

# Provision of HLA Matched Platelets

John Goodwin

FIMLS, MPhil, DipRCPath

H&I Laboratory, National Blood Service, Sheffield

# HLA Matched Platelets

- Patient categories
- Definitions and background
- Algorithm
- Logistics
- Statistics
- Troubleshooting / questions

# Patient Categories for HLA Matched Platelets

- Patients with platelet disorders e.g. Glanzmann's / Bernard Soulier's
- Prophylactic to avoid sensitisation e.g. aplastic anaemia, pre renal transplant (also HLA matched RBC)
- Refractory patient's

# Platelet Refractoriness

## Definition

Increase in patient's platelet count of  $<10 \times 10^9/l$  between 1 and 24 hours after the transfusion of an adult dose of ABO compatible apheresis platelets on two separate occasions

# Platelet Refractoriness

## Immune

- Platelet alloantibodies
  - anti HLA (class I - >95%)
  - anti HPA (<5% HPA + HLA, HPA only <1%)
- Other antibodies
  - Autoantibodies
  - Drug-dependent antibodies
  - ABO antibodies
- Immune complexes

## Non Immune (80%)

- Splenomegaly
- DIC
- Bleeding
- Consumption (eg ECMO)
- Infection and its treatment e.g. amphotericin B

# HLA Matched Platelets

## Logistics

- Receive request
  - Fax forms
- Assess request
- Tissue type and HLA antibody screen patient
- Panels searched to select donor
- Issue platelets
- Obtain increment data
- Weekly review meetings

## First Request for HLA Selected Platelets

NB for products to support NAIT/FMAIT please contact H&I Filton during normal working hours and issue at evenings and weekends

<b>PATIENT'S NAME</b>					
DoB		Blood Group		CMV status	
Hospital		Hospital No			
Ward		In Patient <input type="checkbox"/>		Out Patient <input type="checkbox"/>	
Pulse Hosp Code		Hematos Reference			
Male <input type="checkbox"/>	Female <input type="checkbox"/>	Adult <input type="checkbox"/> Weight		Paediatric <input type="checkbox"/> Weight	
Doctor		Consultant			
Bleep Number	Hospital Phone No	Blood Bank Phone No		Fax No	
<b>Diagnosis</b> Clinical Details					
Treatment	Chemo <input type="checkbox"/>	Post Chemo <input type="checkbox"/>	Post BMT <input type="checkbox"/>	ATG <input type="checkbox"/>	IVIG <input type="checkbox"/>
Reason for Request	Prophylactic <input type="checkbox"/>		Poor Increments <input type="checkbox"/>		
Previous platelet transfusion		Reaction	Pack type	Fresh	ABO comp
Last Date	pre..... .post.....	Yes/No	Pool/Apheresis	Yes/No	Yes/No
Prev Date	pre..... .post.....	Yes/No	Pool/Apheresis	Yes/No	Yes/No
<b>Other Non Immune Reasons</b>					
Bleeding <input type="checkbox"/>	Fever <input type="checkbox"/>	Splenomegaly <input type="checkbox"/>	Infection <input type="checkbox"/>	DIC <input type="checkbox"/>	Antimicrobials <input type="checkbox"/>
<b>Number of Units and Date Required for Initial Request Only</b>					
CMV neg required		Yes <input type="checkbox"/>		No <input type="checkbox"/>	
Signature		Print Name			
For NHSBT use only					
HLA/HPA type	Typed in House <input type="checkbox"/>	Conf Fax Received <input type="checkbox"/>	Not typed samples requested <input type="checkbox"/>		
Antibody Results	Pos <input type="checkbox"/>	Neg <input type="checkbox"/>	Not tested <input type="checkbox"/>		
Antibody Results					
Authorised by					
Name	Date	Time			
Comments					
Advice given					

(Template Version 07/10/08)

Cross-Referenced in Primary Document:SOP3064

Page 1 of 1



# Blood and Transplant

## Key Points

- Blood group
- Previous transfusion data
- CMV requirement
- FRM559

John Goodwin, H&I Department, Sheffield

**Request for HLA Selected Products - Second and Subsequent Orders**

For first requests use FRM558 for HLA or HLA & HPA selected products e.g. for refractory patients  
 FRM603 or FRM604 for hyperconcentrated units  
 For HPA 1a/5b negative neonatal units contact Filton H&I weekdays or Hospital Services department  
 evenings, weekends and bank holidays

Weekdays	Fax/Telephone Local H&I Laboratory
Evenings, weekends and bank holidays	Fax/Telephone Local Hospital Services Department

*Receipt of this fax must be confirmed by telephoning the relevant NHSBT department  
 Please give as much notice as possible when requesting these selected products*

<b>Patient Details</b>			
Surname:		Forename:	
DOB:		Sex: Male/Female	
ABO group and Rh type		CMV status:	
Red Cell Phenotype:	* for requests for red cells only		
Hospital:		Hospital/NHS No:	

**Requirements**

<b>Ad Hoc orders</b>	*NB For urgent orders, please state the latest time required Please note these products are non standard and NHSBT will endeavour to deliver by the date/time required or inform the requester of any delay. The minimum delivery time is unlikely to be less than 6 hours from ordering and may take longer depending upon the availability of suitably HLA selected units.	
Date and time of transfusion:	____/____/____ : ____	Delivery details e.g. *Urgent/Routine Latest time for delivery ____/____/____ : ____
Type of component required (Blood/Platelet): e.g. CMV neg /PAS/Irradiated		
Number of Units Required:	<input type="checkbox"/> Mon <input type="checkbox"/> Tues <input type="checkbox"/> Wed <input type="checkbox"/> Thurs <input type="checkbox"/> Fri <input type="checkbox"/> Sat <input type="checkbox"/> Sun	

**or**

<b>Standing orders</b>	NB Standing orders must be reviewed at least monthly	
Start and end date:	Start: ____/____/____	End : ____/____/____
Component type and frequency: e.g. 3x week		
Delivery details:		

<b>Requested by</b>	Date and time of request:	
Signature:		Print name: Contact details:

<b>Amendment to Order</b>	
Discussed with:	
Signature:	Date:

(Template Version: 07/10/08)

Cross-Referenced in Primary Document: MPD304 &amp; SOP3064

Page 1 of 1



# Blood and Transplant

## Key Points

- Date and time of transfusion
- Latest time for delivery
- CMV requirement
- Check for updated forms

John Goodwin, H&I Department, Sheffield



# HLA Matched Platelets

## Logistics

- Receive request
- Assess request
- Tissue type and HLA antibody screen patient
- Panels searched to select donor
- Issue platelets
- Obtain increment data
- Weekly review meetings

# Platelet Selection

- Local and national lists searched manually
  - Tissue type
  - HLA antibodies
  - CMV status
  - Lysin
  - Availability and location
  - HPA type and antibodies
  - Blood group
- Memos generated and faxed

# Platelet Match Grades

## Match Grades (HLA A and B locus)

- A = Full match (30%)
- B1 = 1 MM antigen
- B2 = 2 MM antigens
- B3 = 3 MM antigens
- B4 = 4 MM antigens
- SEL = selected

## Algorithm for management of patients refractory to random donor platelets



## Blood and Transplant

Refractory to ABO matched <72 hours old  
Platelet concentrate

Screen for anti-HLA class I

Exclude non-immune

Infection and its treatment  
Splenomegaly  
disseminated intravascular  
coagulation (DIC) bleeding

POSITIVE

NEGATIVE

Give HLA class I matched  
platelets and measure  
increments after each  
transfusion

If refractoriness is  
confirmed, discuss with  
blood centre a trial of HLA  
matched platelets

Good increment,  
continue with HLA  
class I matched  
platelets and screen  
for anti-HLA monthly

Good increment,  
continue with HLA  
class I matched  
platelets and screen  
for anti-HLA monthly

If poor, screen for  
anti-HPA

No increment  
consider HPA antibodies

POSITIVE

Give HLA and HPA  
matched platelets

If positive, supply HPA matched  
platelets.

If negative consider returning  
to random platelets and discuss with  
NHSBT

NEGATIVE

Discuss with NHSBT

Keep in mind non –  
immune causes and  
ABO matching

# HLA Matched Platelets

## Logistics

- Receive request
- Assess request
- Tissue type and HLA antibody screen patient
- Panels searched to select donor
- Issue platelets
- Obtain increment data
- Weekly review meetings

# Increment Data Form



*Blood and Transplant*

<b>PATIENT DETAILS</b>			
<b>Name:</b>	«FirstName» «LastName»		
<b>DOB:</b>	«DateOfBirth»	<b>ABO/Rh:</b>	«ABO»«Rh»
<b>Hospital:</b>	«HospitalName»	<b>Hospital Number:</b>	«HospitalNumber»
<hr/>			
<b>DONATION DETAILS</b>			
<b>Donation Number:</b>	«Dnt_DonationNo»	<b>Date Bled:</b>	«Dnt_DateBled»
<b>Pack Number:</b>	«Dnt_ProductDesc»	<b>Match Grade:</b>	«MatchGrade»
<b>Planned transfusion Date:</b>			
<hr/>			
<b>TRANSFUSION DETAILS FOR COMPLETION BY THE HOSPITAL</b>			
PLEASE RETURN THIS FORM TO THE ADDRESS OR FAX NUMBER AT THE TOP			
<b>DATE AND TIME OF TRANSFUSION:</b> .....			
<b>Pre transfusion count:</b> .....x10 <sup>9</sup> /l <b>Date and time:</b> .....			
<b>Post transfusion count:</b> .....x10 <sup>9</sup> /l <b>Date and time:</b> .....			
<b>ANY CLINICAL RESPONSE / SYMPTOMS?</b> PLEASE GIVE DETAILS:			
<b>ADVERSE REACTION TO TRANSFUSION?</b> YES/NO IF YES PLEASE GIVE DETAILS:			
<b>SIGNATURE:</b> .....		<b>DATE:</b> .....	

Who should fill this in?

John Goodwin, H&I Department, Sheffield

# Increment Return Rates

- National average return rate 2012 only  
33% (36% Sheffield)
  - Range 58 – 6%

# Reasons for Incremental Data

- To aid in platelet selection
  - Identify unacceptable antigens
  - Identify acceptable antigen
- To achieve better clinical response
- To identify if HPA testing is required
- To identify if PAS is required
- To identify if further samples are required for HLA antibody testing
- To not waste a precious resource
- To save money



# Platelet increments

Patient WS A2 B7 antibodies 96% A3++

Date	Donor type	Pre count	Post count
04/5/05	A2,30B7,40	5	6
09/5/05	A2 B7,27	7	33
11/5/05	A2 B40	9	30
17/5/05	A2,24 B7,39	6	3
18/5/05	A2 B7,27	3	45
23/5/05	A2 B7	15	53
27/5/05	A2 B40	6	34

*Courtesy Andrea Harmer*

# Cost 2012/13

- Platelets (1 adult dose) £209.30

## Premium

- HLA matched £174.10
- CMV-ve £8.10
- PAS £112.09
- Irradiated £8.08
- **Total** **£511.67**

## Number of HLA Matched Platelets Issued

	2007	2008	2009	2010	2011	2012
Birmingham	895	1285	1313	1074	1127	1259
Bristol	1276	1153	1287	1382	1577	1648
Colindale	1780	2123	2647	2912	6685	6004
Newcastle	520	552	512	612	742	453
Sheffield	3231	3442	3313	4134	4826	4353
Tooting	1858	2730	1167	3199	4127	4721
Unallocated	336	477	1287	931	0	0
	9896	11762	13350	14174	19084	18438

# Summary

- Not an 'off the shelf' product
- Can be time consuming
- Many people involved
- Regular patient review
- Not cheap
- Communication essential