

Transfusion Bites: Blood on Board (BOB)

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RVI



Introducing Me!



- ▶ HCPC registered Biomedical Scientist since August last year
- ▶ Completed a Healthcare Science degree at University of Sunderland
- ▶ Started my dream job in Haematology & Transfusion at the RVI in July of last year
- ▶ Just coming to the end of three months of training in Transfusion
- ▶ Hoping to soon begin the Haematology and Transfusion Science specialist portfolio!



Who is BOB?

- ▶ Blood on Board, or BOB, has one very simple yet catastrophically important aim - to save lives across the North East, North Yorkshire and Cumbria.
- ▶ BOB involves providing air ambulances in Teesside and Cumbria with blood products.
- ▶ 2 units of red blood cells, and 2 units of thawed fresh frozen plasma (FFP)
- ▶ 1 box for each base prepared every day by 4pm
- ▶ Third box provided Thursday through Sunday to work as a 'resupply' for either base

When did BOB start?

- ▶ Created by Dr Rachel Hawes OBE, who when deployed in Afghanistan, observed the effectiveness of immediate treatment of major trauma patients with blood products.
- ▶ Brought this concept to air ambulances, and once trailed BOB was brought into affect in 2015.
- ▶ Supply was originally of red cells only - however lead to coagulopathy in 1/3 of patients treated.
- ▶ In May of 2016, FFP was added to the boxes to be given in a 1:1 ration. This has been a huge success, with GNAAS reporting 'unexpected survivors' since its addition.



BOB in the Laboratory

THE NEWCASTLE UPON TYNE HOSPITALS NHS FOUNDATION TRUST		THE NEWCASTLE UPON TYNE HOSPITALS NHS FOUNDATION TRUST	
DONATION NUMBER G095 621 133 130 J	DONATION NUMBER G095 620 380 312 6	DONATION NUMBER G095 621 133 130 J	DONATION NUMBER G095 620 380 312 6
BOB999 NUMBER	BOB999 NUMBER	BOB999 NUMBER	BOB999 NUMBER
PRE HOSPITAL BOB	PRE HOSPITAL PLASMA	PRE HOSPITAL BOB	PRE HOSPITAL PLASMA
O NEGATIVE	GROUP A	O NEGATIVE	GROUP A
UNCROSSMATCHED BLOOD		UNCROSSMATCHED BLOOD	
PATIENT BLOOD A POSITIVE	DOB U	PATIENT BLOOD A POSITIVE	DOB U
WARD RVED	DATE RECD. 26/02/2021	WARD RVED	DATE RECD. 26/02/2021
PRODUCT G095621133130J	PRODUCT G0956203803126	PRODUCT G095621133130J	PRODUCT G0956203803126
RBCs (OAS)(WW)	FFP (LDF)	RBCs (OAS)(WW)	FFP (LDF)
SURNAME BOB999	SURNAME PRE HOSPITAL BOB	SURNAME BOB999	SURNAME PRE HOSPITAL BOB
LAB CHECK	LAB CHECK	LAB CHECK	LAB CHECK
STAFF I.D.	STAFF I.D.	STAFF I.D.	STAFF I.D.
PATIENT CHECK	PATIENT CHECK	PATIENT CHECK	PATIENT CHECK
STAFF I.D.	STAFF I.D.	STAFF I.D.	STAFF I.D.
DATE:	DATE:	DATE:	DATE:
TIME:	TIME:	TIME:	TIME:

Legal Requirement: On completion of transfusion return this completed portion to the Blood Transfusion Laboratory.

If transfused place peel out label in notes →

If not transfused; return unit to transfusion laboratory

AM - Selection of Products

- ▶ Freshest four units of O negative red cells - at least 10 days until expiry, must be K negative.
- ▶ Four units of group A FFP are thawed first thing in the morning. All units must be high titre negative.
- ▶ All units are placed into the fridge to cool.

Each unit is tagged with a compatibility label associated with a record specifically for BOB.

- ▶ After an hour at least, a temperature spot is attached - used to easily identify whether the unit has gone out of temperature at any point while in the BOB box.



Unit has not breached 10°C
(indicator window is white)



Unit has breached 10°C
(indicator window is blue)



Golden-Hour Box Preparation



- ▶ Made up of:
 - A black thermal isolation chamber (TIC) and lid
 - A white insulated inner vacuum chamber
 - Fabric outer case
- ▶ The black TIC box is stored at -20 for at least 8 hours before bringing into use - Each box is numbered to be able to track time spend in the freezer
- ▶ Boxes are reconditioned at room temperature for 25 minutes before packing, and then wiped to remove condensation



Blood Components Packaging

PM - Packaging of Products

PRE HOSPITAL BLOOD AND PLASMA TRACKING FORM

1. Details of blood in Golden Hour Box Thermal Insulated Chamber (TIC) must be pre-conditioned: -20°C for a MINIMUM 8 hours then Room Temperature for 25 minutes.					
Box Number: 4	Destination (please circle): CUMBRIA / TEESIDE / RESUPPLY Destination if resupply used:	Date / Time IN freezer: 5/1/21 00:30	Date / Time OUT freezer: 7/1/21 14:20	Box conditioned at RT (Y/N): 4	Initials: CJC
2. To be completed by the person issuing and packaging the red cells					
I confirm that the components listed have been put in a Golden Hour transport Box and this will maintain the units within the temperature range recommended for such components in the current version of <i>Guidelines for the Blood Transfusion Services in the United Kingdom</i> for up to 48 hours.		Donation Number	Expiry Date		
		G095 620 530 660Z	21/01/21		
		G095 620 457 928A	23/01/21		
		G095 620 142 8778	12/01/21		
		G095 620 232 827X	12/01/21		
Print Name <u>CHARLOTTE COSGRAVE</u> Signature <u>CCosgrave</u> Position <u>BMS</u> Date <u>7-1-21</u> Time <u>14:20</u>					
3. Collect by Blood Bikes <i>Confirm cable tie is present</i>					
Print Name _____		Signature _____		Position _____ Date _____ Time _____	

Step 1

Step 2



RBC



PLASMA



RBC

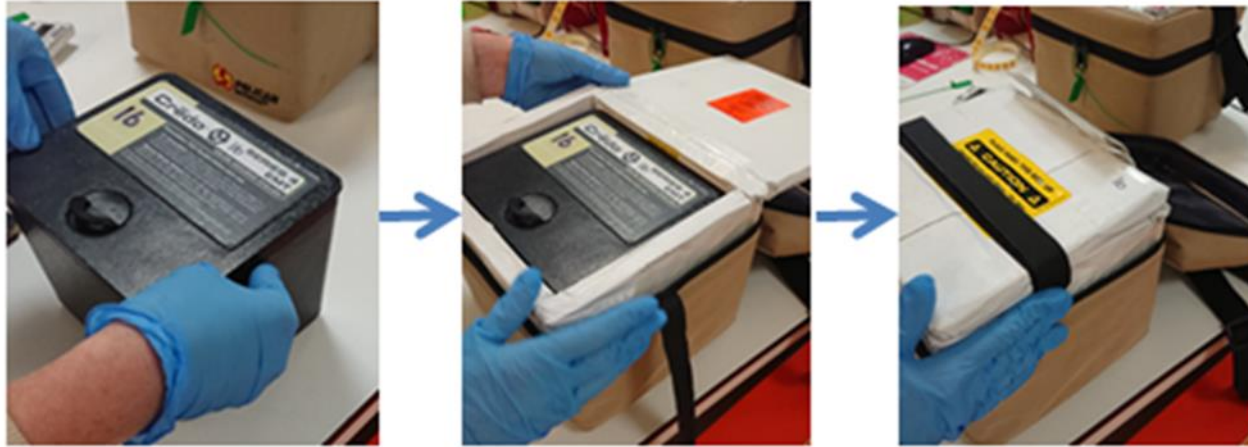


PLASMA



Blood Components Packaging

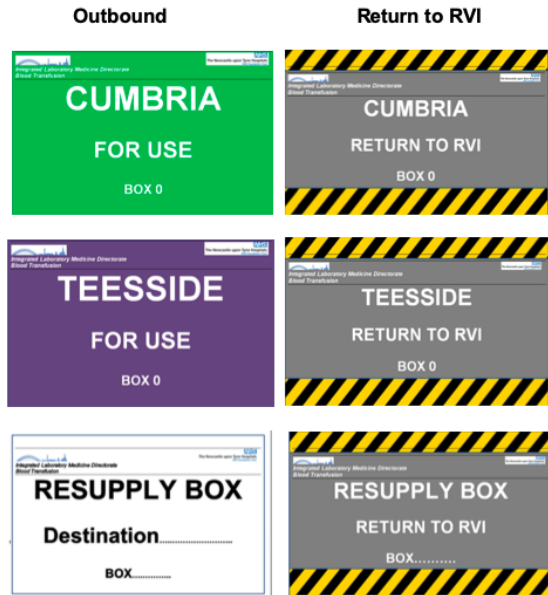
Step
3



Step
4



Distribution of BOB



- ▶ Each box is provided with a destination card, which is flipped over when the box is to be returned
- ▶ Both boxes are collected by Northumbria Blood Bikes at 6pm
- ▶ Exchange with Blood Bikes Cumbria who deliver the Cumbria box
- ▶ Northumbria Blood Bikes deliver the Teesside box

- ▶ Blood Bikes place the new BOB box into a secure holding box location
- ▶ Any old cool boxes, used or not, are returned to the RVI by blood bikes
- ▶ Sometimes an old box will not be there, for example if the air ambulance have not yet returned





Using BOB at the Scene

- ▶ Pre-transfusion checks:
 - Correct product - FFP/RBC
 - Group A or AB for FFP, Group O negative for Red Cells
 - Unit is in date
 - Visual check of unit itself - no signs of bacterial contamination etc
 - Temperature spot check - still green & white?
 - Sign/date/time both halves of compatibility tag

- ▶ One unit of product is removed, then lid immediately replaced until the next is required

- ▶ Products given in the format of plasma-blood-plasma-blood

- ▶ Staff activate major haemorrhage protocol to alert hospital



Reporting use of BOB

- ▶ To ensure the treatment administered to the patient by the air ambulance crew is documented, a prescription sheet is filed in the patients notes.
- ▶ The treatment must also be added to the patients electronic record, therefore an audit form is sent to Dr Hawes, and the transfusion practitioners communicate with laboratory staff to add this.


BS-Forms-BT-1

The Newcastle upon Tyne Hospitals NHS Foundation Trust
Blood Sciences Department

BS-Forms-BT-68

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

Pre Hospital blood / plasma for:



GNAAS PRF:	_____
MRN:	_____
Surname:	_____
Forename:	_____
D.O.B.:	_____

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

Plasma Transfused	Plasma 1 Affix sticker	Plasma 2 Affix sticker
	Red Blood Cells Transfused	Red Blood Cell 1 Affix sticker

Prehospital Emergency Blood & Plasma Transfusion
Blood on Board Audit Form

Date: _____
Time: _____
GNAAS Doctor: _____
GNAAS Paramedic: _____
Helimed 58/ Helimed 63/ MERIT (delete as appropriate)
Hospital/ Mortuary taken to: _____

Patient Name: _____
Sex: Male / Female
GNAAS PRF Number: _____
Hospital ID Number: _____
DOB: _____
Address: _____

Clinical Details:
MOR: _____
Injuries: _____
Treatment: _____
Was the patient in cardiac arrest on your arrival? Yes / No
What BP and HR that triggered the need for transfusion: _____
Did the patient die on scene? Yes / No
Drugs affecting clotting? Yes / No / Unknown

Clinical Management
How much / what type of fluid was administered by the land crew?
How much / what type of fluid was administered by GNAAS?
How much Blood & Plasma did you give? Responded / transient response / No response
CVS instability (response to fluid/ blood): Yes / No
Did you give TXA 1g? (If not, reason?) Yes / No / N/A
Tourniquet or haemostatic dressing (Celox) used? Yes / No
Warming blanket applied? Yes / No

Did the patient have a complication or transfusion reaction? Yes / No
Clinical course if known? E.g. CT scan results/ theatre – which operation?/ ICU

Blood Product Donation Number: (top of red tag)
Plasma 1: _____
Plasma 2: _____
Blood 1: _____
Blood 2: _____

Difficulties
Any logistical issues? Yes / No
Any clinical issues? Yes / No
Any other comments? _____

Please email to Rachel.Hawes@nhs.net



Overcoming Issues



- ▶ Extended antigen testing - brown tags
- Confusion at the scene as to what these are
- ? If it meant the unit had been issued to somewhere else
- ▶ Fresh Frozen Plasma D status
- Compatibility tag states the FFP group is A positive, however it can be either D negative or D positive
- Some confusion as to whether this is compatible

- ▶ Working closely with Dr Hawes to combat these issues and make adaptations to include them in training so they're not a problem in the future.



Future Developments - Whole Blood Trial

- ▶ Proposes the use of whole blood components rather than separate units of red cells and plasma
- ▶ O negative, K negative whole blood would be used
- ▶ Aims to reduce wastage if plasma
- ▶ Disadvantage: lack of use for whole blood units once they're too old to be used in BOB boxes
- ▶ More research needed into the impact of ABO antibodies in O negative whole blood units when transfused to non group O patients



Thank you!

Any Questions?