

# LABORATORY PERSPECTIVE;

## INCLUDING PRE THAWED FFP IN MAJOR HAEMORRHAGE PACKS

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## MAJOR HAEMORRHAGE AT NUTH

The Newcastle upon Tyne Hospitals

- Level 1 Multi-Trauma Centre
- A major haemorrhage protocol (MHP)
- 3 types of consecutively issued packs
- Designed to achieve a 1:1 ratio of red blood cells (RBC) to fresh frozen plasma (FFP) after transfusion of all contents
- The key challenge is how to ensure that plasma is available for transfusion as quickly as it is needed





## **MAJOR HAEMORRHAGE AT NUTH**

Major Haemorrhage Pack (MHP) Algorithm

Pack 1:	4 RBC	4 FFP	
Pack 2:	4 RBC	4 FFP	1 Platelet
Pack 3:	4 RBC 2 Cryop	4 FFP recipitate	1 Platelet pools

- As soon as the box is taken the next is prepared
- MHP 3 continues until we are told to stand down



#### MAJOR HAEMORRHAGE AT NUTH

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- For Emergency Department (ED) 4 units of red cells are labelled and ready to pack.
- Two sets are available, group O D Positive for males and group O D negative for females / children.
- Where the patient is known and there is a valid sample group specific will be issued.



## PRE INTRODUCTION OF PRE THAWED FFP

The Newcastle upon Tyne Hospitals NHS

**NHS Foundation Trust** 

- Time from MHP activation to collection of complete pack
- January to June 2013, 24 patients in ED



**IUTH 2016** 



## **2013 CHALLENGE**

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#### Maintain a stock of thawed FFP

- •Plasma is available immediately when requested
- •No 20-30 minute wait for defrosting
- •Normal practice thawed FFP has a shelf-life of 24 hours provided it is maintained under the laboratory control at 4°C

•Pre-thawing of FFP will lead to minimal delay in provision of the product but at what cost?





## **POST INTRODUCTION OF PRE THAWED FFP**

The Newcastle upon Tyne Hospitals NHS

- Time from MHP activation to collection of complete pack
- January to June 2014, 28 patients in ED





#### **IMPACT OF INTRODUCING PRE THAWED FFP**

The Newcastle upon Tyne Hospitals NHS



![](_page_8_Picture_0.jpeg)

#### **BCSH GUIDELINES**

The Newcastle upon Tyne Hospitals

NHS Foundation Trust

British Committee For Standards in Haematology Guideline

A practical guideline for the haematological management of major haemorrhage (Hunt *et al*, 2015), recommends that:

'In laboratories that investigate many massive haemorrhage cases consideration should be given to having pre thawed plasma on standby.'

With levels of wastage demonstrated this would be unsustainable

http://onlinelibrary.wiley.com/doi/10.1111/bjh.13580/full

![](_page_9_Picture_0.jpeg)

![](_page_9_Picture_1.jpeg)

The Newcastle upon Tyne Hospitals NHS

**NHS Foundation Trust** 

**Total FFP Wastage for NUTH April 15 - February 16** 

![](_page_9_Figure_3.jpeg)

![](_page_10_Picture_0.jpeg)

![](_page_10_Picture_1.jpeg)

The Newcastle upon Tyne Hospitals NHS

**NHS Foundation Trust** 

- Wastage costs of FFP are a minimum of £28.46 per unit
- Not including lab costs

# NUTH 2015-16 £55,525.46

![](_page_11_Picture_0.jpeg)

#### **BCSH GUIDELINES - ADDENDUM**

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NHS Foundation Trust

 The Joint United Kingdom (UK) Blood Transfusion and Tissue Transplantation Services' Professional Advisory Committee (JPAC) has reviewed the available data on FFP and agreed that:

The shelf life of thawed standard FFP can be extended from 24 hours to 120 hours, to enable rapid provision of FFP for the management of unexpected major haemorrhage without excessive wastage

(http://onlinelibrary.wiley.com/doi/10.1111/bjh.14163/full)

(http://www.transfusionguidelines.org.uk/document-library/supporting-papers).

![](_page_12_Picture_0.jpeg)

### **BCSH GUIDELINES - ADDENDUM**

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- Should be administered within 24 hours of thawing,
- Or within 120 hours only for patients who develop unexpected major bleeding (e.g. trauma) and for whom delay in providing FFP is detrimental
- Clotting factor activity (particularly FV, FVII and FVIII) drop over time
- Balanced by receiving the product earlier
- Busy laboratories will use most product earlier

![](_page_13_Picture_0.jpeg)

#### **BCSH GUIDELINES - ADDENDUM**

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- Once thawed, store at 4 ± 2°C
- Plasma must be thawed by methods that do not directly expose units to water, all equipment must decontaminated daily and all units inspected to ensure that no precipitate is visible and that the component packaging is intact.

![](_page_13_Picture_4.jpeg)

![](_page_14_Picture_0.jpeg)

#### WASTAGE RISK

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- Pre-thawed FFP that is out of a controlled temperature environment (4 ±2°C), can be accepted back into temperature controlled storage if this occurs on one occasion only of less than 30 minutes.
- Transfusion of FFP should be completed within 4 hours of issue out of a controlled temperature environment
- This will result in some wastage as units are returned after this time or if packs are partially used.

![](_page_15_Picture_0.jpeg)

## EXTENDED LIFE PRE THAWED PLASMA AT NUTH

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- Quickly changed to follow the new recommendations
- All units of plasma are labelled with expiry date and time (120 hours post thaw) and kept in the fridge labelled ready to go with the first major haemorrhage pack.
- Minimise wastage through education of staff both in the lab and clinical environment and by cooperation with other Freeman.

![](_page_15_Picture_5.jpeg)

![](_page_16_Picture_0.jpeg)

![](_page_16_Picture_1.jpeg)

**Total FFP Wastage for NUTH April 15 - July 16** 

The Newcastle upon Tyne Hospitals NHS

![](_page_16_Figure_3.jpeg)

![](_page_17_Picture_0.jpeg)

#### **REDUCTION IN WASTAGE**

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- From over 160 units per month the total for May 2016 was 46.
- Cost down from over £4500 per month to approx. £1200.

![](_page_18_Picture_0.jpeg)

![](_page_18_Picture_1.jpeg)

#### **PRE HOSPITAL PLASMA**

![](_page_18_Picture_3.jpeg)

![](_page_18_Picture_4.jpeg)

![](_page_18_Picture_5.jpeg)

![](_page_19_Picture_0.jpeg)

#### PRE HOSPITAL PLASMA

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- We have been providing GNAAS with 2 units of packed RBC for both sites for over 18 months.
- Most patients gave a transient response
- With 24 hour expiry supplying plasma was not a viable option.
- With the extended life to 120 hours we are trialling a supply of 2 units each day

![](_page_19_Picture_6.jpeg)

![](_page_20_Picture_0.jpeg)

#### TRIAL

The Newcastle upon Tyne Hospitals NHS

- May 2016 supply one base with 2 units of plasma.
- Base supplied must be randomised
- Thawed fresh every day

![](_page_20_Picture_5.jpeg)

- Returned plasma used at RVI overnight for unexpected haemorrhage.
- Transfer to Freeman

![](_page_21_Picture_0.jpeg)

#### PRE HOSPITAL PLASMA WASTAGE

The Newcastle upon Tyne Hospitals

Number of FFP Thawed (4months):	260	
Number Transfused on Board:	17	
Number Transfused in Hospital:	120	
Number FFP units Wasted:	124	£3,529.04

![](_page_21_Figure_3.jpeg)

![](_page_22_Picture_0.jpeg)

#### PRE HOSPITAL PLASMA

The Newcastle upon Tyne Hospitals

- Taken into consideration the total hospital and pre hospital wastage the cost is significantly reduced with extended life plasma.
- And we are providing a better service
- Hoping to extend the service
- Look at minimising wastage from returned pre hospital plasma e.g. changes the way it is delivered and returned.

![](_page_23_Picture_0.jpeg)

![](_page_23_Picture_1.jpeg)

![](_page_23_Picture_2.jpeg)