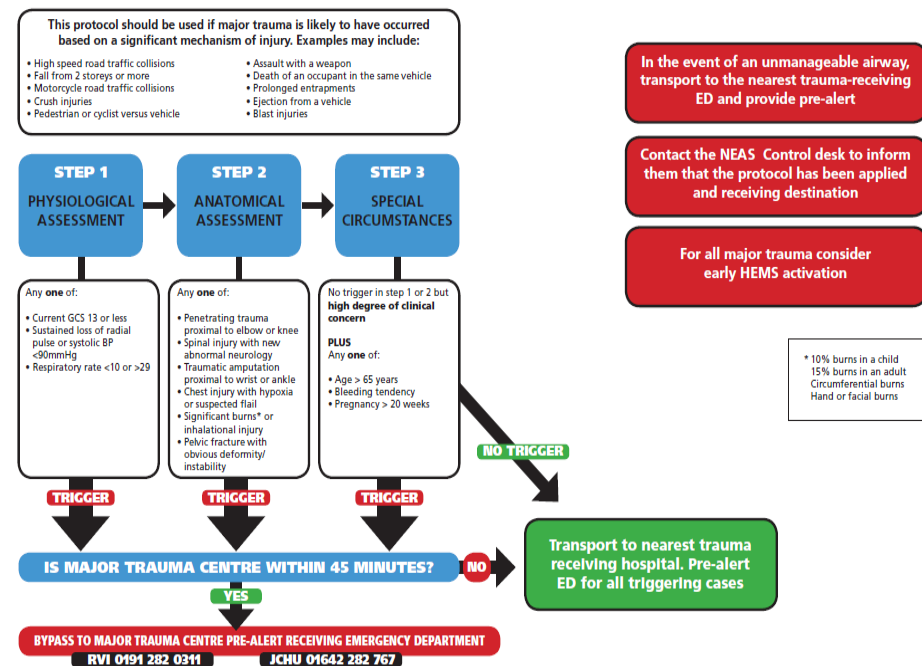
- Logistics & clinical overview

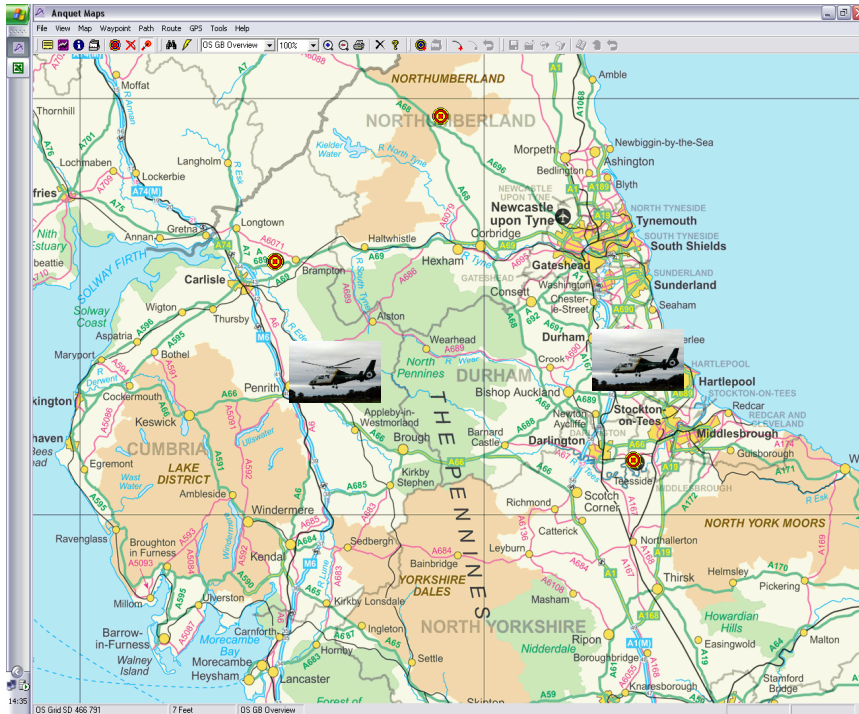


Northern Trauma Network

- Major Trauma Centre and surrounding Trauma Units
- Bypass protocol
 - RVI & JCUH, LGI, PRH
- Advanced PHC 24/7
- Haemorrhage control
- 24hr ED Cons cover
- Rapid access to CT scan
- Rapid access to theatre
- Blood & Labs Results
- Specialist ICM
- Increased number of survivors

MAJOR TRAUMA BYPASS PROTOCOL





GNAAS
www.greatnorthairambulance.co.uk
www.greatnorthairambulance.co.uk

Established 2001

Regional Service

- NE, N Yorkshire, Cumbria

Large area

- Prolonged transfers
- Esp. Cumbria & N Northumberland

365 days per year

➤ Daylight hours ?

➤ 3 helicopters

➤ 2 cars

100% charity funded

- £4.5million per year

Severely ill and injured

Eurocopter
Dauphin
 3 identical
 Twin engine
 140 km/hr



Blood Bikes

www.northumbriabloodbikes.org

Began live operations in February 2014.

To support hospitals across County Durham, Tyne & Wear and Northumberland.

100% charity funded

365 days per year (19:00 to 07:00)

What we asked for?

- Delivery Route
- Timing
- Inclement Weather Plan



Management of Major Bleed

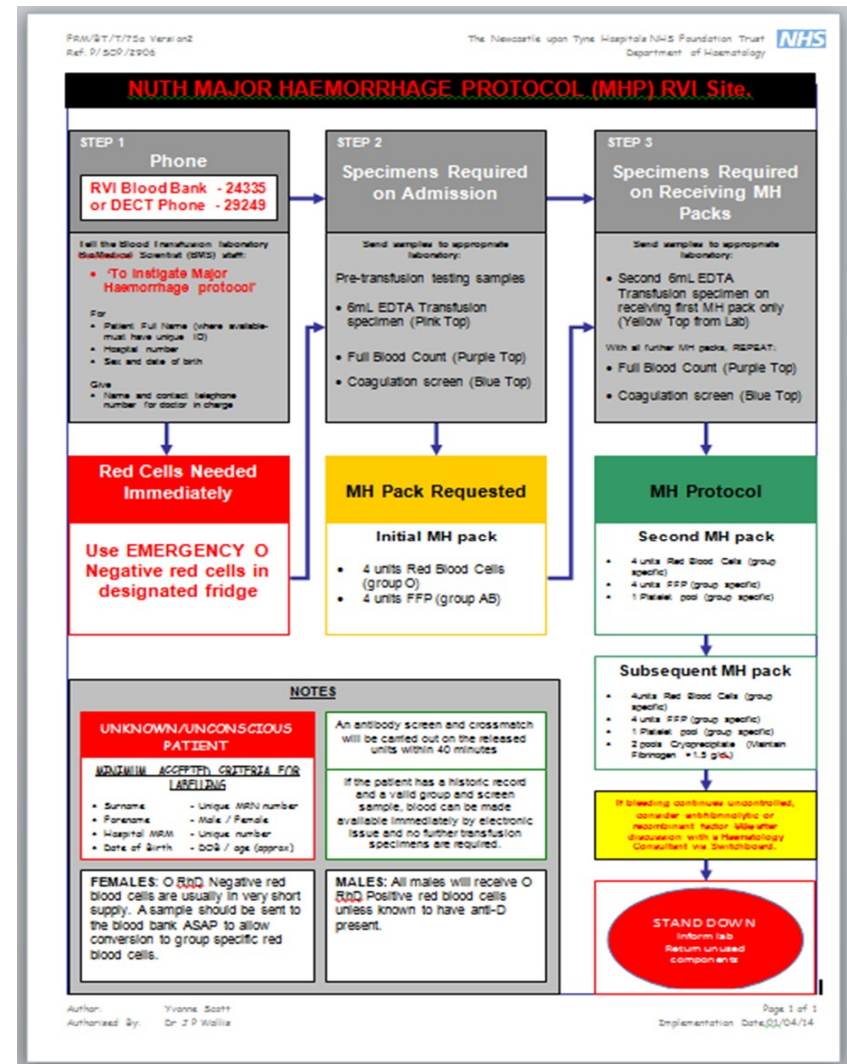
- NICE Prehospital Fluids for Trauma
 - Small volumes of fluid to support circulation
 - Reduce blood clotting problems
- Prehospital Tranexamic Acid
 - PGD Paramedic Prescribing
- Introduction of Major Haemorrhage Policy
 - Pre 2006
- Pre-hospital initiation of the Major Haemorrhage Policy
 - Oct 2011
- Pre-thawed Fresh Frozen Plasma
 - Feb 2014

'Novel Hybrid' Resuscitation Strategy

- Hypotensive Resuscitation - (excluding head injuries)
 - Radial Pulse
 - Avoid excess clear fluids
 - Dilution of clotting factor
 - 'First clot is the best clot'
 - Mortality benefit 10-15%
- Haemostatic Resuscitation
 - Balanced transfusion 1:1:1(:1)
 - Tranexamic Acid (CRASH trial)
 - Calcium
 - Near patient testing
- Active warming

Major Haemorrhage Policy

- Pre-hospital initiation
- Reduce logistical delay
- Standardise blood product use
- Pre-thawed FFP
 - avoid delay in balanced transfusion
- Next logical stage BOB?



Blood on Board (BOB)

- Do we really need it?
 - Haemorrhage leading cause of death
 - 999 to Emergency Department 40mins
 - 25% already have bleeding problems
- Is it effective?
 - Integrated, seamless care, point of injury to hospital care
 - Part of a 'bundle of care'
 - London results showed improved outcomes
- Is it safe?
 - Do no further harm
- Can we afford it?
 - GNAAS charity organisation



Consistent & Reliable

- 365 days per year
- Inclement weather

Affordable for a charity

Weight v fuel

Air Worthiness ££££

Power source

Legislation – MHRA

Access

- Protected

Storage

- Constant temperature
- Monitoring & Data log

Traceability

- Documentation
- 100% traceability

Minimal waste

Logistics

- Supply & Preparation
 - NHSBT, RVI, JCUH or NCUH?
 - Whole Blood, PRC, FFP?
- Transport Route
 - NHSBT
 - Private Transport
 - Blood Bikes (BB)
- Delivery
 - No staff on airbase?
 - 'Drop Off Locker'
 - Sign in/out procedure for BB and GNAAS
 - Fax to RVI from each base monthly
- Collection of unused/ empty boxes
- Resupply after use
- Documentation
 - Trace unit from donor to recipient
 - From patient back to donor
- Cool box performance



The Boxes

- 3 part 'golden hour' boxes
- All 3 parts given number
- All numbers to match on boxes
- Cool Boxes validated
- 2 units blood
- Data loggers to Temperature monitor

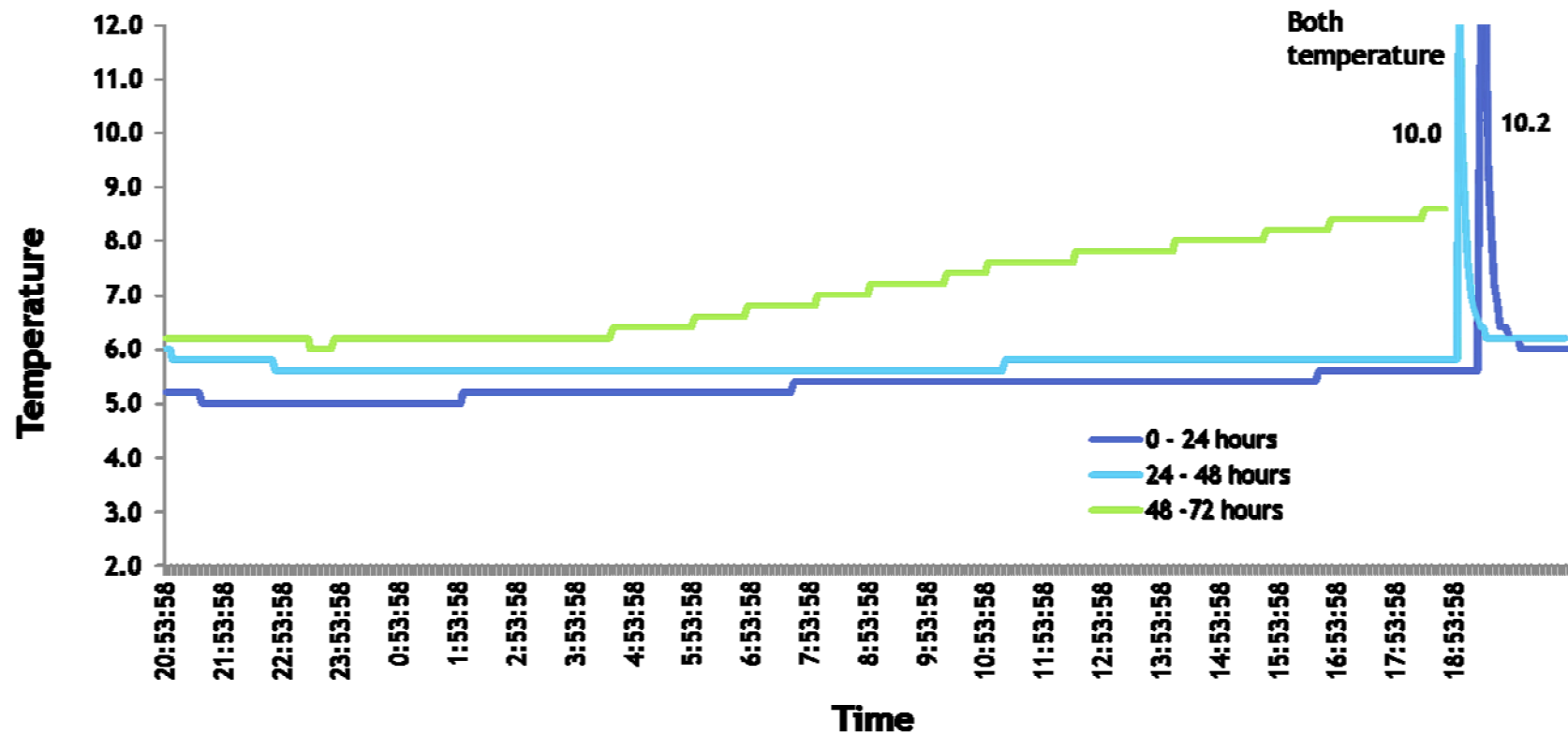


Box Conditioning & Preparation

- -20°C for 8 hrs
- Then 25 minutes at room temperature prior to use
- Stable for 72Hours?

Box Validation

Trial 1



- All golden boxes validated in line with lab policy
- Ensure that boxes keep blood at less than 10°C

Unit Preparation

Blood Temperature Dot!

- Temp monitor not activated



- Temp monitor activated and within temp

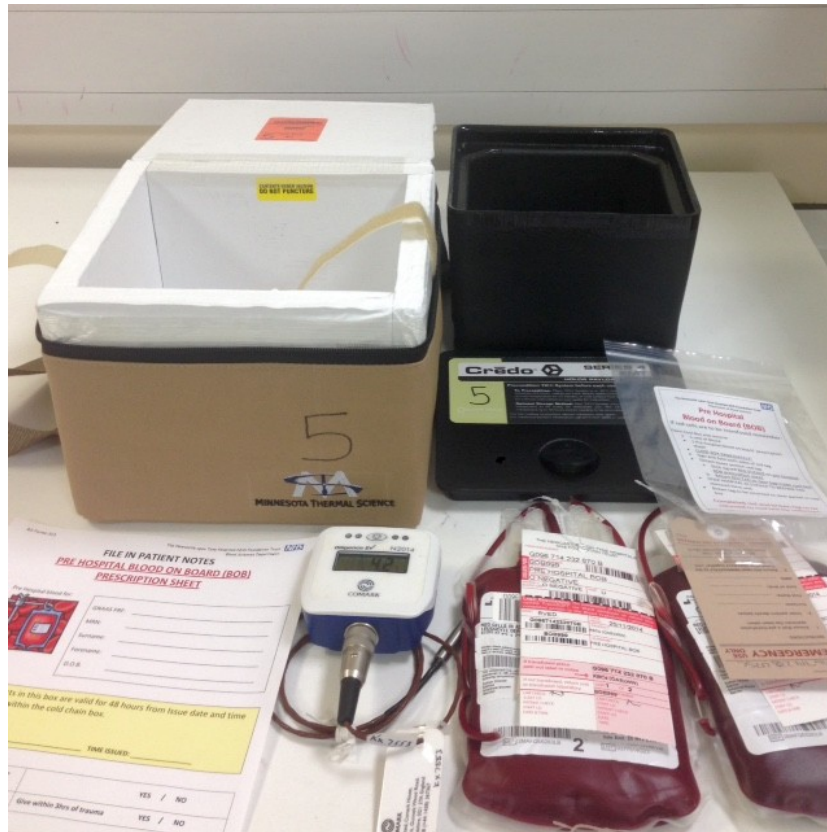


- Temp monitor activated and outside temp



Box Contents & Ready for Issue

Box packed by blood bank staff



Box ready for collection



Blood Bikes Delivery

www.northumbriabloodbikes.org

19.30hrs - Box collected by Northumbria Blood Bikes from RVI

Box collected by Cumbria blood bikes from Penrith

Boxes handed over at Haltwhistle

Cumbria Blood Bikes delivers box to Penrith

Northumbria Blood Bike returns previous days box to RVI



21.30hrs - Box collected by Northumbria Blood Bikes from RVI

Box delivered to Teesside & Old box collected from Teesside

Northumbria Blood Bikes then returns to RVI with collected box

Cold Chain

Boxes signed in / out drop boxes by Blood Bikes

Signed out / in of drop boxes by GNAAS paramedic



Drop Off Locker

- Custom made
- Protection from
 - Heat
 - Frost
- Required 'Frost stat'
- Electricity supply
- Access out of hours
- Security
 - Key/ Key press
 - Passport



- Cool Box exchange
- Signing In & Out
- Traceability


Clinical Side?

- Overview Checklist
 - Challenge & Response
- Aide memoire
- Blood Prescription
- Info & Advice Sheet
 - Leave at hospital
- Must happen
 - Check unit
 - Documentation
 - Hospital Communication

Q&A-Forma-BT-1 The Newcastle upon Tyne Hospitals NHS Foundation Trust **NHS**
Blood Sciences Department

FILE IN PATIENT NOTES
PRE HOSPITAL BLOOD ON BOARD (BOB)
PRESCRIPTION SHEET

Pre Hospital blood for:



GNAAS PRF: _____

MRN: _____

Surname: _____

Forename: _____

D.O.B: _____

Blood Products in this box are valid for 48 hours from Issue date and time if maintained within the cold chain box.

DATE ISSUED: _____ TIME ISSUED: _____

Pre hospital activation of the Major Haemorrhage Protocol?	YES / NO
Tranexamic Acid given?	Give within 3hrs of trauma YES / NO

Red Blood Cells

Transfused

Red Blood Cell
1
Affix sticker

Red Blood Cell
2
Affix sticker

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Implementation Date: 01/01/15



Clinical

- GNAAS Audit Form
 - Sharepoint
 - Email to Rachel
- Liaison Links
 - RVI
 - JCUH
 - Royal Preston Hospital
 - Leeds General Infirmary
- Volume of use
- Outcome Data
 - Linked to TARN & ISS
- Appropriate use & Reactions
 - SABRE, SHOT (TACO)

Logistical

- Traceability
 - Brown & Red Tags
 - Box tracking
- Temperature monitoring
- Cool Box Performance
- Wastage
- Inclement weather plan
- Summer hours

Audit So Far

Patient	Age/Sex	Mode of Injury	Injury	RBC at Scene	Further Blood Usage	Outcome
1 HEMS	58 year old male	RTA Van v HGV	Bilateral pneumothorax, liver lacerations, femoral fractures, acetabular fractures, scalp de-gloving	2 units RVI	5 RBC, 4 FFP, 1 Plt	Theatre – ITU – Ward
2 HEMS	53 year old male	RTA	Traumatic cardiac arrest, chest injuries	2 units North Tyneside Mortuary		Died at scene
3 HEMS	43 year old Male	RTA Car v van.	Head, chest, pelvis and femoral injuries. Un-recordable BP, pulse 120,	2 units RVI	20 RBC, 22 FFP, 8 Cyto, 6 platelets	Died 33 hrs post admission.
4 HEMS	84 year old female	RTA Car v car	Chest and abdo injuries, traumatic cardiac arrest,	2 units North Tyneside Mortuary		Died at scene
5 HEMS	60 year old female	RTA	Head and chest injuries, traumatic cardiac arrest,	1 unit JCUH (2 nd unit did not have the full donation number written on brown tag so couldn't be given)	1 RBC,	ITU and was alive 4 days post-accident
6 HEMS	81 year old female	RTA Ped v car	Chest injuries	2 units RVI	9 RBC, 9 FFP, 1 Plt, 2 Cryo,	Died 27hrs after admission
7 HEMS	14 year old male	RTA Ped v car	Traumatic cardiac arrest	2 units JCUH	4 RBC,	Died in ED
8 HEMS	23 year old female	RTA Motorbike v car	Chest and head injuries	2 units RVI	17 RBC, 16 FFP, 2 Plt, 4 Cryo	Died in ITU (treatment withdrawn due to unsurvivable head injury)
9 HEMS	76 year old male	RTA	Pelvic and long bone injuries	1 unit JCUH	3 RBC, 4 FFP, 1 Plt	Still on ITU as of 06/05/15
10 MERIT	24 year old male	RTA	Traumatic cardiac arrest	2 units RVI	4 RBC, 4 FFP.	Died on ITU.

Costs!

Initial Set l

- Cool Boxes £2,500
- Drop Off Boxes £2,000
- Belmont, Buddy Lite Fluid Warmers £3,500
- Transport (Initial quote £40,000)
 - Private
 - NHSBT
 - Subsidised Hospital Delivery
 - Blood Bikes (Free)
- Charitable Donations

Annual Costs

- Transport £2-5,000
 - Blood Bikes Free
 - Inclement weather
- Data Loggers £2,200
- Wastage & Usage??
 - £130 per unit
 - £2000 wastage?

HEMS

(Helicopter Emergency Medical Service)

Concept started

- Early 2012
- Sept 2014 equipment purchased

GNAAS Teaching

- First wave – 9am – 4pm Thursday 27th Nov 2015

BOB Dry Run – Empty Box

- Friday 12th Dec 2014, 10 days

RVI Lab Teaching

- Week beginning 5th January 2015

BOB Go Live

- 13th Jan 2015!!!!
- First used 14th Jan 2015

GNAAS Teaching

- Second wave - 9am – 12pm Thursday 15th Jan 2015

Step by Step Summary

MERIT

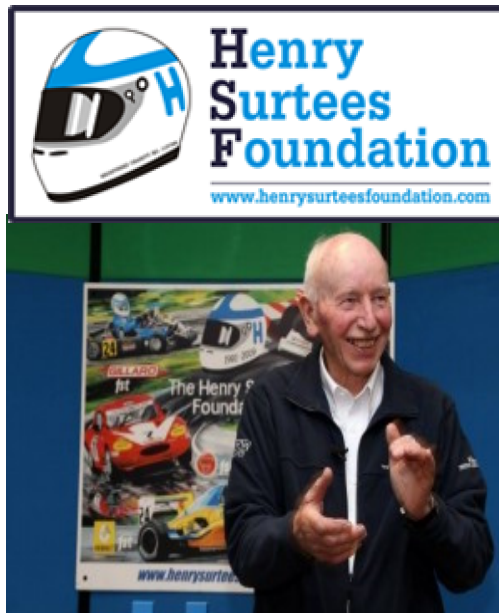
(Medical Emergency Response
Incident Team)

Go- Live (Fri & Sat night)

➤ Friday 8th May 2015

➤ First used 8th May 2015





Team Work



The Newcastle upon Tyne Hospitals 
NHS Foundation Trust



