NHS
Blood and Transplant

Red Cell Immunohaematology

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Caring Expert Quality

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The RCI Laboratories

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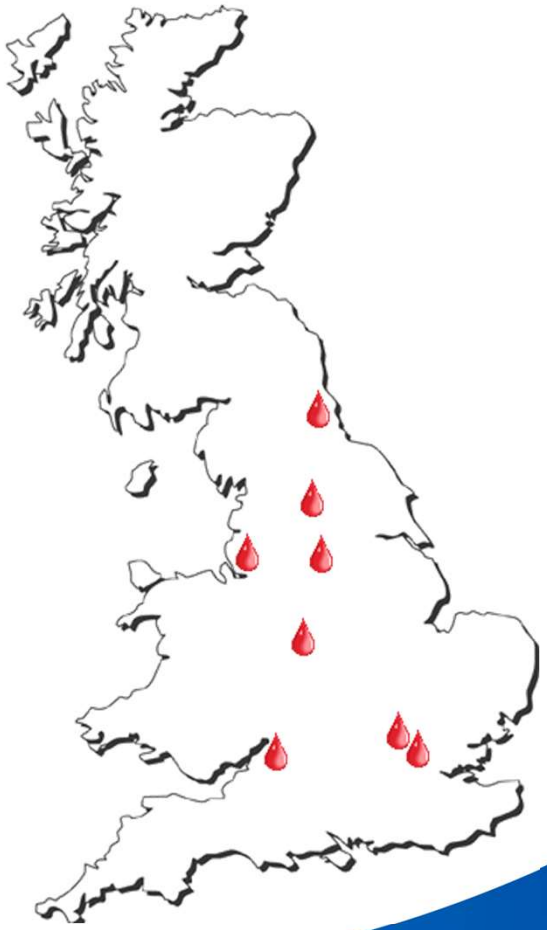
Red Cell Immunohaematology

- Reference laboratories supporting hospital blood banks in England.
- RCI laboratories at NHSBT centers in
  - Newcastle
  - Leeds
  - Sheffield
  - Liverpool
  - Birmingham
  - Bristol (Filton)
  - London (Colindale and Tooting)



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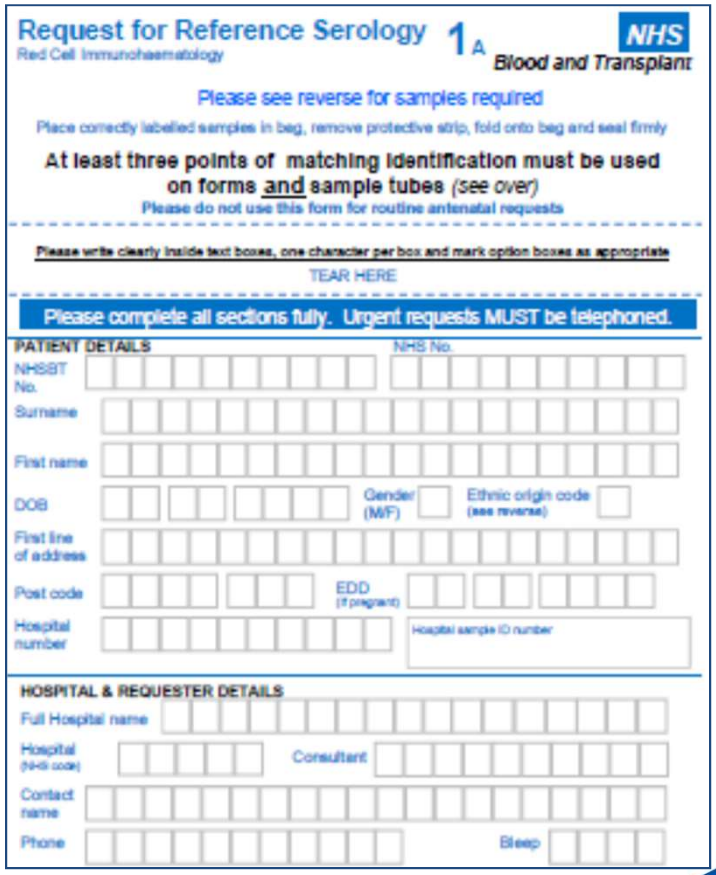
RCI Services

- Blood Grouping Anomalies
- Antibody Investigations
  - Complex antibody investigations
  - Crossmatching
- Antenatal Reference Services
  - Titrations / Quantitations (anti-D, anti-c)
- Fetal-Maternal Haemorrhage
- Transfusion Reaction Investigations



Request for Reference Serology 1A

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Please see reverse for samples required

Place correctly labelled samples in bag, remove protective strip, fold onto bag and seal firmly

At least three points of matching identification must be used on forms and sample tubes *(see over)*

Please do not use this form for routine antenatal requests

Please write clearly inside text boxes, one character per box and mark option boxes as appropriate

TEAR HERE

Please complete all sections fully. Urgent requests MUST be telephoned.

PATIENT DETAILS

NHS No.

NHSBT No.

Surname

First name

DOB

Gender (M/F)

Ethnic origin code (see reverse)

First line of address

Post code

EDD (if pregnant)

Hospital number

Hospital sample ID number

HOSPITAL & REQUESTER DETAILS

Full Hospital name

Hospital (NHS code)

Consultant

Contact name

Phone

Bleep

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Antibody Investigations

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Panels and Cells

- Panel cells from NHSBT reagents
  - Panel 1 and 2
  - Reference Panel 1 (R1R1, for anti-c)
  - Reference Panel 2 (R2R2, for anti-e)
- Rare cells from selected donors
  - From Testing / Rare Cell Exchange Scheme
  - Frozen Cell Bank
  - High frequency negatives, eg. K+k-, U-, Vel-
  - Low frequency positives, eg. Wr(a+), Js(a+), Di(a+)

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Serological Techniques

- A variety of techniques can be employed
  - BioRad gel IAT
  - BioRad enzyme IAT
  - LISS Tube IAT
  - Saline (direct agglutination)
  - Capture-R (*Immucor*)
  - BioVue IAT (*Ortho*)
- Vary temperature, incubation times, etc

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Adsorptions & Elutions

- DAT performed if auto control positive
  - Monospecific anti-IgG, -IgM, -IgA, -C3d, -C3c
- Autoantibodies can be removed by
  - Autoadsorptions: ZZAP-treated own cells
  - Alloadsorptions: paired reagent cells
- Elutions may be used to ascertain specificity of antibody coating red cells
  - Transfusion Reactions
  - Haemolytic Disease of the Fetus & Newborn

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Antibody Neutralisation

- “Nuisance” antibodies can be inhibited or neutralised to reveal any underlying alloantibodies
- Chido-Rogers antibodies
  - Target C4 complement proteins
  - Neutralised by the addition of excess complement (AB serum)
- Knops-McCoy antibodies
  - Target CR1 molecule on red cells
  - Neutralised by the addition of recombinant KNIR reagent

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Phenotyping & Genotyping

- Allo or autoantibody?
- Phenotyping
  - Serological testing using antisera
  - Phenotyping cannot be performed if the patient has had a recent transfusion.
- Genotyping
  - DNA Sequencing
  - Consider in: transfusion-dependent patients (eg. sickle cell), patients with multiple antibodies, before starting treatments, eg. Daratumumab

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Drug-Related Panreactivity

- In some monoclonal antibody therapies the *drug* causes positive reactions vs all cells
- Daratumumab (Darzalex)
  - Anti-CD38 used in Multiple Myeloma
  - Drug action inhibited using DTT
- Camellia
  - Anti-CD47 used in AML
  - Genotype-matched blood issued

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Tertiary Referral

- The International Blood Group Reference Laboratory (IBGRL) is located at NHSBT Filton
  - Samples may be referred to IBGRL from RCI if antibody specificity cannot be ascertained
  - IBGRL receive samples from all over the World.
- The National Frozen Blood Bank is located at NHSBT Liverpool
  - Rare donors are identified by Testing and red cell units frozen
  - Rare, frozen blood can be requested when required
  - eg. Bombay phenotype (with anti-H)

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Interpreting Antigrams

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The Rules of the Game I

- BSH Guidelines for pre-transfusion compatibility procedures in blood transfusion laboratories (2002).
- *Always* do your best to exclude all clinically significant antibodies.
  - Excluding anti-Cw, -P1, -Kpa, -Lua, -Lea, Leb not *strictly* necessary if you don't have appropriate cells
- Don't forget your screening results!!!

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The Rules of the Game II

- Antibody exclusions:
  - *"…the presence of anti-Jka, anti-Jkb, anti-S, anti-s, anti-Fya and anti-Fyb should be excluded using red cells having homozygous expression of the relevant antigen…"*
  - ***"…A single example only of each phenotype is sufficient for exclusion…"***

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The Rules of the Game III

- Antibody identification:
  - *"…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…"*

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The Enzyme Panel

- Papain most commonly used (from Papaya)
- Papain enhances the reaction strength of
  - Rh system antibodies (anti-D, -C, -c, -E, -e, -Cw)
  - Kidd system antibodies (anti-Jka, -Jkb)
- Papain destroys some red cell antigens; so negative reactions will be observed with
  - MNS system antibodies (anti-M, -N, -S, -s)
  - Duffy system antibodies (anti-Fya, -Fyb)

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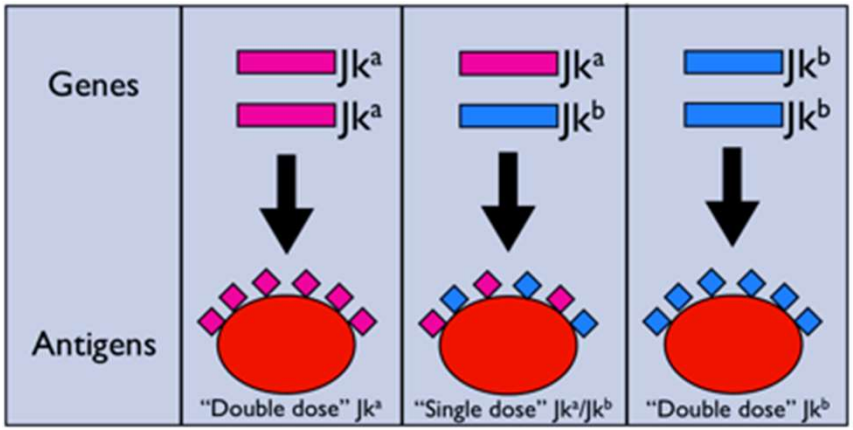
The Dosage Effect

- "Dosage" refers to the effect of seeing stronger reactions with *homozygous* antigen expression compared to *heterozygous* expression.
  - Eg. anti-Jka may react stronger with Jk(a+b-) cells than Jk(a+b+) cells



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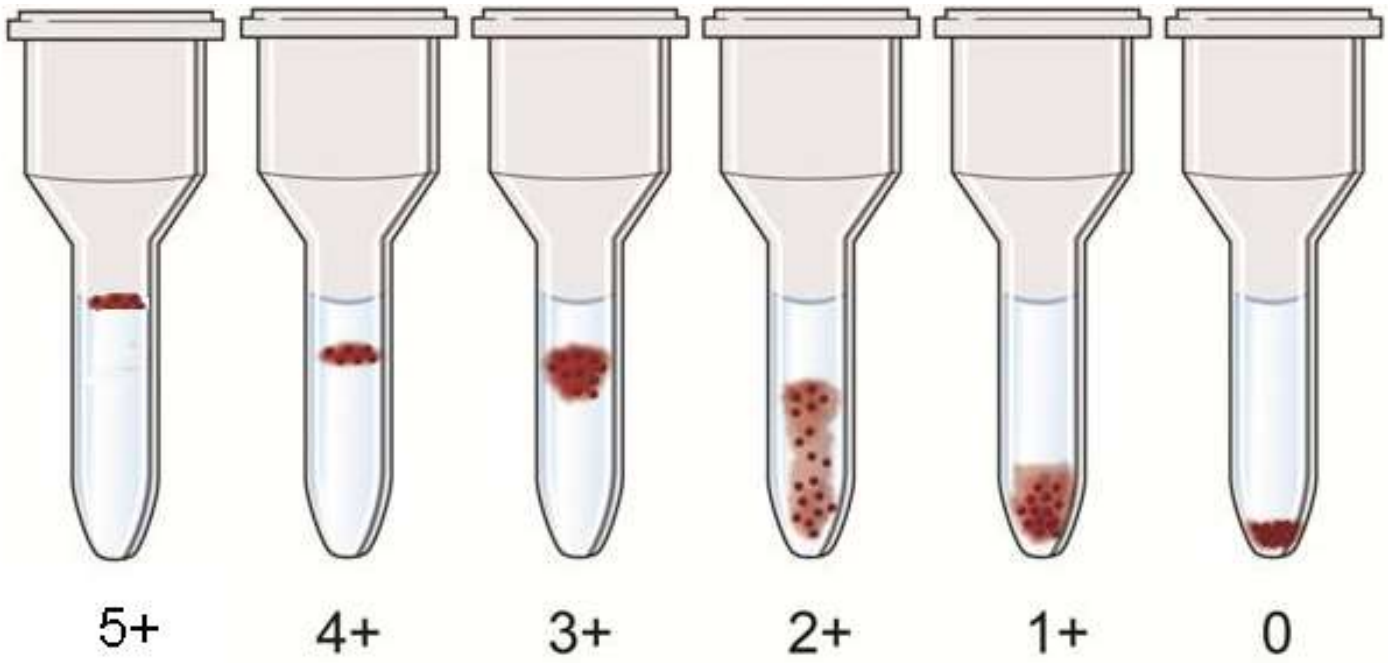
Gel IAT Grading



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Interpreting Antigrams

Cell	Rh	M	N	S	s	P1	Lu^a	K	k	Kp^a	Le^a	Le^b	Fy^a	Fy^b	Jk^a	Jk^b	
1	$R_1^wR_1$	0	+	0	+	5	0	+	+	0	0	+	0	+	0	+	**0**
2	R_1R_1	+	+	+	0	0	0	0	+	0	+	0	+	0	+	0	**4**
3	R_2R_2	0	+	0	+	3	0	0	+	0	+	0	0	+	+	0	**0**
4	r'r	+	0	+	0	3	0	0	+	0	0	+	0	+	+	0	**0**
5	r''r	+	0	+	0	0	0	0	+	0	0	+	+	0	0	+	**4**
6	rr	+	0	0	+	0	0	+	0	0	0	+	0	+	+	0	**0**
7	rr	+	0	+	0	0	0	+	+	0	0	0	+	0	+	0	**4**
8	rr	0	+	0	+	2	0	0	+	+	0	+	+	0	+	0	**4**
9	rr	0	+	+	0	3	0	0	+	0	0	+	+	0	0	+	**4**
10	rr	+	0	+	0	3	+	0	+	0	+	0	0	+	0	+	**0**

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Interpreting Antigrams

Cell	Rh	M	N	S	s	P1	Lu^a	K	k	Kp^a	Le^a	Le^b	Fy^a	Fy^b	Jk^a	Jk^b	
1	$R_1^wR_1$	0	+	0	+	5	0	+	+	0	0	+	0	+	0	+	0
2	R_1R_1	+	+	+	0	0	0	0	+	0	+	0	+	0	+	0	4
3	R_2R_2	0	+	0	+	3	0	0	+	0	+	0	0	+	+	0	0
4	r'r	+	0	+	0	3	0	0	+	0	0	+	0	+	+	0	0
5	r''r	+	0	+	0	0	0	0	+	0	0	+	+	0	0	+	4
6	rr	+	0	0	+	0	0	+	0	0	0	+	0	+	+	0	0
7	rr	+	0	+	0	0	0	+	+	0	0	0	+	0	+	0	4
8	rr	0	+	0	+	2	0	0	+	+	0	+	+	0	+	0	4
9	rr	0	+	+	0	3	0	0	+	0	0	+	+	0	0	+	4
10	rr	+	0	+	0	3	+	0	+	0	+	0	0	+	0	+	0

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Interpreting Antigrams

Cell	Rh	M	N	S	s	P1	Lu^a	K	k	Kp^a	Le^a	Le^b	Fy^a	Fy^b	Jk^a	Jk^b	
1	~~$R_z{}^wR_1$~~	0	~~+~~	0	~~+~~	~~5~~	0	+	+	0	0	~~+~~	0	~~+~~	0	~~+~~	**0**
2	R_1R_1	+	+	+	0	0	0	0	+	0	+	0	+	0	+	0	**4**
3	~~R_2R_2~~	0	+	0	+	3	0	0	~~+~~	0	~~+~~	0	0	+	~~+~~	0	**0**
4	r'r	~~+~~	0	~~+~~	0	3	0	0	+	0	0	+	0	+	+	0	**0**
5	r''r	+	0	+	0	0	0	0	+	0	0	+	+	0	0	+	**4**
6	rr	+	0	0	+	0	0	~~+~~	0	0	0	+	0	+	+	0	**0**
7	rr	+	0	+	0	0	0	+	+	0	0	0	+	0	+	0	**4**
8	rr	0	+	0	+	2	0	0	+	+	0	+	+	0	+	0	**4**
9	rr	0	+	+	0	3	0	0	+	0	0	+	+	0	0	+	**4**
10	rr	+	0	+	0	3	~~+~~	0	+	0	+	0	0	+	0	+	**0**

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Your Turn!

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Panel Sheet Exercise

- "IAT" = BioRad Gel IAT results
- "ENZ" = BioRad Enzyme results (papainised cells)
- Effect of Papain (enzyme panel)
  - Enhances reactions with anti-D, -C, -c, -E, -e, -C^w, -Jka, -Jkb
  - Destroys M, N, S, s, Fya, Fyb antigens

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Panel 1

Instructions for use can be found at http://www.blood.co.uk/reagents

	Rh	C	D	E	c	e	C^w	M	N	S	s	P1	Lu^a	K	k	Kp^a	Le^a	Le^b	Fy^a	Fy^b	Jk^a	Jk^b	Other	IAT	CW2				
1	$R_1^wR_1$	+	+	0	0	+	+	+	+	0	+	4	0	+	+	0	+	0	0	+	+	0		0	0				
2	R_1R_1	+	+	0	0	+	0	+	0	+	0	3	0	0	+	0	0	+	+	0	0	+		0	0				
3	R_2R_2	0	+	+	+	0	0	0	+	0	+	2	0	0	+	+	0	+	+	0	0	+		3	5				
4	r'r	+	0	0	+	+	0	0	+	0	+	2	0	0	+	0	+	0	0	+	0	+	Kna-	0	0				
5	r''r	0	0	+	+	+	0	+	0	+	0	1	0	0	+	0	+	0	0	+	+	0		4	5				
6	rr	0	0	0	+	+	0	+	0	+	0	4	0	+	0	0	0	+	+	0	0	+		0	0				
7	rr	0	0	0	+	+	0	0	+	0	+	1	0	+	+	0	0	+	+	w	0	+		0	0				
8	rr	0	0	0	+	+	0	+	+	0	+	0	0	0	+	+	+	0	+	0	+	0		0	0				
9	rr	0	0	0	+	+	0	+	0	0	+	0	+	0	+	0	0	+	0	+	0	+		0	0				
10	rr	0	0	0	+	+	0	0	+	+	0	3	0	0	+	0	0	+	0	+	+	0		0	0				
																							AUTO	0	/				

Reagent							DAT Profile	Anti-IgG	IgA	IgM	C3c	C3d	Ctrl
Lot No.							Result						

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Panel 1

Instructions for use can be found at http://www.blood.co.uk/reagents

	Rh	C	D	E	c	e	C^w	M	N	S	s	P1	Lu^a	K	k	Kp^a	Le^a	Le^b	Fy^a	Fy^b	Jk^a	Jk^b	Other	IAT	CAT
1	$R_1^wR_1$	+	+	0	0	+	+	+	+	0	+	4	0	+	+	0	+	0	0	+	+	0		0	0
2	R_1R_1	+	+	0	0	+	0	+	0	+	0	3	0	0	+	0	0	+	+	0	0	+		0	0
3	R_2R_2	0	+	+	+	0	0	0	+	0	+	2	0	0	+	+	0	+	+	0	0	+		3	5
4	r'r	+	0	0	+	+	0	0	+	0	+	2	0	0	+	0	+	0	0	+	0	+	Kna-	0	0
5	r''r	0	0	+	+	+	0	+	0	+	0	1	0	0	+	0	+	0	0	+	+	0		4	5
6	rr	0	0	0	+	+	0	+	0	+	0	4	0	+	0	0	0	+	+	0	0	+		0	0
7	rr	0	0	0	+	+	0	0	+	0	+	1	0	+	+	0	0	+	+	w	0	+		0	0
8	rr	0	0	0	+	+	0	+	+	0	+	0	0	0	+	+	+	0	+	0	+	0		0	0
9	rr	0	0	0	+	+	0	+	0	0	+	0	+	0	+	0	0	+	0	+	0	+		0	0
10	rr	0	0	0	+	+	0	0	+	+	0	3	0	0	+	0	0	+	0	+	+	0		0	0
																							AUTO	0	/

Reagent							DAT Profile	Anti-IgG	IgA	IgM	C3c	C3d	Ctrl
Lot No.							Result						

Anti-E

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Panel 2

Instructions for use can be found at http://www.blood.co.uk/reagents

	Rh	C	D	E	c	e	C^w	M	N	S	s	P1	Lu^a	K	k	Kp^a	Le^a	Le^b	Fy^a	Fy^b	Jk^a	Jk^b	Other	IAT	EN2				
1	$R_1^wR_1$	+	+	0	0	+	+	+	+	0	+	4	0	+	+	0	+	0	0	+	+	0		0	0				
2	R_1R_1	+	+	0	0	+	0	+	0	+	0	3	0	0	+	0	0	+	+	0	0	+		3	0				
3	R_2R_2	0	+	+	+	0	0	0	+	0	+	2	0	0	+	+	0	+	+	0	0	+		3	0				
4	r'r	+	0	0	+	+	0	0	+	0	+	2	0	0	+	0	+	0	0	+	0	+	Kna-	0	0				
5	r''r	0	0	+	+	+	0	+	0	+	0	1	0	0	+	0	+	0	0	+	+	0		0	0				
6	rr	0	0	0	+	+	0	+	0	+	0	4	0	+	0	0	0	+	+	0	0	+		3	0				
7	rr	0	0	0	+	+	0	0	+	0	+	1	0	+	+	0	0	+	+	w	0	+		3	0				
8	rr	0	0	0	+	+	0	+	+	0	+	0	0	0	+	+	+	0	+	0	+	0		3	0				
9	rr	0	0	0	+	+	0	+	0	0	+	0	+	0	+	0	0	+	0	+	0	+		0	0				
10	rr	0	0	0	+	+	0	0	+	+	0	3	0	0	+	0	0	+	0	+	+	0		0	0				
																							AUTO	0	/				

Reagent							DAT Profile	Anti-IgG	IgA	IgM	C3c	C3d	Ctrl
Lot No.							Result						

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Panel 2

Instructions for use can be found at http://www.blood.co.uk/reagents

	Rh	C	D	E	c	e	C^w	M	N	S	s	P1	Lu^a	K	k	Kp^a	Le^a	Le^b	Fy^a	Fy^b	Jk^a	Jk^b	Other	IAT	EN2				
1	$R_1^wR_1$	+	+	0	0	+	+	+	+	0	+	4	0	+	+	0	+	0	0	+	+	0		0	0				
2	R_1R_1	+	+	0	0	+	0	+	0	+	0	3	0	0	+	0	0	+	+	0	0	+		3	0				
3	R_2R_2	0	+	+	+	0	0	0	+	0	+	2	0	0	+	+	0	+	+	0	0	+		3	0				
4	r'r	+	0	0	+	+	0	0	+	0	+	2	0	0	+	0	+	0	0	+	0	+	Kna-	0	0				
5	r''r	0	0	+	+	+	0	+	0	+	0	1	0	0	+	0	+	0	0	+	+	0		0	0				
6	rr	0	0	0	+	+	0	+	0	+	0	4	0	+	0	0	0	+	+	0	0	+		3	0				
7	rr	0	0	0	+	+	0	0	+	0	+	1	0	+	+	0	0	+	+	w	0	+		3	0				
8	rr	0	0	0	+	+	0	+	+	0	+	0	0	0	+	+	+	0	+	0	+	0		3	0				
9	rr	0	0	0	+	+	0	+	0	0	+	0	+	0	+	0	0	+	0	+	0	+		0	0				
10	rr	0	0	0	+	+	0	0	+	+	0	3	0	0	+	0	0	+	0	+	+	0		0	0				
																							AUTO	0	/				

Reagent							DAT Profile	Anti-IgG	IgA	IgM	C3c	C3d	Ctrl
Lot No.							Result						

Anti-Fya

Can't exclude anti-Kpa

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Panel 3

Instructions for use can be found at http://www.blood.co.uk/reagents

	Rh	C	D	E	c	e	C^w	M	N	S	s	P1	Lu^a	K	k	Kp^a	Le^a	Le^b	Fy^a	Fy^b	Jk^a	Jk^b	Other	IAT	EN2		IAT vs Eluate		
1	$R_1^wR_1$	+	+	0	0	+	+	+	+	0	+	4	0	+	+	0	+	0	0	+	+	0		0	0		1		
2	R_1R_1	+	+	0	0	+	0	+	0	+	0	3	0	0	+	0	0	+	+	0	0	+		0	0		0		
3	R_2R_2	0	+	+	+	0	0	0	+	0	+	2	0	0	+	+	0	+	+	0	0	+		0	0		0		
4	r'r	+	0	0	+	+	0	0	+	0	+	2	0	0	+	0	+	0	0	+	0	+	Kna-	0	0		0		
5	r''r	0	0	+	+	+	0	+	0	+	0	1	0	0	+	0	+	0	0	+	+	0		0	0		1		
6	rr	0	0	0	+	+	0	+	0	+	0	4	0	+	0	0	0	+	+	0	0	+		0	0		0		
7	rr	0	0	0	+	+	0	0	+	0	+	1	0	+	+	0	0	+	+	w	0	+		0	0		0		
8	rr	0	0	0	+	+	0	+	+	0	+	0	0	0	+	+	+	0	+	0	+	0		0	0		1		
9	rr	0	0	0	+	+	0	+	0	0	+	0	+	0	+	0	0	+	0	+	0	+		0	0		0		
10	rr	0	0	0	+	+	0	0	+	+	0	3	0	0	+	0	0	+	0	+	+	0		0	0		1		
																							Auto	3	/		/		

Reagent							DAT Profile	Anti-IgG	IgA	IgM	C3c	C3d	Ctrl
Lot No.							Result	3mf	0	0	0	0	0

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Panel 3

Instructions for use can be found at http://www.blood.co.uk/reagents

	Rh	C	D	E	c	e	C^w	M	N	S	s	P1	Lu^a	K	k	Kp^a	Le^a	Le^b	Fy^a	Fy^b	Jk^a	Jk^b	Other	IAT	EN2		IAT vs Enzyme		
1	$R_1^wR_1$	+	+	0	0	+	+	+	+	0	+	4	0	+	+	0	+	0	0	+	+	0		0	0		1		
2	R_1R_1	+	+	0	0	+	0	+	0	+	0	3	0	0	+	0	0	+	+	0	0	+		0	0		0		
3	R_2R_2	0	+	+	+	0	0	0	+	0	+	2	0	0	+	+	0	+	+	0	0	+		0	0		0		
4	r'r	+	0	0	+	+	0	0	+	0	+	2	0	0	+	0	+	0	0	+	0	+	Kna-	0	0		0		
5	r''r	0	0	+	+	+	0	+	0	+	0	1	0	0	+	0	+	0	0	+	+	0		0	0		1		
6	rr	0	0	0	+	+	0	+	0	+	0	4	0	+	0	0	0	+	+	0	0	+		0	0		0		
7	rr	0	0	0	+	+	0	0	+	0	+	1	0	+	+	0	0	+	+	w	0	+		0	0		0		
8	rr	0	0	0	+	+	0	+	+	0	+	0	0	0	+	+	+	0	+	0	+	0		0	0		1		
9	rr	0	0	0	+	+	0	+	0	0	+	0	+	0	+	0	0	+	0	+	0	+		0	0		0		
10	rr	0	0	0	+	+	0	0	+	+	0	3	0	0	+	0	0	+	0	+	+	0		0	0		1		
																							Auto	3	/		/		

Reagent							DAT Profile	Anti-IgG	IgA	IgM	C3c	C3d	Ctrl
Lot No.							Result	3mf	0	0	0	0	0

Anti-Jka

Can't exclude anti-Cw

NHS
Blood and Transplant

Panel 4

Instructions for use can be found at http://www.blood.co.uk/reagents

	Rh	C	D	E	c	e	C^w	M	N	S	s	P1	Lu^a	K	k	Kp^a	Le^a	Le^b	Fy^a	Fy^b	Jk^a	Jk^b	Other	IAT	ENZ				
1	$R_1^wR_1$	+	+	0	0	+	+	+	+	0	+	4	0	+	+	0	+	0	0	+	+	0		3	5				
2	R_1R_1	+	+	0	0	+	0	+	0	+	0	3	0	0	+	0	0	+	+	0	0	+		3	5				
3	R_2R_2	0	+	+	+	0	0	0	+	0	+	2	0	0	+	+	0	+	+	0	0	+		3	0				
4	r'r	+	0	0	+	+	0	0	+	0	+	2	0	0	+	0	+	0	0	+	0	+	Kna-	3	5				
5	r''r	0	0	+	+	+	0	+	0	+	0	1	0	0	+	0	+	0	0	+	+	0		0	0				
6	rr	0	0	0	+	+	0	+	0	+	0	4	0	+	0	0	0	+	+	0	0	+		0	0				
7	rr	0	0	0	+	+	0	0	+	0	+	1	0	+	+	0	0	+	+	w	0	+		3	0				
8	rr	0	0	0	+	+	0	+	+	0	+	0	0	0	+	+	+	0	+	0	+	0		3	0				
9	rr	0	0	0	+	+	0	+	0	0	+	0	+	0	+	0	0	+	0	+	0	+		3	0				
10	rr	0	0	0	+	+	0	0	+	+	0	3	0	0	+	0	0	+	0	+	+	0		0	0				
																							Auto	0	/				

Reagent							DAT Profile	Anti-IgG	IgA	IgM	C3c	C3d	Ctrl
Lot No.							Result						

NHS
Blood and Transplant

Panel 4

Instructions for use can be found at http://www.blood.co.uk/reagents

	Rh	C	D	E	c	e	C^w	M	N	S	s	P1	Lu^a	K	k	Kp^a	Le^a	Le^b	Fy^a	Fy^b	Jk^a	Jk^b	Other	IAT	ENZ
1	$R_1^wR_1$	+	+	0	0	+	+	+	+	0	+	4	0	+	+	0	+	0	0	+	+	0		3	5
2	R_1R_1	+	+	0	0	+	0	+	0	+	0	3	0	0	+	0	0	+	+	0	0	+		3	5
3	R_2R_2	0	+	+	+	0	0	0	+	0	+	2	0	0	+	+	0	+	+	0	0	+		3	0
4	r'r	+	0	0	+	+	0	0	+	0	+	2	0	0	+	0	+	0	0	+	0	+	Kna-	3	5
5	r''r	0	0	+	+	+	0	+	0	+	0	1	0	0	+	0	+	0	0	+	+	0		0	0
6	rr	0	0	0	+	+	0	+	0	+	0	4	0	+	0	0	0	+	+	0	0	+		0	0
7	rr	0	0	0	+	+	0	0	+	0	+	1	0	+	+	0	0	+	+	w	0	+		3	0
8	rr	0	0	0	+	+	0	+	+	0	+	0	0	0	+	+	+	0	+	0	+	0		3	0
9	rr	0	0	0	+	+	0	+	0	0	+	0	+	0	+	0	0	+	0	+	0	+		3	0
10	rr	0	0	0	+	+	0	0	+	+	0	3	0	0	+	0	0	+	0	+	+	0		0	0
																							Auto	0	/

Reagent							DAT Profile	Anti-IgG	IgA	IgM	C3c	C3d	Ctrl
Lot No.							Result						

Anti-C, Anti-s

Can't exclude anti-Cw, Lua, Kpa

NHS
Blood and Transplant

Panel 5

	Rh	C	D	E	c	e	C^w	M	N	S	s	P1	Lu^a	K	k	Kp^a	Le^a	Le^b	Fy^a	Fy^b	Jk^a	Jk^b	Other	IAT				
1	R1wR1	+	+	0	0	+	+	0	+	0	+	0	0	0	+	0	+	0	0	+	0	+	Bgb+	0				
2	R1wR1	+	+	0	0	+	+	+	0	+	0	0	0	0	+	0	0	+	+	0	+	0	Cob+	3				
3	R1Rz	+	+	+	0	+	0	+	+	0	+	0	0	0	+	0	0	+	0	+	0	+		0				
4	R1Rz	+	+	+	0	+	0	0	+	0	+	4	0	0	+	0	0	+	+	0	+	0		0				
5	Ror	0	+	0	+	+	0	+	0	0	+	4	0	0	+	0	0	+	0	0	+	0	Dob- Goa+	5				
6	R1R1	+	+	0	0	+	0	0	+	+	0	1	0	+	0	0	0	0	w	0	0	+		0				
7	R1R1	+	+	0	0	+	0	+	0	0	+	0	0	+	+	0	0	+	0	+	+	0		3				
8	R1R1	+	+	0	0	+	0	0	+	0	+	2	0	0	+	+	0	+	+	0	+	0		0				
9	R1R1	+	+	0	0	+	0	+	0	+	0	3	0	0	+	0	+	0	0	+	0	+		3				
10	R1R1	+	+	0	0	+	0	+	+	0	+	3	+	0	+	0	0	+	+	0	0	+	Cob+	0				
																							AUTO	0				

Reagent							DAT Profile	Anti-IgG	IgA	IgM	C3c	C3d	Ctrl
Lot No.							Result						

NHS
Blood and Transplant

Panel 5

	Rh	C	D	E	c	e	C^w	M	N	S	s	P1	Lu^a	K	k	Kp^a	Le^a	Le^b	Fy^a	Fy^b	Jk^a	Jk^b	Other	IAT				
1	R1wR1	+	+	0	0	+	+	0	+	0	+	0	0	0	+	0	+	0	0	+	0	+	Bgb+	0				
2	R1wR1	+	+	0	0	+	+	+	0	+	0	0	0	0	+	0	0	+	+	0	+	0	Cob+	3				
3	R1Rz	+	+	+	0	+	0	+	+	0	+	0	0	0	+	0	0	+	0	+	0	+		0				
4	R1Rz	+	+	+	0	+	0	0	+	0	+	4	0	0	+	0	0	+	+	0	+	0		0				
5	Ror	0	+	0	+	+	0	+	0	0	+	4	0	0	+	0	0	+	0	0	+	0	Dob- Goa+	5				
6	R1R1	+	+	0	0	+	0	0	+	+	0	1	0	+	0	0	0	0	w	0	0	+		0				
7	R1R1	+	+	0	0	+	0	+	0	0	+	0	0	+	+	0	0	+	0	+	+	0		3				
8	R1R1	+	+	0	0	+	0	0	+	0	+	2	0	0	+	+	0	+	+	0	+	0		0				
9	R1R1	+	+	0	0	+	0	+	0	+	0	3	0	0	+	0	+	0	0	+	0	+		3				
10	R1R1	+	+	0	0	+	0	+	+	0	+	3	+	0	+	0	0	+	+	0	0	+	Cob+	0				
																							AUTO	0				
Reagent													DAT Profile		Anti-IgG		IgA		IgM		C3c		C3d		Ctrl			
Lot No.													Result															

Anti-M, Anti-c

Need two M- c+ cells to confirm anti-c.
Anti-M showing dosage

NHS
Blood and Transplant

Panel 6

Instructions for use can be found at http://www.blood.co.uk/reagents

	Rh	C	D	E	c	e	C^w	M	N	S	s	P1	Lu^a	K	k	Kp^a	Le^a	Le^b	Fy^a	Fy^b	Jk^a	Jk^b	Other	IAT	37C				
1	$R_1^wR_1$	+	+	0	0	+	+	+	0	+	0	0	0	+	+	0	+	0	0	+	0	+		3	S				
2	R_1R_1	+	+	0	0	+	0	0	+	0	+	0	0	0	+	0	0	+	+	0	+	0		3	S				
3	R_2R_2	0	+	+	+	0	0	+	0	+	0	2	0	0	+	0	+	0	+	0	0	+	HLA+	3	S				
4	r'r	+	0	0	+	+	0	0	+	0	+	0	0	0	+	0	+	0	+	+	+	0		3	S				
5	r''r	0	0	+	+	+	0	0	+	0	+	4	+	0	+	0	0	+	0	+	+	0		3	S				
6	rr	0	0	0	+	+	0	+	0	+	0	1	0	+	0	0	0	+	+	0	+	0		3	S				
7	rr	0	0	0	+	+	0	0	+	0	+	3	0	+	+	0	+	0	0	+	+	0	Cob+	3	S				
8	rr	0	0	0	+	+	0	0	+	0	+	0	0	0	+	+	0	+	+	0	+	0		3	S				
9	rr	0	0	0	+	+	0	+	0	0	+	2	+	0	+	0	0	+	0	+	0	+		3	S				
10	rr	0	0	0	+	+	0	0	+	+	0	3	0	0	+	0	+	0	+	0	0	+	Cob+	3	S				
																							Auto	3					

Reagent							DAT Profile	Anti-IgG	IgA	IgM	C3c	C3d	Ctrl
Lot No.							Result	3	0	0	0	0	0