Irish Blood Transfusion Service
Seirbhís Fuilaistriúcháin na hÉireann

Document Detail

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Review

Review: IBTS PMF REVIEW

Level	Owner Role	Actor	Sign-off By
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4	QUALITY ASSURANCE REVIEWER IBTS	COLIN JOHNS	

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Change Orders

Changes as described on Change Order: **Change Order No.**

Change Orders - Incorporated

Changes as described on Change Order: **Change Order No.**
IBTS/CO/0376/20

Valid on Day of Printing, Verify Current Version
Printed By: **Date:**

IRISH BLOOD TRANSFUSION SERVICE

PRODUCT MASTER FILE GENERAL REQUIREMENTS

Change Description:
Revise IBTS/PMF/SPEC/0201,/0213,/0214,/0216 and IBTS/PMF/SPEC/0200.
• Update general requirements (IBTS/PMF/SPEC/0201) to describe revised platelet testing regime and adverse reactions
• Update listed product master file specifications documents to reflect changes in Platelet product expiry dates, to remove obsolete product codes and to describe revised platelet testing regime including removal of references to extension of platelet expiry date
• Update listed product master file specification documents to improve the information for customers for reporting of adverse reactions.
• Update index of product codes (IBTS/PMF/SPEC/0200) to reflect removal of obsolete codes
• Change upper volume limit for platelets in PAS (IBTS/PMF/SPEC/0214) to 378ml

Reason for Change:
Validation refs :CCP 0248/20/IBTS, IBTS/QA/VP/0641
The updating of relevant documents is a listed task as part of Project Plan ref PMO/0032/20 and described in CC 243/20/IBTS (Index) and CC 248/20/IBTS (eProgesa update to expiry date of product codes)
• BacT testing of platelets will change from day 1 and day 4 testing to day 2 testing only. All platelets will have a standard 7 day shelf life
• There will be no requirement for extended shelf life product codes and these can be removed from PMFs
• Review of PMF documents has provided the opportunity to revise the information for customers regarding reporting of adverse reactions. This is not a process change.
• Ensure index is consistent with correct codes
• Change in upper volume detailed in CC 211/20/IBTS. Change is derived from analysis of quality monitoring data.

Change order No.:
CO/0376/20/IBTS
CC 243/20/IBTS
CC 248/20/IBTS

Referenced Procedures
None

SmartSolve Roles
N/A

Training Type
N/A

SmartSolve Document Category

Category	Mobile	Cryobiology	Website	GDP
Yes / No	No	No	Yes	No

Name of Products: **Blood and Blood Components**

General Description: This specification applies to single donor and small pool components prepared from units of whole blood or collected by apheresis appliances.

Secure and effective procedures shall ensure that:

1. Donor Selection

1.1 Donors of blood or cellular components for homologous use are voluntary and non-remunerated.

1.2 Donors are provided with educational materials.

1.3 Donors undergo an individual medical assessment to determine eligibility to donate.

1.4 Suitable donors are selected at the time of donation, in accordance with the EU Directive, following the IBTS Donor Selection Guidelines IBTS/MED/GDE/0001 and in accordance with written standard operating procedures. Face to face interviews are conducted with all donors and records retained. Interviews with first time, lapsed or deferred donors are conducted by a Medical Officer or Registered General Nurse.

1.5 Donors are temporarily or permanently deferred in accordance with written standard operating procedures.

1.6 Donors of blood for autologous transfusion are selected, in compliance with EU Directive and in accordance with written standard operating procedures.

2. Donation Collection

2.1 Donation collection is performed according to written standard operating procedures by manual procedure or using automated apheresis appliance.

2.2 The first 30ml of the donation is diverted. This diverted volume is the source of the blood sample for mandatory testing of the donation.

2.3 Donations, components, their laboratory samples and corresponding Donor Questionnaires are correctly identified by ISBT-128 barcoded and eye-readable identification numbers. Professional/Hospital users are advised to take appropriate action to ensure good inventory management with an intact audit trail.

2.4 Donations can be traced to their donor.

2.5 Batch numbers of blood collection sets, identity of manufacture and the serial number of equipment used to collect every donation are traceable.

2.6 Equipment used in donor testing and donation collection is validated, calibrated and maintained and records of these activities made and retained.

2.7 Donations are transported, from the collection site, stored in containers and appliances validated for the purpose within the specified temperature range according to written standard operating procedures.

2.8 Donor samples are suitably stored to preserve the properties for which they will be tested.

2.9 Adverse reactions in donors are documented and reported in compliance with the EU Directive and in accordance with written standard operating procedures and communicated to the Health Products Regulatory Authority (HPRA) by the Donor Consultant.

3. Donation Testing

3.1 Tests are appropriately performed and controlled using validated procedures and the results recorded.

3.2 All testing, both mandatory and additional, is performed according to written standard operating procedures.

3.3 Batch numbers of kits and reagents, identity of manufactures and the serial number of equipment used to test every donation are traceable.

3.4 Test equipment is validated, calibrated and maintained and records of these activities made and retained.

3.5 Appropriate reactivity with control samples is demonstrated with every series of tests.

3.6 The laboratory report indicates the result of each and every test. Individual results are recorded either by computer interfaced to a test reader or manually.

3.7 Test results and other relevant test information are archived.

3.8 Donors' NAT plasma sample tubes are archived

4. Donation Processing

4.1 Component Processing areas satisfy the air quality requirements defined in the current *Rules Governing Medicinal Products in the European community Volume IV, Good Manufacturing Practice for Medicinal Products.*

4.2 Whole blood is maintained at ambient temperature before processing in accordance with written standard operating procedures for a minimum of 6 hours and not exceeding 24 hours

4.3 Components are prepared in a closed system using validated procedures and in accordance with written standard operating procedures.
Cellular components and plasma for clinical use are leucodepleted within 24 hours of donation and before storage at 4 C, 22 C or freezing.

4.4 When components are transferred into a pack that was not part of the original pack assembly, a secure system is in place to ensure the correct identification labelling of the final pack.

4.5 Component sampling procedures are designed and validated to ensure when test samples are removed from a component to be issued for infusion, the essential properties of the component is not adversely affected and the sample truly reflects the contents of the component pack

4.6 Male donors are selected for the preparation of plasma components

4.7 Components can be traced to their donor.

4.8 Components are labelled in accordance with written standard operating procedures.

4.9 Components are stored in appliances validated for the purpose within the specified temperature range according to written standard operating procedures.

4.10 Autologous blood and blood imports are stored separately.

4.11 Components are inspected visually for defects, leakage, abnormal colour or visible clots.

4.12 All platelet components are gamma irradiated prior to release for use

5. Component Release

5.1 Blood and Blood Components are not released for issue until all the General Quality Requirements (Section 7 mandatory laboratory tests), have been completed, documented, acceptable test results achieved and approved for release for issue. Platelet Components are stored for a minimum of 36 hours after collection before bacterial testing and are released with bacterial 'culture negative to date' result after 12 hour post testing hold.

5.2 Swirling phenomenon is demonstrated in Platelet Components.

5.3 Components are inspected visually for defects, leakage, abnormal colour or visible clots before issue to hospitals.

5.4 Components are transported in containers and appliances validated for the purpose within specified temperature range according to written standard operating procedures.

5.5 Autologous blood components are distributed and transported separately.

5.6 Components issued can be traced to the receiving hospital or institution. Hospitals are responsible for ensuring traceability to the recipient.

6. General labelling requirements (refer to Appendix I- attachment 6.2 extracted from IBTS/QA/SS/0460 V.3)

6.1 The following shall be included on the labels :

- Component Name in Eye Readable format only
- Component ISBT-128 Code in Eye Readable and Barcoded format (will reflect irradiation if applicable)
- Component Codabar Code in Eye Readable and barcoded format.
- Donation Number in ISBT Eye Readable and Barcoded format (14 digits, consisting of R0001= Republic of Ireland, next 2 digits= year, 6 digit donation number and a final check character).
- Donation Number label (50 mm x 19mm) placed in top left corner of the Full Face Label in the area marked Cut away section.
- Short Form Donation Number, 6 digit donation number embedded in the ISBT 128 Donation Number above.
- ABO Group as an Eye Readable image and in Barcoded format
- Codabar ABO Barcode in Eye Readable and Barcoded format.

- Rh D positive or negative as an Eye Readable image and in Barcoded format

- ABO barcode also contains C,c,E,e,K values in position 3 as per Data Structure 002 in the ICCBBA Technical Standard. The 4 digit code is also in eye readable format underneath the ABO barcode. (Reference; Appendix II).

- Date of donation as Drawn Date in Eye Readable and Barcoded (Julian date) format.

- ISBT-128 Expiry date and Time in Eye Readable and Barcoded (Julian Date) format

- Codabar Expiry Date in Eye Readable and barcoded (Julian date) format

- The identification of the Manufacturing Centre /Blood Collection Establishment and Version No.

- Storage Temperature in Eye Readable format only

- Component Volume or Nominal Volume in Eye Readable format only.

- Warnings not to use if there are visible signs of deterioration (abnormal colour, haemolysis etc.) and that this component may transmit infection in Eye Readable format.

- Instructions that the component should be administered through a 170–200 mm filter in Eye Readable format only.

- The Name, Composition and Volume of anticoagulant (e.g. CPD) and / or additive solution (e.g. SAGM) in Eye Readable format.

- Antigens in Eye Readable and Barcoded format encoded in accordance with Data Structure 012 in the ICCBBA Technical Standard. (Ref. Appendix III). This additional information will not be applicable to the labels for Platelets, Leucocytes and Frozen Products.

- The ISBT red cell antigen barcode is located over the eye readable extended phenotype on the unit label. This barcode consists of 18 digits. Digits 1-16 encode for commonly tested antigens.

Additional component information (if appropriate)

Modifiers

CMV Antibody Negative in Eye Readable format
Confirmed Group in Eye Readable format

Irradiated – component barcode will reflect irradiation of product if applicable.

Autologous Blood and Blood Components

- Additional instruction For Autologous transfusion only in Eye Readable format.

- Additional Tag containing the following data:

Side 1	**Side 2**
Donor's name	Unit Number
Address	Name of admitting hospital
Date of Birth	Donor's Signature
Medical Officer's Signature	

7. Components suitable for use in intrauterine transfusion, neonates and infants under one year

General requirements are

7.1 Components are prepared from donors who fulfil the following criteria:

- have given at least one donation in the previous two years and have tested negative in microbiology tests that were designated as mandatory at that time
- CMV antibody negative
- C and E antigen negative if Rh D negative
- K antigen negative (red cell components only)
- free from clinically significant irregular blood group antibodies
- free from high titre Anti A and Anti B (components suspended in plasma only)
- Sickle Cell trait negative (red cell components only)
- have not received a blood transfusion or organ transplant
- have not taken aspirin in the last five days

7.2 Components for neonates are split into pedipacks thereby providing the potential to reduce donor exposure.

- Components are mixed prior to splitting to ensure the contents are homogenous in accordance with written standard operating procedures
- A Split component is identified by a unique number, e.g. Donation number and Component Code, to ensure all sub batches are accounted for.
- An un-split ISBT-128 component code will end in 00
- The ISBT-128 component code of Splits 1/2/3 will end in A0, B0, C0. If the splits are further split into aliquots they become Aa, Ba or Ca.

8. Additional Tests or Procedures

8.1 Additional tests / procedures of selected donations may be undertaken in special circumstances to increase the safety of transfusion for susceptible patients or clinical efficacy of specific transfusions eg.

- West Nile Virus (WNV) RNA NAT testing.
- CMV antibody negative component
- HLA matched platelets
- Irradiated components
- Extended Antigen Typing
- Washed Component

8.2 Components are exposed to more than 25Gray and less than 50Gray ionising radiation in accordance with written standard operating procedure. Where irradiation is mandatory, the word 'IRRADIATED' will be in the name of the component. In certain circumstances, e.g. irradiated to order, the word 'IRRADIATED' will be in eye readable format in the modifier part of the label.

8.3 When these tests / procedures are performed to meet a specific need the results are an essential part of the criteria for release for issue of that component.

9. Specific Component Quality Requirements

9.1 Component and process monitoring tests are performed on at least 1% of each component type and are subjected to statistical analysis. It is acceptable, due to biological variability, that a minimum of 75% of components tested should achieve the specified quality requirements excluding leucocytes where 95% should achieve the specified quality requirement. Tests of this type are not part of the criteria for component release for issue. The specific quality requirement for each component release is detailed in written standard operating procedures.

10. Serious Adverse Reactions

10.1 Serious Adverse Reaction (SAR) in a recipient notified to the IBTS which may be attributable to the quality and safety of blood or blood components is documented and investigated according to written standard operating procedures by the Quality Assurance and the Medical Departments and is notified to the National Haemovigilance Office.

10.2 Serious Adverse Reaction in a recipient notified to the IBTS which may be attributable to the quality and safety of blood or blood components is communicated to the HPRA through the NHO by the Director of Quality and Compliance as soon as all relevant information about the reaction is known.

Serious Adverse Events

10.3 Serious Adverse Event (SAE) in the Blood Establishment which may affect the quality and safety of blood and blood components is documented and investigated according to written standard operating procedures by the Quality Assurance Department

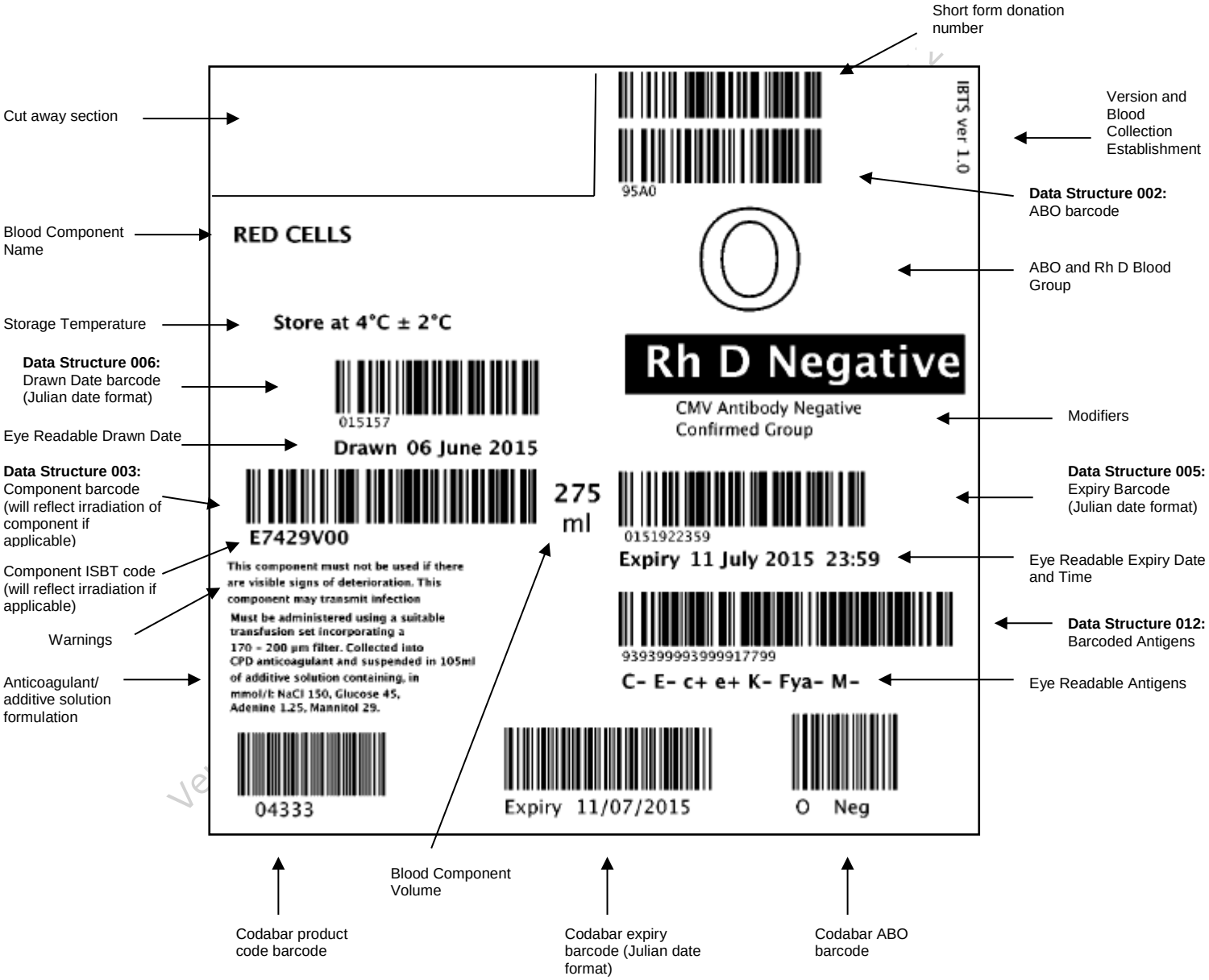
10.4 In the event that a Serious Adverse Event is confirmed, the HPRA will be notified by Director of Quality and Compliance as soon as relevant information about the event is known. (Refer to 10.3 above.)

General Testing Specification:

Parameter	Quality Requirement	Frequency of Control
ABO, RhD	ABO RhD Group	All Units
HBs Antigen	Negative	All Units
HIV 1+ 2 Antibody	Negative	All Units
HCV Antibody	Negative	All Units
HTLV 1+2 Antibody	Negative	All Units
Syphilis	Negative	All Units
HBc antibody	Negative	All Units
HIV NAT	Negative	All Units
HCV NAT	Negative	All Units
HBV NAT	Negative	All Units
Bacterial Screen	Culture Negative to Date, (Sampling after minimum 36 hours hold post collection and further minimum 12 hour hold post testing)	Platelet Units Only
Sickle Cell Trait	Negative	Neonatal Red Cell / Whole Blood Units only
Ionizing Irradiation	Exposure 25-50 Gray	All Platelet Units Red Cell units as specified or clinically requested/required.

Appendix I

Attachment 6.2 Example Standard Full Face ISBT128 Label layout (not to scale)



N.B. ISBT128 barcodes are displayed with the barcode value underneath

Appendix II

ICCBBA Technical Standard Document Table 6 Data Structure 002 Position 3

Table 6 Data Structure 002: Rh, Kell, and Mia/Mur Phenotypes [RT007]

Results with Anti-Kell:			Phenotype:			
Not tested	Negative	Positive	C	c	E	e
0	S	T	not tested	not tested	not tested	not tested
1	A	J	negative	positive	negative	positive
2	B	K	positive	positive	negative	positive
3	C	L	positive	positive	positive	positive
4	D	M	positive	positive	positive	negative
5	E	N	negative	positive	positive	positive
6	F	O	negative	positive	positive	negative
7	G	P	positive	negative	negative	positive
8	H	Q	positive	negative	positive	positive
9	I	R	positive	negative	positive	negative
X	Y	Z	negative	not tested	negative	not tested
U			Mi^3/Mur negative			
V			Mi^3/Mur positive			
W			Special Testing bar code present and must be scanned and interpreted			

Values of **r** {0–9, A–T, X–Z} are used to encode the results of testing for K, C, c, E, and e as shown in this table. (For example, if the value of **r** is **E**, then the red blood cells are K-negative, C-negative, c-positive, E-positive and e-positive). Values U and V encode Mi^3/Mur antigen test results.

Appendix II

Example of Data Structure 002 ABO variations

The ISBT ABO barcode consists of 4 characters, the first two are the base ABO value, the third (position 3) is encoded in accordance with Table 6 and the fourth character will always be 0.

ABO	Base Value
A Positive	6200
A Negative	0600
O Positive	5100
O Negative	9500
B Positive	7300
B Negative	1700
AB Positive	8400
AB Negative	2800
Bombay Positive	H600
Bombay Negative	G600

Example 1: A Negative (0600)

Results with Anti Kell:			Phenotype:			
Not Tested	**Neg**	**Pos**	**C**	**c**	**E**	**e**
0600	06S0	06T0	not tested	not tested	not tested	not tested
0610	06A0	06J0	neg	pos	neg	pos
0620	06B0	06K0	pos	pos	neg	pos
0630	06C0	06L0	pos	pos	pos	pos
0640	06D0	06M0	pos	pos	pos	neg
0650	06E0	06N0	neg	pos	pos	pos
0660	06F0	06O0	neg	pos	pos	neg
0670	06G0	06P0	pos	neg	neg	pos
0680	06H0	06Q0	pos	neg	pos	pos
0690	06I0	06R0	pos	neg	pos	neg
06X0	06Y0	06Z0	neg	not tested	neg	not tested

Appendix II

Example 2: O Negative (9500)

Results with Anti Kell:			Phenotype:			
Not Tested	**Neg**	**Pos**	**C**	**c**	**E**	**e**
9500	95S0	95T0	not tested	not tested	not tested	not tested
9510	95A0	95J0	neg	pos	neg	pos
9520	95B0	95K0	pos	pos	neg	pos
9530	95C0	95L0	pos	pos	pos	pos
9540	95D0	95M0	pos	pos	pos	neg
9550	95E0	95N0	neg	pos	pos	pos
9560	95F0	95O0	neg	pos	pos	neg
9570	95G0	95P0	pos	neg	neg	pos
9580	95H0	95Q0	pos	neg	pos	pos
9590	95I0	95R0	pos	neg	pos	neg
95X0	95Y0	95Z0	neg	not tested	neg	not tested

Appendix III

IBTS Configuration of ISBT128 Data Structure 012 Special Testing Red Cell antigens Barcode

The ISBT red cell antigen barcode is located over the eye readable extended phenotype on the unit label. This barcode consists of 18 digits. Digits 1-16 encode for commonly tested antigens.

Data Structure 012 allows the option of using Position 1 or Position 14-16 for coding of RHCE status. Positions 14-16 will be used for C/cE/e by the IBTS therefore position 1 will always be shown as a '9'.

Data Structure 012 allows the use of the digits at Positions 17 & 18 to indicate antigen negative status of a number of different mostly rare antigens. However, this position is also used to indicate whether the unit is HbS negative. To reduce ambiguity when a unit may be antigen negative for a high frequency antigen and HbS negative, only two values will be configured for Positions 17 & 18 - namely "96" to indicate the unit is labelled as HbS negative (this will also be eye-readable) or the default, "99" if no information provided.

If the unit has been found to be negative for an antigen not listed in positions 1 through 16, then this will be visible in eye-readable format* on the label but will not be encoded in the barcode (e.g. if a unit is Kp^b negative, this information will be on the label in eye-readable format but not contained within the barcode). This may require an individual Transfusion Laboratory to enter this status manually or as decided locally.

*In rare cases of very rare antigen types, it may not be printed on the label. The status of the units will in this case be identified by other means.

Appendix III

ICCBBA Technical Standard Document Table 9 Data Structure 012 Special Testing Red Blood Cell Antigens Positions 1 – 9

Table 9 Data Structure 012: Special Testing: Red Blood Cell Antigens — General, Positions 1 through 9 [RT009]

Position	1	2		3		4		5		6		7		8		9	
Antibody																	
Antigen / Value	Rh*	K	k	C^w	Mi^a†	M	N	S	s	U	P1	Lu^a	Kp^a	Le^a	Le^b	Fy^a	Fy^b
0	C+c-E+e-	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt
1	C+c+E+e-	nt	neg	nt	neg	nt	neg	nt	neg	nt	neg	nt	neg	nt	neg	nt	neg
2	C-c+E+e-	nt	pos	nt	pos	nt	pos	nt	pos	nt	pos	nt	pos	nt	pos	nt	pos
3	C+c-E+e+	neg	nt	neg	nt	neg	nt	neg	nt	neg	nt	neg	nt	neg	nt	neg	nt
4	C+c+E+e+	neg	neg	neg	neg	neg	neg	neg	neg	neg	neg	neg	neg	neg	neg	neg	neg
5	C-c+E+e+	neg	pos	neg	pos	neg	pos	neg	pos	neg	pos	neg	pos	neg	pos	neg	pos
6	C+c-E-e+	pos	nt	pos	nt	pos	nt	pos	nt	pos	nt	pos	nt	pos	nt	pos	nt
7	C+c+E-e+	pos	neg	pos	neg	pos	neg	pos	neg	pos	neg	pos	neg	pos	neg	pos	neg
8	C-c+E-e+	pos	pos	pos	pos	pos	pos	pos	pos	pos	pos	pos	pos	pos	pos	pos	pos
9	ni	ni	ni	ni	ni	ni	ni	ni	ni	ni	ni	ni	ni	ni	ni	ni	ni

Key: † most commonly associated with GP.Mur (Mi.III); nt — not tested; neg — negative; pos — positive; ni — no information (position not used)

*Common Rh antigens may be encoded together as a phenotype (Rh column 1) or as individual Rh antigens (C,c,E,e, columns 14-16). If Rh antigens are encoded individually using positions 14, 15, and/or 16, then the value of column one shall be set to 9 (no information). Conversely, if the phenotype is present in column 1, then the values of the C,c,E,e antigens shall all be set to ni or nt.

Appendix III

ICCBBA Technical Standard Document Table 9 Data Structure 012 Special Testing Red Blood Cell Antigens Positions 10 – 16

Table 9 (continued) Data Structure 012: Special Testing: Red Blood Cell Antigens — Table General, Positions 10 through 16

Position	10		11		12		13		14		15		16	
Antibody														CMV
Antigen / Value	Jk[a]	Jk[b]	Do[a]	Do[b]	In[a]	Co[b]	Di[a]	VS/V	Js[a]	C*	c*	E*	e*	
0	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt
1	nt	neg	nt	neg	nt	neg	nt	neg	nt	neg	nt	neg	nt	neg
2	nt	pos	nt	pos	nt	pos	nt	pos	nt	pos	nt	pos	nt	pos
3	neg	nt	neg	nt	neg	nt	neg	nt	neg	nt	neg	nt	neg	nt
4	neg	neg	neg	neg	neg	neg	neg	neg	neg	neg	neg	neg	neg	neg
5	neg	pos	neg	pos	neg	pos	neg	pos	neg	pos	neg	pos	neg	pos
6	pos	nt	pos	nt	pos	nt	pos	nt	pos	nt	pos	nt	pos	nt
7	pos	neg	pos	neg	pos	neg	pos	neg	pos	neg	pos	neg	pos	neg
8	pos	pos	pos	pos	pos	pos	pos	pos	pos	pos	pos	pos	pos	pos
9	ni	ni	ni	ni	ni	ni	ni	ni	ni	ni	ni	ni	ni	ni

Key: res — reserved; nt — not tested; neg — negative; pos — positive; ni — no information (position not used)

*Common Rh antigens may be encoded together as a phenotype (Rh column 1) or as individual Rh antigens (C,c,E,e, columns 14-16). If Rh antigens are encoded individually using positions 14, 15, and/or 16, then the value of column one should be set to 9 (no information). Conversely, if the phenotype is present in column 1, then the values of the C,c,E,e antigens must all be set to ni or nt.

Appendix III

ICCBBA Technical Standard Document Table 12 Data Structure 12 Special Testing Red Blood Cell Antigens Positions 17 -18

Table 12 Data Structure 012: Special Testing: Red Blood Cell Antigens — General, Positions 17 and 18: Erythrocyte Antigen Specified Has Been Tested for and Found Negative [RT011]

Value	Antigen	Value	Antigen	Value	Antigen	Value	Antigen
00	information elsewhere	25	Kp^b	50	Au^a	75	An^a
01	En^a	26	Kp^c	51	Au^b	76	Dh^a
02	'N'	27	Js^b	52	Fy4	77	Cr^a
03	V^w	28	Ul^a	53	Fy5	78	IFC
04	Mur^a	29	K11	54	Fy6	79	Kn^a
05	Hut	30	K12	55	Di^b	80	In^b
06	Hil	31	K13	56	Sd^a	81	Cs^a
07	P	32	K14	57	Wr^b	82	I
08	PP_1P^k	33	K17	58	Yt^b	83	Er^a
09	hr^S	34	K18	59	Xg^a	84	Vel
10	hr^B	35	K19	60	Sc1	85	Lan
11	f	36	K22	61	Sc2	86	At^a
12	Ce	37	K23	62	Sc3	87	Jr^a
13	G	38	K24	63	Jo^a	88	Ok^a
14	Hr_0	39	Lu^b	64	removed	89	Wr^a
15	CE	40	Lu3	65	Hy	90	reserved for future use
16	cE	41	Lu4	66	Gy^a	91	reserved for future use
17	C^x	42	Lu5	67	Co3	92	reserved for future use
18	E^w	43	Lu6	68	LW^a	93	reserved for future use
19	D^w	44	Lu7	69	LW^b	94	reserved for future use
20	hr^H	45	Lu8	70	Kx	95	reserved for future use
21	Go^a	46	Lu11	71	Ge2	96	Hemoglobin S negative
22	Rh32	47	Lu12	72	Ge3	97	parvovirus B19 antibody present
23	Rh33	48	Lu13	73	Wb	98	IgA deficient
24	Tar	49	Lu20	74	Ls^a	99	no information provided

