

Red Cell Immunohaematology

What is RCI?



- National support for Transfusion Laboratories
- RCI labs located in Blood Centres in Birmingham, Bristol (Filton), London (Collindale, Tooting), Liverpool and Sheffield
- Liverpool hosts the NFFB and reagents
- Filton hosts the IBGRL
- Majority of blood transfusions can be facilitated by hospitals, BUT..



BCSH Guidelines 2012...



- If there is any doubt concerning the identity of any antibodies present, or the ability to exclude clinically significant antibodies, a sample should be sent to a red cell reference laboratory.
- Laboratories that are not registered for antibody investigation in an accredited external quality assurance 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.

BCSH Guidelines 2012...

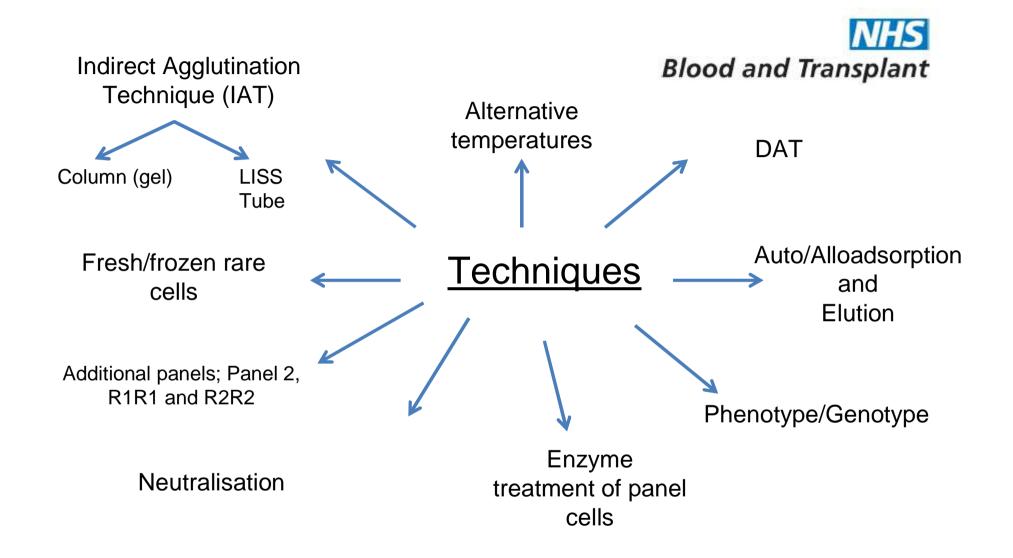


- If a patient is known to have (ever) formed a red cell alloantibody, each new sample must be fully tested to exclude the presence of further alloantibodies.
- When one antibody specificity is detected it is essential that the presence or absence of additional clinically significant alloantibodies is established.

Why Refer to RCI?



- Rare/Anomalous ABO/D blood grouping
- Antibody Confirmation/Identification
- Complex mixtures of antibodies
- Antenatal Investigations;
 - Quantification and titration
 - FMH Investigation
 - Provision of suitable blood for delivery/IUT
- AIHAs/ DAT positive patients
- Suspected Haemolytic Transfusion Reactions
- Advice!
- Panic?





- Via NHSBT Liverpool and in liaison with the International Blood Group Reference Laboratory (IBGRL) RCI have access to additional reagents that may not be available to Hospital Labs;
 - Reference antibody identification panels Rare cells to confirm or exclude specificity
 - Rare antisera for phenotyping
 - National Frozen Cell Bank
 - National / international rare cell exchange
 - WHO International Rare Cell Donor Panel





- Antibody specificity should only be assigned when the plasma is reactive with at least 2 examples of reagent red cells expressing the antigen and non-reactive with at least 2 examples of reagent red cells lacking the antigen.
- When one antibody specificity has been identified, it is essential that the presence or absence of additional clinically significant antibodies should be established. This can be demonstrated by choosing reagent red cells that are negative for the recognised specificity but positive for other antigens to which clinically significant antibodies may arise.

BMS Specialist

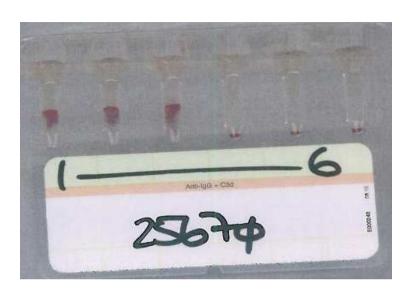


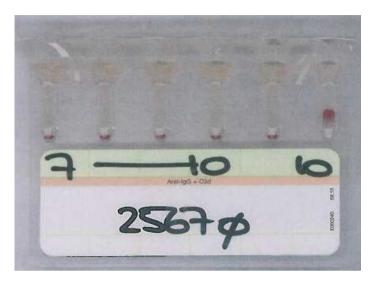


 Failure to recognise all of the antibody specificities within a sample can lead to a haemolytic transfusion reaction.
 Specificities should be excluded using red cells having homozygous expression of the relevant antigen. A single example only of each phenotype is sufficient for exclusion.



Example Cases









Sample	Name					Reques	tor					Data	base Re	f No.				Tested by		
Date of	Birth		-			Hosp no	,		- 1			Sam	ple No.					Date Test	ed	
roduc	,			Lot No.		Product				Lot No.		Produ		- 462		Lot I		Product Panel in L	ISP	Lot No. R146 3288
	n Alsevers			R144 328		Panel in	CellSta	b Cal	IIC to b	R143 3 R153 3		Panel	in CellM Papanis	ed in Co	IIMedia				ATE: 2014.01.0	9
Panel P	apainised i	7	-	R154 328	-	Panel P	1000		ISTAD	Kp*	Le"	Leb	Fy	Fy	Jka	Jkb	Other	IAT	ENEL	
	Rh	M	N	-	s	P1	Lu*	К	K	0	0	+	0	+	0	+	MAR weak	3	5	
1	R ₁ ^w R ₁	0	+	0	+	5	0	*	+	-			+	0	+	0	100000000000000000000000000000000000000	3	<	
2	R ₁ R ₁	+	+	+	0	0	0	0	+	0	+	0	-	+	+	0		1	3	
3	R ₂ R ₂	0	+	0	+	3	0	0	+	0	+	0	0	-		0	Cob+	10	10	
4	r'r	+	0	+	0	3	0	0	+	0	0	+	0	+	+		COD	10	0	1
5	r"r	+	0	+	0	0	0	0	+	0	0	+	+	0	0	+		0	0	
6	rr	+	0	0	+	0	0	+	0	0	0	+	0	+	+	0		- 0	19-1	1
7	rr	+	0	+	0	0	0	+	+	0	0	0	w	0	+	0		0	0	-
8	rr	0	+	0	+	2	0	0	+	+	0	+	+	0	+	0		0	0	-
9	rr	0	+	+	0	3	0	0	+	0	0	+	+	0	0	+		10	0	
10	rr	+	0	+	0	2	+	0	+	0	+	0	0	+	0	+	Cob+	0	0	
Auto	3.0	-	-															0	0	
			_	_		1-														
		-	_	+		+		-		1	_									
_				-	_	+		-	1	1	1									
				-		+		-	-	1	1	+								
				-					-			1								
					_	_	_			-		-	1	Grou	D	_		Phene	0	
-	dy Titre		_		-			-	-			Cell	Lid					9999		
likaion					_	_			-	-	-	Cel	i iu	Conc	lusion			-		
Vnti-									-	_	-	-	-	-						
rchive										_	-			-						
Vrtii												-		-						
Sychise						- R-							_	-						
AT B	atch No																			
PS	3	IgG	Т	IgA		IgM		C30	3	C	3d	C	H	Enter	ed into			- 3	S 1 27	
			1											Data	base by			A	ithorised by	
Reagen	1			T			1					V:								
atch		-	-	-												-				
lo's				-									1		_					

BMS Specialist



Have a go yourself!

NHSB	Reagent	s P	anel	1						Antiboo	dy Inve	estigati	ion We	orkshe	et								
Sample	Name					Reques	tor					Data	abase R	lef No.			_	Tested by			-		
Date of	Birth					Hosp n	0					Sam	ple No.					Date Test	ed				
Produc	t L		_	Lot No.	-	Produc	t		-	Lot No		Produ	ict		-	Lot	lo.	Product			Lot No.		
Panel i	n Alsevers			R144 33		Panel is	n CellSta	b		R143 3	312	Panel	in Celli	Media			3312	Panel in L	ISP	ST 321 A	R146 33		
Panel F	apainised i	n Alsev	ers	R154 33	12	Panel P	apainise	ed in Ce	llStab	R153 3	312	Panel	Papani	sed in C	ellMedia	R173 3312		EXPIRY D	ATE: 2014.1	2.11			
	Rh	M	N	S	s	P1	Lu ^a	K	k	Kp*	Lea	Leb	Fy*	Fy ^b	Jkª	Jkb	Other	IAT	EN2				
1	R ₁ ^w R ₁	0	+	0	+	3	0	0	+	0	0	+	+	0	0	+		3	0				
2	R ₁ R ₁	+	0	+	0	2	0	+	+	0	0	+	0	+	+	0		0	0				
3	R ₂ R ₂	0	+	0	+	0	0	0	+	0	0	+	0	+	0	+		3	5				
4	r'r	0	+	0	+	5	0	0	+	0	0	0	+	+	0	+		3	5				
5			0	+	0	2	0	0	+	0	+	0	+	0	+	0	Rg-	3	5				
6			+	0	+	2	0	+	0	0	0	+	0	+	+	0	Chido-	3	5				
7	rr	0	+	0	+	3	0	+	+	0	+	0	+	0	0	+		3	5				
8	rr	+	0	0	+	0	0	0	+	+	0	+	0	+	0	+		3	5				
9	rr	0	+	+	0	3	0	0	+	0	0	+	+	0	0	+		3	5				
10	rr	0	+	0	+	3	+	0	+	0	0	0	+	0	+	0		3	5				
Auto																		0	0				
																		8					
			_																				
	-																						
Antibo	dy Titre													Grou				Pheno		. (.)	1 (1-1-1	
Dilution												Cell	ld		RNDI	Pos		C'ē-	Ee KRY	-4(a-p	Jka	(10)	
Anti-							-			0.1				100000000000000000000000000000000000000	lusion					,			
Archive														PATIE	NT1:	ANTE	NEAL 28	MEEK (SAMPLE				
Anti																							
Archive																							
DAT Batch No											17.5												
PS	3	lgG		IgA		IgM		C3c		C3	d	Ct	tl	Entered into Database by:					horised by	Variotis			
Reagent			T									T					1						
Batch				+						1		-	1			_		1		_			
No's																							

Pipette batch No's

NBS F	Reagents									Refere	nce Pa	inel 1 \	Norks	heet										
Sample	Name					Reques	stor					Data	base R	ef No.			Y	Tested by						
Date of	Birth					Hosp n	0					Sam	ple No.					Date Test	ed					
Produc	t		_	Lot No	. '	T	-						-											
Referen	nce Panel 1			R201 3	178	- 37										EXPIRY	DATE : 2014	.12.25						
Refere	nce Panel 1	in Cells	tab	R202 3	178	_ 1				_							-							
	Rh	M	N	S	S	P1	Lu*	K	k	Kp*	Le	Leb	Fyª	Fy ^b	Jk*	Jk ^b	Other	IAT						
1	R1wR1	+	0	+	0	3	+	0	+	0	+	0	0	+	+	0		0						
2	R1wR1	0	+	0	+	4	0	0	+	0	0	+	+	0	0	+	W	3						
3	R1RZ	+	+	+	0	0	0	0	+	0	0	+	+	0	+	0		3						
4	R1RZ	0	+	0	+	0	0	0	+	0	0	+	0	+	0	+		0						
5	Ror	0	+	0	+	4	0	0	+	0	0	0	0	0	+	0	V+ VS+	3						
6	R1r'	0	+	0	+	4	0	+	0	0	0	+	+	0	0	+		3						
7	R1R1	+	0	+	0	3	0	+	+	0	0	+	0	+	+	0		0						
8	R1R1	0	+	0	+	0	0	0	+	+	+	0	+	0	+	0		3						
9	R1R1	+	0	0	+	2	+	0	+	0	+	0	0	+ 0 + 0		+		0						
10	R1R1	0	+	+	0	3	0	0	+	0	0	+	0	+	0	+		0						
Auto																								
												-												
				-		- 5																		
Antibo	dy Titre	-		4									-	Grou	p			Ph	eno		-			
Dilution:											1	Cell	Id											
Anti-											10.		1000											
Archive	-					-			-74			1		Conc	lusio	n								
Anti	11			-				1 11			7			-										
Archive																								
DAT E	Batch No					8.																		
PS		lgG		IgA		IgM		C3c	: 1	С3	d	C	tt											
							1							Enter			**********	Au	horised	bv	V01212120201	0.000000		
Reagen	ıt			1			T			T			T	2000	200	1								
Batch				1						+			+			+		100		_				
Male	1									1			1							- 10				

BMS Specialist

Effective: 06/05/14

Requestor Hosp no	NHSE	T Reagent	s P	ane	11						Antiboo	dy Inve	estigati	ion W	orkshe	et							
Product	Sampl	e Name					Reques	stor				-/	Data	abase R	lef No.				Tested by			-	
Panel in Alsevers	Date o	f Birth			164		Hosp n	0					Sam	ple No.		F			Date Teste	ed			
Panel in Alsevers	Produ	ct			Lot No.		Produc	t			Lot No		Produ	ct			Lot	No.	Product	-		Lot No.	
Rin							Panel i	n CellSta							Media					ISP			12
1 R, "R; 0 + 0 + 3 0 0 + 0 0 + + 0 0 + + 0 0 + 0 0 + 0	Panel	Papainised i	n Alsev	ers	R154 33	12	Panel P	apainis	ed in Ce	ellStab	R153 3	312	Panel	Papani	sed in C	ellMedia	R17	3 3312	EXPIRY D	ATE: 201	4.12.11		
2 R ₁ R ₁ + 0 + 0 + 0 2 0 + + 0 0 0 + 0 + 0 + 0 0 0 0			M	N	S	s	P1	Lu*	K	k	Kp*	Le*	Leb	Fy	Fy ^b	Jka	Jkb	Other	IAT	ENZ			
3 R ₂ R ₂		-	0	+	0	+	3	0	0	+	0	0	+	+	0	0	+		0	0			
## 1	_	-		0	+	0	2	0	+	+	0	0	+	0	+	+	0		0	0			
S F"	3		0	+	0	+	0	0	0	+	0	0	+	0	+	0	+		0	0			
6	- 177	1 2000	0	+	0	+	5	0	0	+	0	0	0	+	+	0	+		0	0			
7 rr 0 + 0 + 3 0 + 4 0 + 0 + 0 + 0 + 0 0 + 0 0 0 8 rr + 0 0 0 + 0 0 0 0 + 0 0 0 0 + 0 0 0 9 rr 0 + 0 + 0 3 0 0 0 + 0 0 0 0 + 0 0 0 10 rr 0 + 0 + 0 + 0 0 0 0 + 0 0 0 0 Auto		r"r	+	0	+	0	2	0	0	+	0	+	0	+	0	+	0	Rg-	0	0			
8 rr + 0 0 + 0 0 0 0 0 + 0 0 0 + 0 0 0 + 0 0 0 + 0 0 0 + 0		rr	+	+	0	+	2	0	+	0	0	0	+	0	+	+	0	Chido-	0	0			
9 rr 0 + + 0 3 0 0 + 0 0 0 + + 0 0 0 + 0 0 0 0		rr	0	+	0	+	3	0	+	+	0	+	0	+	0	0	+		0	0			
10 rr 0 + 0 + 3 + 0 + 0 0 0 0 + 0 + 0 0 0 0 0	8	rr	+	0	0	+	0	0	0	+	+	0	+	0	+	0	+		WK	1			
Antibody Titre Group	9	rr	0	+	+	0	3	0	0	+	0	0	+	+	0	0	+		0	0			
ORIR1 O	10	rr	0	+	0	+	3	+	0	+	0	0	0	+	0	+	0		0	0			
Antibody Titre Division: Cell Id Conclusion PATIENT 2: 55 preoperative patient, requires 20xm. Archive DAT Batch No PS IgG IgA IgM C3c C3d Ctl Entered into Database by	Auto																		0	0			
Dilution. Cell Id ORNO Pos C†ë†E†e†K		ORIRI	0	+	0	+	0	0	0	+	+	0	+	+	+	0	+		WK	1			
Dilution. Cell Id ORNO Pos C†ë†E†e†K			_								_												
Dilution. Cell Id ORND Pos C†ë†E†e†K* Arti- Archive A					-	-													11 11				_
Dilution. Cell Id ORNO Pos C†ë†E†e†K	-	-		_	-	-	-			-	-	_									_		1
Dilution. Cell Id ORNO Pos C†ë†E†e†K										1									1				
Archive Archive PATIENT 2: 55 preoperative patient, requires 20xm. Archive DAT Batch No PS IgG IgA IgM C3c C3d CtI Entered into Database by: Authorised by: Authorised by:						1	_	1				_	100		Grou		2.0	Doc			/-		
Archive PATIENT 2: SS preoperative Patient, requires 20xm. Archive PS IgG IgA IgM C3c C3d CtI Entered into Database by Authorised by Authorised by	0.5-0					+	_	-				-	Cell	Id	C		KNU	h02	C.C.	F, E,	1		
Archive DAT Batch No PS IgG IgA IgM C3c C3d Ctl Entered into Database by Authorised by	rostor-serv	-		_		-			-	-	-	_	-	_	PATIEN	JT 2:	55 D	reoperativ	e patie	ent rec	quires	20x1	٧٠.
Archive DAT Batch No PS IgG IgA IgM C3c C3d Ctl Entered into Database by: Authorised by	#56BTUR600	-	\vdash			+	_	-		-	_	-	+	_	141		101						39
PS IgG IgA IgM C3c C3d Ctl Entered into Database by Authorised by	-1 07		-	-		+		1		-	-	-	-										
PS IgG IgA IgM C3c C3d Ctl Entered into Database by: Authorised by		Patab Na																					
Database by: Authorised by	Constitution of	- manage of the	I=C		1-4	Т						. 1	, ac.										
	P	0	igG	-	IgA	-	IgM		C30	-	C3	u	Ct	1					A 41	noricad	hu		
	Posses			-	1						_				Datat	ase by.			Auti	ionsed	т		

BMS Specialist

20200011100	Reagen	ts P	anel	1				0		Antiboo	ly Inve	estigati	on W	orkshee	et							
Sample	Name					Reques	tor	-				Data	base R	lef No.				Tested by				
Date of	Birth					Hosp n	0					Sam	ple No.		-			Date Test	ed			
Produc	t Alsevers			Lot No. R144 331	12	Produc	t n CellSta			Lot No.		Produ	ct in Celli	Madia			No. 33 3312	Product	ICD		Lot No.	
	apainised	in Alseve	ers	R154 331			apainis		liStab	R153 3				sed in Ce	ellMedia		3 3312	Panel in L		14.12.11	R146 3312	
	Rh	M	N	5	s	P1	Lu*	К	k	Kp*	Le*	Leb	Fy*	Fy ^b	Jkª	Jkb	Other	IAT	EN2	TWHE	BLIATE	-
1	R ₁ ^w R ₁	0	+	0	+	3	0	0	+	0	0	+	+	0	0	+		0	0	0	0	
2	R ₁ R ₁	+	0	+	0	2	0	+	+	0	0	+	0	+	+	0		0	0	0	WK	
3	R ₂ R ₂	0	+	0	+	0	0	0	+	0	0	+	0	+	0	+		6	0	0	D	
4	r'r	0	+	0	+	5	0	0	+	0	0	0	+	+	0	+		0	0	0	0	
5	r"r	+	0	+	0	2	0	0	+	0	+	0	+	0	+	0	Rg-	0	0	0	Ĭ	
6	rr	+	+	0	+	2	0	+	0	0	0	+	0	+	+	0	Chido-	0	0	0	NK	
7	rr	0	+	0	+	3	0	+	+	0	+	0	+	0	0	+		0	0	0	0	
8	rr	+	0	0	+	0	0	0	+	+	0	+	0	+	0	+		0	0	0	0	
9	rr	0	+	+	0	3	0	0	+	0	0	+	+	0	0	+		0	0	0	0	
10	rr	0	+	0	+	3	+	0	+	0	0	0	+	0	+	0		0	0	0	WK	
Auto																		5	0	0		
																	XM 1	0				
																	xm 2	0		-		
																	xm 3	- Y				
																	XM 4	WK				
ntibo	dy Titre					1070	40:				-7:			Group				Pheno	Co	LPC+E	e+K-	
lution	12					44.1						Cell	ld		ORh	D ne	29	Tran	sfuse	d-un	able to de	ele
ıbi-										- 19				Concl			and the second second			-		
rchive										27				PATIEN	JT 3:	80A	earold fe	invale, t	vansf	used	14 days OF BLOO!	No. of
Inti	100									46				Previ	ously	1. M	EG SCREE	M PRIO	P TO	ISSUE	OF BLOO!	5.
rchive	3																					
	atch No																					
PS		IgG		IgA		lgM		C30		C36	1	Ct	i	Entere								
-		SMF		0		0		C))	0		Datab	ase by:			Aut	thorise	d by	**********	
Reagen	t																					
latch																						



Any Questions?