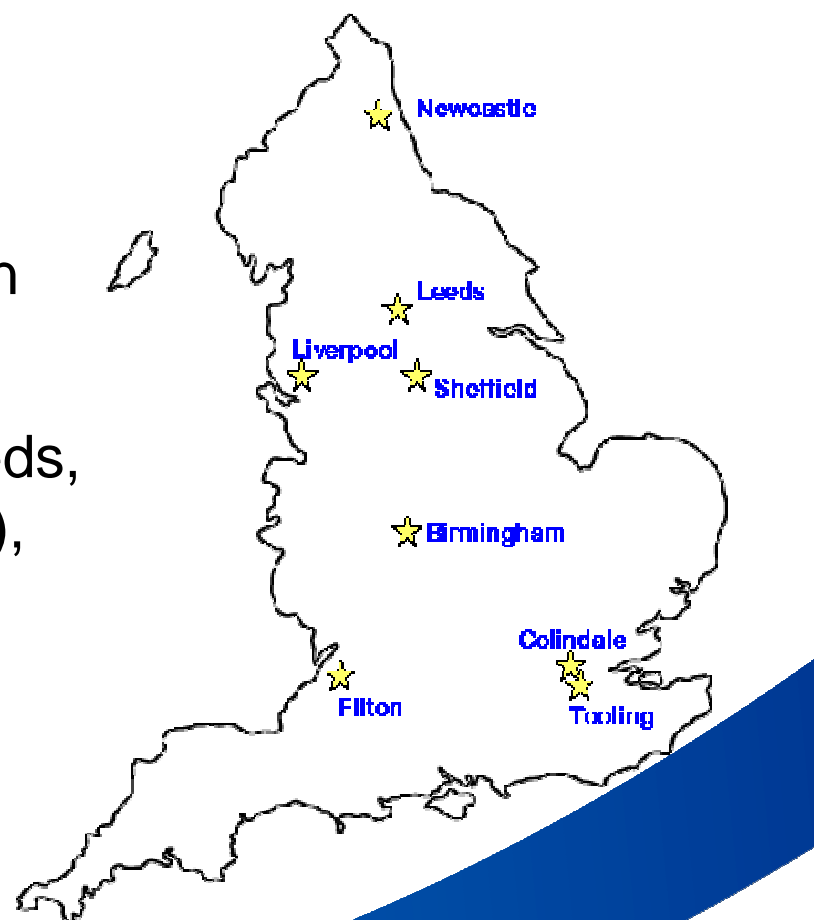


# Red Cell Immunohaematology


Laura Reyland  
*BMS Specialist*

# What is RCI?

- Support for transfusion laboratories in England
- Located at Liverpool, Newcastle, Leeds, Sheffield, Birmingham, Filton (Bristol), Tooting and Colindale (both London)
- ~ 500 hospitals



# What do we do?

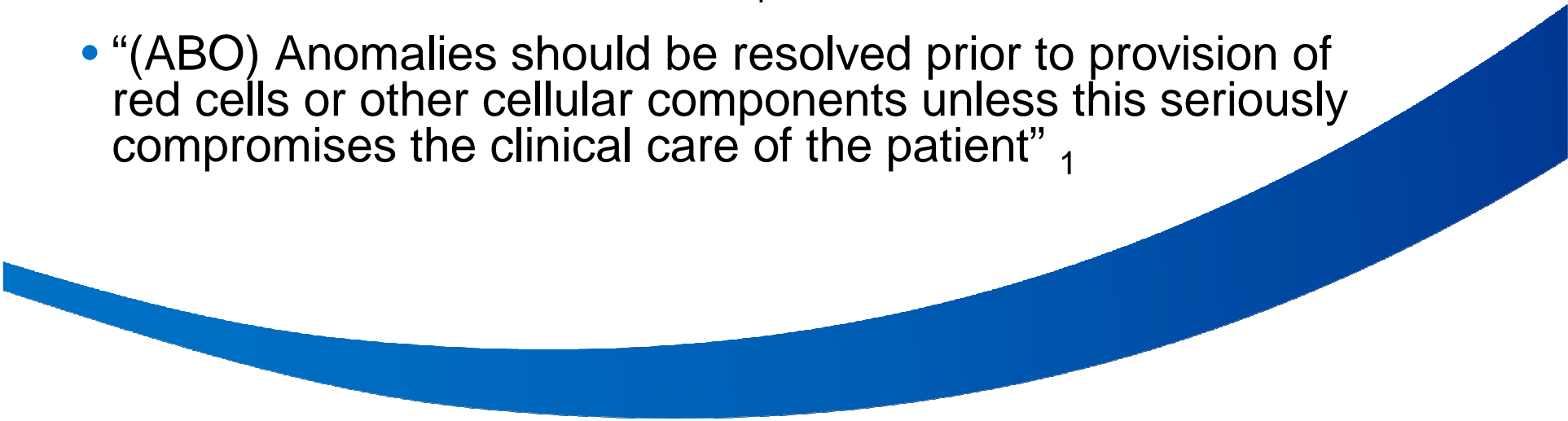
- Samples referred for
    - Reference antibody investigations (surgery, transfusion dependent)
      - DAT positive patients
      - Provision of cross-matched blood
      - Haemolytic Transfusion Reaction investigation
    - Antenatal antibody investigation
      - Titre or quantification
      - Provision of IUT units / units for delivery
    - ABO or RhD anomalies
    - FMH estimation
- 

# What else do we do?

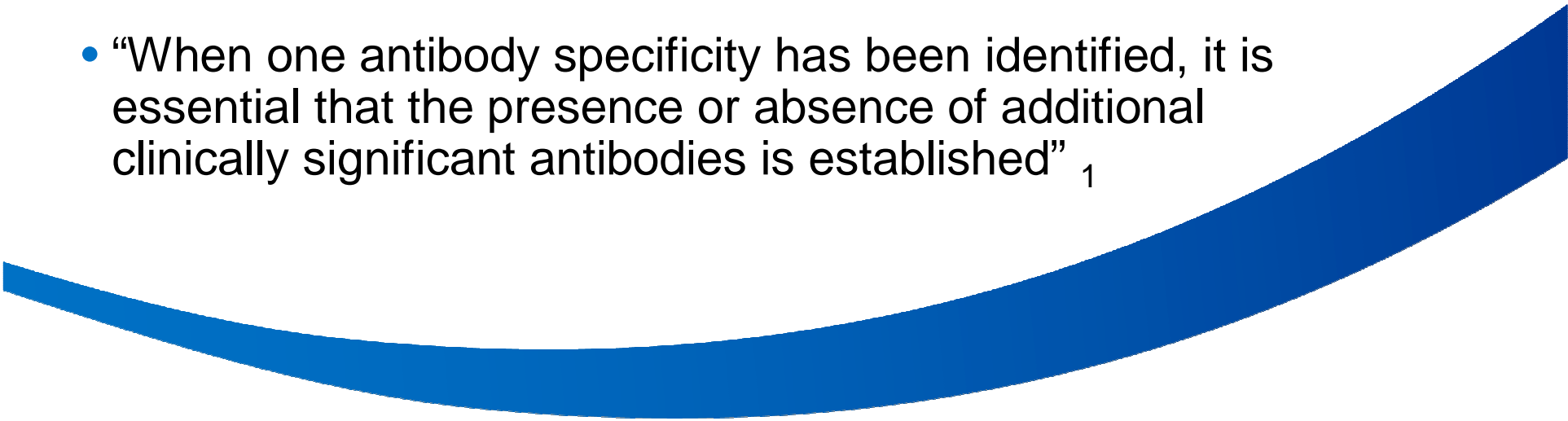
- Red cell genotyping – no obtainable phenotype
- MOD blood grouping
- T activation studies
- IgA deficiency
- Bone Marrow patient monitoring



# When to refer

- Majority of transfusions managed by the hospital transfusion laboratory
  - BUT
  - “If there is any doubt concerning the identity of any antibodies present, or the ability to exclude clinically significant antibodies, a blood sample should be sent to a red cell reference laboratory.” <sup>1</sup>
  - “(ABO) Anomalies should be resolved prior to provision of red cells or other cellular components unless this seriously compromises the clinical care of the patient” <sup>1</sup>
- 

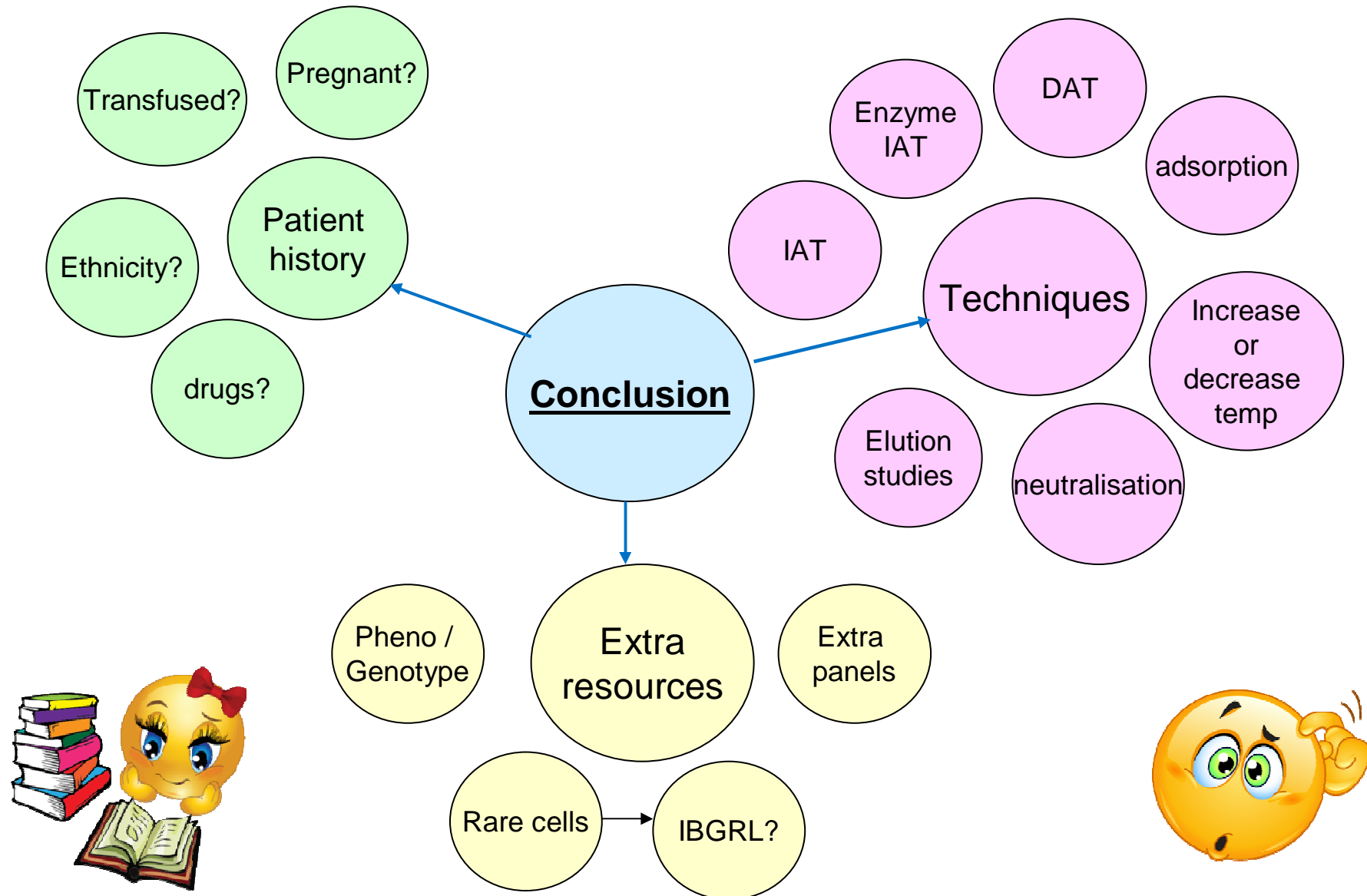
# When to refer

- “If the patient is known to have formed a red cell alloantibody, each new sample should be fully tested to identify or exclude the presence of further alloantibodies”<sub>1</sub>
    - Complicated blood provision?
  - “When one antibody specificity has been identified, it is essential that the presence or absence of additional clinically significant antibodies is established”<sub>1</sub>
- 

# When to refer

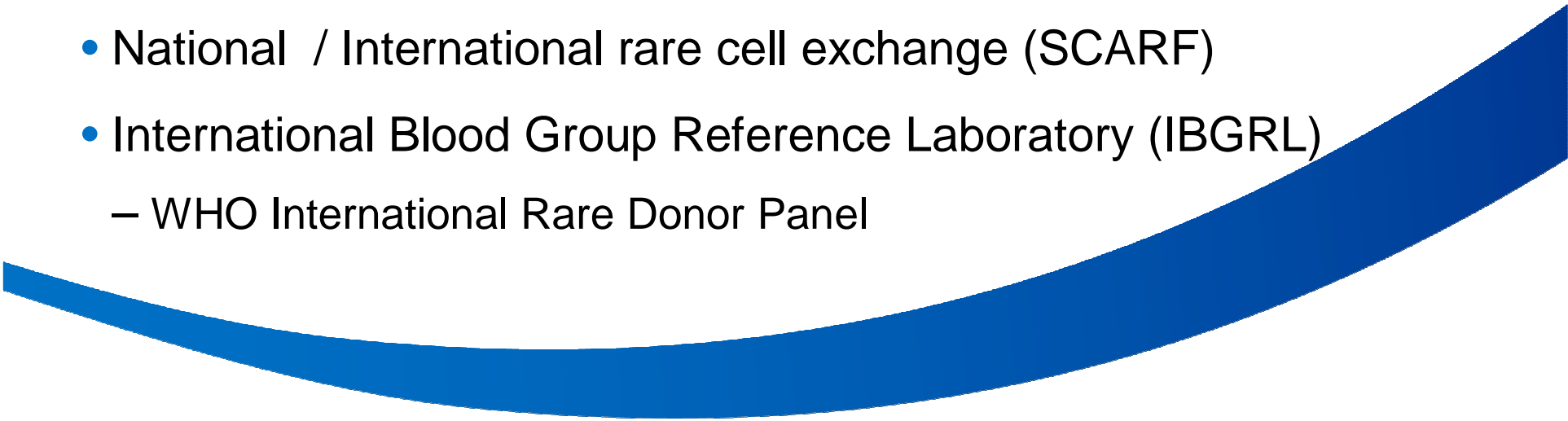
- “Laboratories that are not registered for antibody identification in an accredited external quality assessment scheme should refer samples from all patients that have given positive results in the antibody screen to a laboratory that is registered for antibody identification.”<sub>1</sub>
  - NEQAS (National External Quality Assessment Scheme)
- Fully labelled sample needed!
  - Forename, Surname, DOB, hospital/NHS number, date bled & signature

# How do we come to conclusions?





# Extra Resources

- Additional panels – provided by NHSBT or external reagent company
    - Includes panel of R1R1 and R2R2 RBCs
  - Phenotyping reagents
  - Genotyping
  - Rare phenotyped donors
  - National / International rare cell exchange (SCARF)
  - International Blood Group Reference Laboratory (IBGRL)
    - WHO International Rare Donor Panel
- 

# Assigning specificity

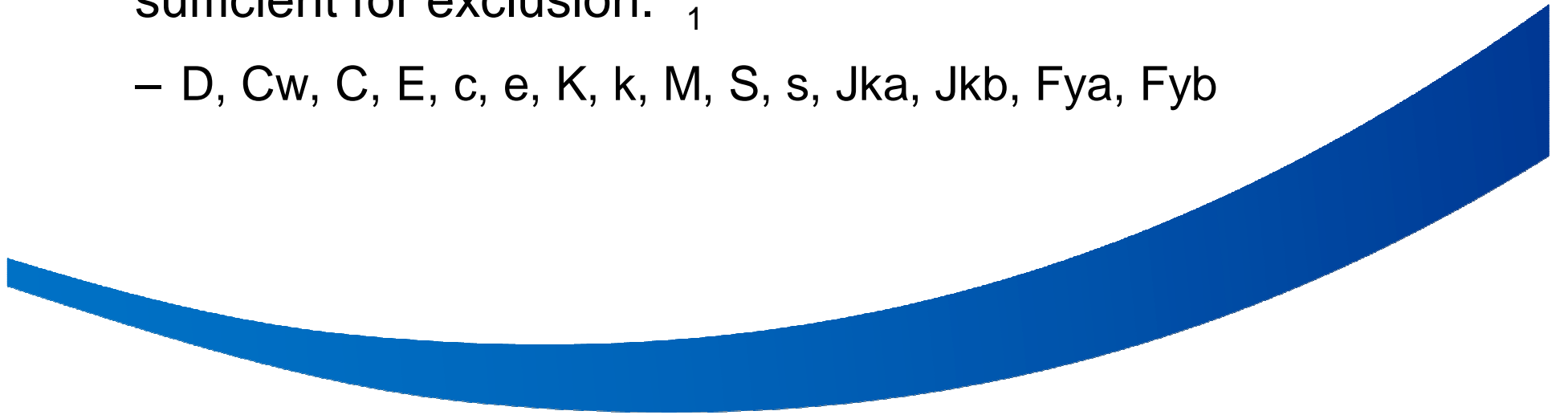
“Antibody specificity should only be assigned when the plasma is reactive with at least two examples of reagent red cells expressing the antigen and non-reactive with at least two examples of reagent red cells lacking the antigen.”<sub>1</sub>



# Exclusions

Failure to recognise all of the antibody specificities within a sample can lead to a **haemolytic transfusion reaction**. Specificities should be excluded using red cells having homozygous expression of the relevant antigen. A single example only of each phenotype is sufficient for exclusion.”<sup>1</sup>

- D, Cw, C, E, c, e, K, k, M, S, s, Jka, Jkb, Fya, Fyb



Effective: 27/04/15

G:009 DD&R:003 Red Cell Immunohaematology:001 Everyone/Reagent product profiles

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Cross-Referenced in Primary Document: SOP883

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# Answers

FORM FRM786/2.2

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NHSBT Reagents		Panel 1		Antibody Investigation Worksheet																	
Sample Name		Requestor		Database Ref No.		Tested by															
Date of Birth		Hosp no		Sample No.		Date Tested															
Product		Lot No.		Product		Lot No.		Product		Lot No.		Product		Lot No.							
Panel in Alsevers		R144 3350		Panel in CellStab		R143 3350		Panel in CellMedia		R163 3350		Panel in LISP		R146 3350							
Panel Papainised in Alsevers		R154 3350		Panel Papainised in CellStab		R153 3350		Panel Papainised in CellMedia		R173 3350		EXPIRY DATE: 2016.05.26									
	Rh	M	N	S	s	P1	Lu*	K	K	Kp*	Le*	Le*	Fy*	Fy*	Jk*	Jk*	Other	IAT	ENZ		
1	R <sub>1</sub> R <sub>1</sub>	0	+	0	+	2	0	0	+	0	+	0	+	0	+	0	+	HLA+	3	4	
2	R <sub>1</sub> R <sub>1</sub>	+	0	+	0	1	+	+	+	0	0	+	0	+	0	+		0	0		
3	R <sub>2</sub> R <sub>2</sub>	0	+	0	+	0	0	0	+	0	+	0	0	+	+	0		3	4		
4	r'r	+	0	0	+	1	0	0	+	0	+	0	0	+	+	0		3	4		
5	r'r	+	0	+	0	0	0	0	+	0	0	+	+	0	0	+		0	0		
6	rr	+	+	0	+	3	0	+	0	0	0	+	+	0	+	0		3	4		
7	rr	0	+	0	+	3	0	+	0	+	0	+	0	0	0	+	Cob+	0	0		
8	rr	0	+	0	+	2	0	0	+	+	0	+	+	0	+	0		3	4		
9	rr	0	+	+	0	0	0	0	+	0	+	0	0	+	+	0	HLA+	3	4		
10	rr	+	0	0	+	0	+	0	+	0	0	+	0	+	0	+		0	0		
Auto																					
Antibody Titre																		Group		Pheno	
Dilution:																		Cell Id		Jk(a-)	
Anti:																		Conclusion			
Archive:																		Anti-Jka by IAT & ENZ			
Anti:																		- additional RBCs not required			
Archive:																		- anti-K excluded by heterozygous cell			
DAT Batch No																		Entered into			
PS																		Database by:			
IgG																		Authorised by:			
IgA																					
IgM																					
C3c																					
C3d																					
Ctl																					
Reagent																					
Batch No's																					
Pipette batch No's																					

G:\009 CD&R\003 Red Cell Immunohaematology\001 Everyone\Reagent product profiles

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# Answers


FORM FRM786/2.2

Effective: 27/04/15

NHSBT Reagents		Panel 1		Antibody Investigation Worksheet																
Sample Name		Patient 3		Requestor				Database Ref No.				Tested by								
Date of Birth				Hosp no				Sample No.				Date Tested								
Product		Lot No.		Product		Lot No.		Product		Lot No.		Product		Lot No.						
Panel in Alsevers		R144 3350		Panel in CellStab		R143 3350		Panel in CellMedia		R163 3350		Panel in LISP		R146 3350						
Panel Papanised in Alsevers		R154 3350		Panel Papanised in CellStab		R153 3350		Panel Papanised in CellMedia		R173 3350		EXPIRY DATE: 2016.05.26								
	Rh	M	N	S	s	P1	Lu*	K	k	Kp*	Le*	La*	Fy*	Fy*	Jk*	Jk*	Other	IAT	EN2	
1	R <sub>1</sub> R <sub>1</sub>	0	+	0	+	2	0	0	+	0	+	0	+	0	+	0	+	HLA+	3	0
2	R <sub>1</sub> R <sub>1</sub>	+	0	+	0	1	+	+	+	0	0	+	0	+	0	+		0	0	
3	R <sub>2</sub> R <sub>2</sub>	0	+	0	+	0	0	0	+	0	+	0	0	+	+	0		0	0	
4	r'r	+	0	0	+	1	0	0	+	0	+	0	0	+	+	0		0	0	
5	r'r	+	0	+	0	0	0	0	+	0	0	+	+	0	0	+		3	0	
6	rr	+	+	0	+	3	0	+	0	0	0	+	+	0	+	0		3	0	
7	rr	0	+	0	+	3	0	+	+	0	+	0	+	0	0	+	Cob+	3	0	
8	rr	0	+	0	+	2	0	0	+	+	0	+	+	0	+	0		3	0	
9	rr	0	+	+	0	0	0	0	+	0	+	0	0	+	+	0	HLA+	0	0	
10	rr	+	0	0	+	0	+	0	+	0	0	+	0	+	0	+		0	0	
Auto		0																		
Antibody Titre																				
Dilution																				
AVL																				
Archive																				
AVL																				
Archive																				
DAT Batch No																				
PS		IgG		IgA		IgM		C3c		C3d		Ctl								
Reagent																				
Batch No's																				
Pipette batch No's																				
Group		Pheno Fy(a-)																		
Conclusion		Anti-Fy <sup>a</sup> by IAT only - additional RBCs not required.																		
Entered into Database by:		Authorised by:																		

# Thank you!

## Any Questions?

- 
1. Milkins, C., Berryman, J., Cantwell, C., Elliott, C., Haggas, R., Jones, J., Rowley, M., Williams, M. and Win, N. (2013), *Guidelines for pre-transfusion compatibility procedures in blood transfusion laboratories*. Transfusion Medicine, 23: 3–35. British Committee for Standards in Haematology