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Section 1

1.1 General Introduction

The Scottish National Blood Transfusion Service is part of the Blood, Tissues and Cells Special Business Unit, a division of National Services Scotland (NSS).

SNBTS is the specialist provider of transfusion medicine in Scotland, supplying safe high quality blood, tissues, cells, products and services. SNBTS works with communities, hospitals and professionals to ensure that the donor’s gift is used wisely and effectively for the benefit of patients.

This handbook is intended for users of the services provided by the South East of Scotland Blood Transfusion Service (SEBTS) Clinical Directorate for pre blood transfusion testing, antenatal service provision and a reference laboratory service for blood serology investigations:

**Pre-transfusion testing and transfusion support**

Royal Infirmary of Edinburgh (RIE)
Royal Hospital for Sick Children (RHSC)
Liberton Hospital
Astley Ainslie Hospital
Roodlands General Hospital
Fairmile Marie Curie Centre
St Columba’s Hospice
Edington Cottage Hospital
Ellen’s Glen House
Belhaven Hospital

**Antenatal service provision**

Lothian Maternity Hospitals and GP practices
Fife Maternity and GP practices

**Reference red cell serology investigations**

Kirkcaldy Victoria Hospital
Queen Margaret Hospital
St John’s Hospital at Howden
Borders General Hospital
Western General Hospital
Spire Murrayfield (BUPA centre)

Information on donor services can be found on the SNBTS website: [www.scotblood.co.uk](http://www.scotblood.co.uk)
### 1.2 Contact Details

**Integrated Red Cell Laboratory,**
Second Floor,
Scottish National Blood Transfusion Service,
Royal Infirmary of Edinburgh,
51 Little France Crescent,
Edinburgh,
EH16 4SA

Transfusion Laboratory (24 hours) Telephone: 0131-242-7501/7502

Transfusion Laboratory (**Emergency Use Only**) Telephone: 0131-242-7504

Transfusion Laboratory Fax:  0131 - 242 – 7503

Red Cell Investigation Laboratory Telephone (08:30 – 16:30): 0131-242-7509

For all investigation queries out with routine working hours, contact the transfusion laboratory.

### Staff Contact Details

<table>
<thead>
<tr>
<th>Position</th>
<th>Telephone Number</th>
<th>E-mail Address</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Consultant</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Haematologist</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dr Lynn Manson</td>
<td>0131-242-7527</td>
<td><a href="mailto:lynnmannson@nhs.net">lynnmannson@nhs.net</a></td>
</tr>
<tr>
<td><strong>Medical Staff</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Specialist Registrar</td>
<td>Bleep (110) 2215</td>
<td>N/A</td>
</tr>
<tr>
<td>Duty registrar</td>
<td>#6466</td>
<td>N/A</td>
</tr>
<tr>
<td>• 9-7pm</td>
<td>Contact</td>
<td></td>
</tr>
<tr>
<td>• 7pm -9am</td>
<td>switchboard</td>
<td></td>
</tr>
<tr>
<td>• 7pm -9am</td>
<td>(0 or 0131-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>536-1000)</td>
<td></td>
</tr>
<tr>
<td><strong>Transfusion Practitioner</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Catherine Innes</td>
<td>0131-242-7531</td>
<td><a href="mailto:Catherine.innes@nhslothian.scot.nhs.uk">Catherine.innes@nhslothian.scot.nhs.uk</a></td>
</tr>
</tbody>
</table>
**Laboratory**

**Laboratory Manager:**

Marion Mathie  
0131-242-7518  
marion.mathie@nhs.net

**Blood Bank Manager:**

Carol McFarlane  
0131-242-7505  
carol.mcfarlane@nhs.net

**Red Cell Investigation Manager:**

Raymond Steven  
0131-242-7509  
raymond.steven@nhs.net

**1.3 Clinical Advice**

For advice on transfusion matters and the clinical use of blood components:

**Monday to Friday 9am - 7pm**
If calling from within the RIE, bleep duty registrar on #6466.  
For all other hospitals, contact the RIE switchboard and ask for the Blood Transfusion Duty Registrar.

**Evening/Night/Weekend/Public Holiday**
Contact the RIE switchboard and ask for the Blood Transfusion Duty Registrar.

A 24 hour on-call rota operates for the Duty Registrar (first point of contact) and Consultant cover. This cover is for all Lothian Hospitals, including St John’s Hospital and Western General Hospital.

Please restrict out-of hour’s calls to clinically urgent matters.

**1.4 Complaints/ Comments/ Suggestions**

NSS Blood, Tissues and Cells, as a Strategic business Unit (SBU) of NSS, is committed to capturing and recording feedback from service users and reviewing this correspondence as part of its Continual Improvement Programme.

In the event that a user is dissatisfied with any aspect of the service they have received, then they are encouraged to firstly, contact any of the addressees identified in the contacts section to discuss their concerns. Alternatively, concerns/complaints can be submitted in writing to Susan Buchanan, Associate Director for Patient Services, who will ensure that they are dealt with promptly and thoroughly (See Appendix 8).

The documents “Information for patients” and “Information for clinical staff” can be found at www.scotblood.co.uk/publications
1.5 Protection of Personal Information

In line with National Services Scotland (NSS) Information Security policies the laboratory has in place information technological and organisational safeguards to ensure that the confidentiality, integrity and availability of all forms of information held on patients, donors, NHS Scotland staff and family health contractors, it is not lost or compromised.

1.6 Quality Assurance

A Quality Management System monitors and audits all aspects of the service. All laboratory investigations and clerical procedures are governed and maintained by compliance with the SEBTS Quality Manual, Management Procedures and relevant Standard Operating Procedures (SOPs).

Standards of testing are maintained by the rigorous use of internal quality assurance protocols and through participation in appropriate UK National External Quality Assessment Schemes (UK NEQAS).

Quality Assessment and External Audit

A copy of last year’s participation certificate and results summary is available, on request, for each of the following:

- **UK NEQAS for Red cell antibody identification and identification**
- **UK NEQAS for FMH screening and quantification by acid elution**

1.7 Accreditation

The SNBTS Edinburgh clinical laboratory is accredited through Clinical Pathology Accreditation (UK) Ltd (CPA) and the Medicines and Healthcare products Regulatory Agency (MHRA) complicate.
### Section 2

#### 2.1 Sample Requirements for Blood Transfusion and Serological Investigations

<table>
<thead>
<tr>
<th>Investigation</th>
<th>Sample Type</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Blood Bank</strong></td>
<td></td>
</tr>
<tr>
<td>• Group and Screen and/or crossmatch</td>
<td>4.5ml EDTA Sample</td>
</tr>
<tr>
<td>• Newborn Group and DAT</td>
<td>1.2ml EDTA Sample (for under 10kgs)</td>
</tr>
<tr>
<td>• Newborn Cross match (less than 4 months old)</td>
<td>1.2ml EDTA Sample (for under 10kgs) and 4.5ml EDTA Maternal sample</td>
</tr>
<tr>
<td>• Cord Blood</td>
<td>4.5ml EDTA Sample</td>
</tr>
<tr>
<td>• Transfusion Reaction</td>
<td>4.5ml EDTA Sample and 10ml Clotted sample</td>
</tr>
<tr>
<td>• Rhesus Programme</td>
<td>2 x 4.5ml maternal EDTA sample and 1 x 4.5ml EDTA cord sample (alternatively 1.2ml neonatal EDTA sample)</td>
</tr>
<tr>
<td><strong>Immunohaematology</strong></td>
<td></td>
</tr>
<tr>
<td>• Red Cell Antibody Investigation</td>
<td>4.5ml EDTA Sample</td>
</tr>
<tr>
<td>• Cold Agglutinin</td>
<td>4.5ml EDTA sample and 10ml Clotted sample</td>
</tr>
<tr>
<td>• AIHA (Auto Immune Haemolytic Anaemia)</td>
<td>3 x 4.5ml EDTA Sample</td>
</tr>
<tr>
<td>• DAT (Direct Antiglobulin Test)</td>
<td>4.5ml EDTA Sample</td>
</tr>
<tr>
<td>• Suspected Transfusion Reaction</td>
<td>4.5ml EDTA Sample, 4.5ml Clotted Sample and any RCC (used or unused)</td>
</tr>
<tr>
<td><strong>Antenatal / Obstetric Samples</strong></td>
<td></td>
</tr>
<tr>
<td>• Antenatal Group and Screen</td>
<td>4.5ml EDTA Sample</td>
</tr>
<tr>
<td>• Antibody follow-up</td>
<td>4.5ml EDTA Sample</td>
</tr>
<tr>
<td>• Paternal Investigation</td>
<td>4.5ml EDTA Sample</td>
</tr>
<tr>
<td>• Kleihauer</td>
<td>2 x 4.5ml maternal EDTA Sample</td>
</tr>
</tbody>
</table>
2.2 Sample Labeling

SNBTS operate a zero tolerance approach to sample acceptance (See Appendix One). Please note failure to adhere to the sample labelling requirements may result in sample rejection. The laboratory will not accept requests that do not have the minimum information as described below.

Known high risk samples must be labelled as such on the sample tube and request form. Addressograph labels are NOT acceptable on SAMPLE TUBES for transfusion related work. The following information shows the minimum data required on the sample request form and sample tube:

Each request accepted by the laboratory for examination(s) shall be considered an agreement.

### Sample Tubes - Handwritten

<table>
<thead>
<tr>
<th>Details</th>
<th>Requirement</th>
<th>Consequence if missing from sample tube</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Patient details on sample &amp; request form must match exactly)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patient <strong>surname and first name</strong> (correctly spelt)</td>
<td>Mandatory</td>
<td>Discard</td>
</tr>
<tr>
<td><strong>Date of birth</strong></td>
<td>Mandatory</td>
<td>Discard</td>
</tr>
<tr>
<td><strong>CHI number</strong></td>
<td>Mandatory</td>
<td>Discard</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td>Desirable</td>
<td>Gender is desirable but not essential</td>
</tr>
<tr>
<td><strong>Signature of person taking the sample</strong></td>
<td>Mandatory</td>
<td>Discard</td>
</tr>
<tr>
<td><strong>Date sample taken</strong></td>
<td>Mandatory</td>
<td>Discard</td>
</tr>
</tbody>
</table>

### Request Forms – addressograph labels may be used

<table>
<thead>
<tr>
<th>Details</th>
<th>Requirement</th>
<th>Consequence if missing from request form</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Patient details on sample &amp; request form must match exactly)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patient <strong>surname and first name</strong> (correctly spelt)</td>
<td>Mandatory</td>
<td>Discard</td>
</tr>
<tr>
<td><strong>Date of birth</strong></td>
<td>Mandatory</td>
<td>Discard</td>
</tr>
<tr>
<td><strong>CHI number</strong></td>
<td>Mandatory</td>
<td>Discard</td>
</tr>
<tr>
<td><strong>Signature or Initials of person taking sample</strong></td>
<td>Mandatory</td>
<td>Discard</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td>Desirable</td>
<td>Gender is desirable but not essential</td>
</tr>
<tr>
<td><strong>Date and time of sampling</strong></td>
<td>Mandatory</td>
<td>Discard</td>
</tr>
<tr>
<td><strong>Clinical details/reason for request and requesting clinician</strong></td>
<td>Desirable</td>
<td>Requester to be contacted if possible**</td>
</tr>
<tr>
<td><strong>Clinical area</strong></td>
<td>Desirable</td>
<td>Clinician to be contacted if possible</td>
</tr>
</tbody>
</table>

* All **transfusion samples** must be labelled with the patient’s CHI number – an alternative unique identifier (hospital number or emergency number) may only be used if the patient does not yet have a CHI number.
** Requester is responsible for ensuring the laboratory is made aware of any special requirements that may be necessary.

In addition to the above criteria, samples will not be accepted under the following circumstances:

- Addressograph labels
- Unlabelled samples/request form
- Where patient details have been scored out and a different patient details added
- Inverted names e.g. surname written in forename field and vice versa
- Expired sample tubes
- Specimen tubes/request forms which are badly blood stained
- Unreadable patient information
- Overwriting of information on the sample

### 2.3 Unidentified Patients

In the case of an unidentified patient the minimum acceptance criteria are:

- A/E Number
- Gender

The blood bank must be contacted when the patient details become available to allow essential updates of the laboratory computer system.

In the event of a Major Incident, all patients will be identified by a unique major incident number on admission. This number will be used on all issued blood component labels to identify such patients until additional information becomes available.

### 2.4 Infant Samples

All samples from this group of patients must only be labelled with the individuals details. Samples which contain details of the mother on the blood sample tube will be discarded. Maternal details must be given **ONLY** on the request form.

Neonates rarely make antibodies in response to blood transfusion but may have passively acquired red cell antibodies in their plasma from the mother. If a crossmatch is required please send:

- a maternal sample which will be screened for antibodies
- An infant sample which will be used for ABO & RhD grouping and a DAT.

See Section 2.1.

If no maternal sample is available a larger infant sample is required.
2.5 Clinical Details

Details of the patient risk status, previous name(s), known antibodies, previous pregnancies and transfusions should be included on the request form. In obstetric cases, gestation, expected date of delivery and any dates of prophylactic anti-D injections should all be noted on the request form.

Clinical details should be included in the diagnosis section to allow samples to be prioritized appropriately and for the correct tests to be carried out.

Request forms can be obtained from Astley Ainslie Stores.
Telephone Number: 0131 537 9277.

2.6 Urgent Samples

Fully crossmatched red cells are available within 40 minutes of sample receipt for the vast majority of patients. Should red cells be needed sooner, uncrossmatched, group specific red cells may be issued in emergency situations only. Urgent samples must meet the mandatory labeling requirements or they risk being discarded. Please contact the laboratory before dispatching urgent samples as this will ensure they are processed in the shortest time possible.

2.7 Private Patients

When there is no indication for blood grouping to be performed e.g. for foreign travel, SEBTS will invoice the requesting medical practitioner for the costs (approximately £25). In this circumstance, please allow at least one working week to process the sample and issue a report bearing the patients details and blood group.

2.8 Specimen Transport

Samples from within the Royal Infirmary may be sent via the Quire Pace pneumatic tube delivery system to user number 222. To ensure that any leakages are contained, samples should be sent in sealed plastic bags with the request form protected from the samples.

Urgent samples are sent via porter by contacting the Cofley helpdesk on extension: 24242.

Requirements for sending samples by Royal Mail:

Samples must be packaged in accordance with Packaging Instruction P650 (UN3373, Diagnostic Specimens). (See www.royalmail.com) Briefly these states:

The packaging shall consist of three components:

a) A primary receptacle
b) A secondary packaging
c) An outer packing
Primary receptacles shall be packed in secondary packaging in such a way that, under normal conditions of carriage, they cannot break, be punctured or leak their contents into the secondary packaging. Secondary packaging shall be secured in outer packaging with suitable cushioning material. Any leakage of the contents shall not compromise the integrity of the cushioning material or of the outer packaging.
For carriage, the mark illustrated below shall be displayed on the external surface of the outer packaging on a background of a contrasting colour and shall be clearly visible and legible. The width of the line shall be at least 2mm; the letters and numbers shall be at least 6mm high.

2.9 High Risk Specimens

Any specimen from a patient who is (or suspected to have) a hazardous infection must be labeled with a “Risk of Infection” label on both the sample tube and request form. The request form must NOT be sealed in the same bag as the specimen.

NO sample should be taken from a patient suffering from a viral hemorrhagic fever (Lassa, Marburg or Ebola) until a Consultant Medical Microbiologist has been informed.

2.10 Sample factors influencing test performance and results

Haemolysed samples may influence test results and receipt of a haemolysed sample may result in the request for a replacement.

Samples more than 7 days old will not be processed.

2.11 Uncertainty of Measurement

Certain tests give results as a numerical value. Within this reported value there is an inherent uncertainty, or variability, in the data generated. Data obtained from these tests enable an assessment of this uncertainty of measurement (UoM). Please contact the laboratory for discussion or advice on results if necessary.
Section 3: Laboratory Procedures

3.1 Blood Bank Turnaround Times

The laboratory aims to meet the following targets in reporting results.

<table>
<thead>
<tr>
<th>Investigation</th>
<th>Average Turnaround Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group and save</td>
<td>2 hours</td>
</tr>
<tr>
<td>Urgent group and save</td>
<td>40 minutes</td>
</tr>
<tr>
<td>Group, save and crossmatch</td>
<td>1 hour</td>
</tr>
<tr>
<td>Kleihauer</td>
<td>Next working day</td>
</tr>
<tr>
<td>Complex crossmatch</td>
<td>Varies according to patient red cell requirements. Notice of 1-2 days may be required for individual patients.</td>
</tr>
<tr>
<td>DAT</td>
<td>30 minutes</td>
</tr>
<tr>
<td>Rh Programme</td>
<td>3 hours</td>
</tr>
<tr>
<td>Group specific uncrossmatched red cells</td>
<td>10 – 15 minutes</td>
</tr>
<tr>
<td>Antibody investigation</td>
<td>Up to 3 working days</td>
</tr>
<tr>
<td>Antibody investigation with provision of compatible red cells</td>
<td>Up to 1 working day</td>
</tr>
<tr>
<td>Antibody investigation requiring Alloabsorption studies</td>
<td>1 working day</td>
</tr>
<tr>
<td>Transfusion reaction investigation</td>
<td>1 hour on receipt of implicated unit(s) and post transfusion G&amp;S sample</td>
</tr>
<tr>
<td>Elution studies</td>
<td>By special arrangement only</td>
</tr>
<tr>
<td>Cold agglutinin studies</td>
<td>By special arrangement only</td>
</tr>
</tbody>
</table>

3.2 Group and Screen

Pre transfusion samples are grouped for ABO and D, and also screened for the presence of red cell antibodies in the plasma.

The group and screen samples are stored at 4°C for up to 7 days from the date of withdrawal and can be used for any subsequent requests for red cells for up to 72 hrs after the first unit has been issued.

To ensure that the specimen used for compatibility testing is representative of the patient’s current immune status, **samples should not be taken more than three days in advance of the procedure/transfusion when the patient has been transfused or pregnant in the preceding 3 months, or when this information is unavailable.**
3.3 Emergency Issue

- O RhD negative, K negative blood is available for emergency use. This should only be used in circumstances where there is no time for carrying out a compatibility test.
- Males can be given O RhD positive red cells.
- Women of childbearing age (<51 years old) should be given O D negative, K negative red cells.
- Units of O RhD negative for EMERGENCY USE can be found in the blood refrigerators as follows:

<table>
<thead>
<tr>
<th>Refrigerator Location</th>
<th>O RhD negative units</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROYAL INFIRMARY OF EDINBURGH</td>
<td></td>
</tr>
<tr>
<td>• A&amp;E</td>
<td>4</td>
</tr>
<tr>
<td>• Obstetric Theatre</td>
<td>2</td>
</tr>
<tr>
<td>Royal Hospital for Sick Children</td>
<td>2</td>
</tr>
</tbody>
</table>

NOTE: When this blood is removed from the satellite fridge, the blood bank must be informed immediately (27501 or 27502). 6 units of O, CDE Negative, K Negative RCC are available at all times from the blood bank.

- Before the emergency transfusion of uncrossmatched red cells commences, a 4.5ml EDTA blood sample must be taken from the patient and sent to blood bank.
- The blue traceability tag must be fully completed by clinical staff and returned to blood bank as soon as possible to ensure full traceability of the component and to allow completion of the patient’s transfusion record in blood bank.

3.4 Compatibility Testing

This consists of a group and screen and the selection of suitable units of red cells for transfusion. If red cell antibodies have been identified, 2 units of crossmatched red cells are made available depending on the clinical need. Whenever patient’s plasma is known to contain atypical red cell antibodies, advance warning must be given to the blood bank whenever possible as the presence of alloantibodies may delay the provision of fully crossmatched blood.

3.5 Electronic Issue

Electronic Issue is the term given to the issue of red cells without a serological crossmatch. Patients eligible for the electronic issue of red cells must meet the following criteria:
- Historical record of patients blood group (which matches current sample).
- Sample fully tested by automated techniques
- No atypical red cell antibodies (or history of red cell antibodies)
- No history of bone marrow transplant
- No solid organ transplant within the last three months.
3.6 Provision of blood which is not fully compatible with the patient

In certain circumstances it may not be possible to find blood which is serologically compatible with the patient’s plasma. We will always try to select the units, which we feel are most suitable for the patient in this instance. The doctor prescribing the blood will be notified of any concerns and advised if any special precautions are required.

3.7 Issue of blood of a different blood group

Occasionally blood may be issued which is not the same group as the patient. This may be because of a shortage of suitable blood of the patient’s group e.g. during a large volume transfusion, or a patient with a rare blood group. The blood issued will always be ABO and D compatible and an information card will be provided with each pack.

3.8 Issue of blood products to patients who have undergone a stem cell transplant

Patients who undergo this procedure often change blood group as a result. During the change from one blood group to another, the blood bank will provide the best suited products for these patients often meaning the patient will receive plasma products of one group and red cells of another.
3.9 Red Cell Donations

RED CELLS IN ADDITIVE
STORE AT 4°C ± 2°C
Volume 275 ml

INSTRUCTION
Always check patient / component compatibility / identity.
Inspect pack for signs of deterioration or damage.
Risk of adverse reaction/infection, including vCJD.

Rh D POSITIVE
Do Not Use After
23 APR 2014 23:59

Irradiated
SNBT
Bled 19 Mar 2014

Donation Number
Component Code
Blood Group
Expiry Date
Special Requirements
### 3.10 Compatibility Label

The compatibility label is generated by the blood bank computer system and is attached to the blood product.

The unique donation number on the blood product must match exactly with the donation number on the traceability label.

**It contains the following information:**
- Patients full name (surname and forename)
- Date of Birth
- Gender
- Patient identification number
- Patient Blood Group
- Component Type
- Blood product donation number
- Date and time required

<table>
<thead>
<tr>
<th>Donation No:</th>
<th>Special Requirements:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Component:</td>
<td>Once transfusion has been started, you must send the completed section below to the Hospital Transfusion Laboratory. This is a legal requirement.</td>
</tr>
<tr>
<td>Signature 1:</td>
<td>Surname: Forename:</td>
</tr>
<tr>
<td>Signature 2:</td>
<td>Patient Identity No: Lab Sample No:</td>
</tr>
<tr>
<td>Date Given:</td>
<td>Donation Number:</td>
</tr>
<tr>
<td>Time Given:</td>
<td>Component:</td>
</tr>
<tr>
<td>Patient Blood Group:</td>
<td>Date/Time Required:</td>
</tr>
<tr>
<td>Date/Time Required:</td>
<td>Component:</td>
</tr>
<tr>
<td>Component:</td>
<td>Date/Time Required:</td>
</tr>
<tr>
<td>Date Given:</td>
<td>Time Given:</td>
</tr>
<tr>
<td>Time Given:</td>
<td>I confirm that the above patient received this blood component. Sign and Print Name</td>
</tr>
</tbody>
</table>
3.11 Administering Blood Products

The prescription /authorising of blood and blood components is the responsibility of the medical officer in charge of the patient.

RCC should be transfused within 4 hours of removal from controlled storage.
If the transfusion cannot be finished safely within the requisite time frame then a new unit of red cells should be requested.

If the RCC is no longer required it should be returned to blood bank within 30 minutes of removal from controlled storage to prevent the unit being discarded.
3.12 Traceability

All issued blood components, including emergency O RhD Negative units have a Blood Transfusion label attached. The blue tear off section MUST be completed by the individual giving the transfusion and the details MUST be completed fully.

The blood bank must receive these tags back within 24 hours of transfusion.

Returning these tags is a legal requirement (BSQR 2005).

For further information on blood transfusion please refer to the ‘Handbook of Transfusion Medicine’ (5th Edition 2014 UK Blood Services).

3.13 Transfusion Reaction

In the event of a suspected transfusion reaction, the transfusion should be stopped and the relevant clinicians informed.

The following should be sent immediately to the Blood Bank:
1. Pack of red cells suspected of causing the reaction
2. Any used or unused units of red cells issued to the patient
3. A 4.5ml EDTA sample and 4.5ml Clotted Sample, taken post transfusion, together with a completed request form indicating the degree of urgency of further transfusion
4. Completed Transfusion Reaction Investigation Form

For advice on testing and compatibility procedures contact the blood bank. Specialist advice may be sought from the BTS specialist registrar. See Appendix 6 for further information.

3.14 Maximum Surgical Blood Order Schedule

Blood ordering schedules are designed to provide guidance primarily for pre-planned surgical procedures. They have been prepared in order to allow the most efficient utilisation of blood stocks and laboratory facilities, and are the result of a consensus between NHS Lothian surgeons, anaesthetists and the Transfusion Committee. Blood requirements for emergency / trauma cases are naturally less predictable and therefore individual clinician judgement is required in these circumstances.

Please refer to NHS Lothian University Hospitals Division: Surgical Blood Ordering Schedule (SBOS) (Adults) for requirements.
## Section 4

### 4.1 Blood Components and Products

The following blood components are available from SEBTS. More detailed information is available from the department.

Blood products should only be administered where there is a clear indication and expectation of clinical benefit.

The reasons for transfusion should be clearly documented in the medical notes.

None of these products are guaranteed to be free from the risk of transmission of infectious diseases or other adverse events.

All products are now leucodepleted at the time of manufacture.

<table>
<thead>
<tr>
<th>Blood Component</th>
<th>Main Indication for Use</th>
<th>Description</th>
</tr>
</thead>
</table>
| Red Cell Concentrate (RCC)             | Increase Oxygen carrying capacity due to loss or lack of production of the patients own red cells. | • Shelf life 35 days  
• Stored at 4°C +/- 2°C  
• Volume 270ml +/- 50ml  
• Greater than 40g Hb per unit  
• Must be transfused within 4 hours of removal from temperature controlled storage area  
• If not required, must be returned to blood bank within 30 minutes of removal from temperature controlled storage area |
| Red Cell Concentrate (Paedipack)       | Increase Oxygen carrying capacity due to loss or lack of production of the patients own red cells. For neonates and infants under one year. | As with RCC.  
Allow small volume top up transfusion. One unit RCC split into 4 Paedipacks to reduce donor exposure and decrease donor-related risk. |
<table>
<thead>
<tr>
<th>Blood Component</th>
<th>Main Indication for Use</th>
<th>Description</th>
</tr>
</thead>
</table>
| Red Cells for Intrauterine Transfusion | Used for the prevention and treatment of foetal anaemia due to Haemolytic Disease of the Foetus and Newborn (HDFN) | • Accredited donor  
• CPD Whole blood, PCV 0.7-.85  
• Leucodepleted  
• Less than 5 days old  
• Negative for relevant antigen  
• ABO and D Compatible  
• K Negative  
• CMV Negative  
• anti-A and B negative  
• Red cell antibody negative  
• Gamma Irradiated  
• Expiry 24 hours |
| Red Cells for Exchange Transfusion | Mainly used in the treatment of severe hyperbilirubinaemia or anaemia in babies with HDFN. | As with red cells for IUT except PCV 0.5-0.6 |
| Platelet (Apheresis)            | Bleeding due to thrombocytopenia or platelet function defect.                           | • Shelf life 5 days  
• Stored at 20 – 24°C with gentle agitation  
• Platelet count per bag >240x10⁹  
• Normally Group O and A  
• Sourced from one donor  
If not required, must be returned to blood bank within 30 minutes. |
| Platelet Pooled                 | As with apheresis platelets                                                             | A pool of platelets derived from 4 buffy coats and a volume of up to 300ml of plasma.                                                     |
| Fresh Frozen Plasma (FFP)       | Replacement of coagulation factors not available as specific concentrates. Can be used for plasma exchange for TTP/HUS. | Plasma is separated from whole blood and frozen within 8 hours of collection.  
• Volume approx 220ml  
• Shelf life 24 months at -30°C  
• Must be transfused within 4hrs of thawing if maintained at 22+/- 2°C  
• Must be transfused within 24hrs of thawing if maintained at 4°C  
• FVIIIc > 0.7 IU/mL |
<table>
<thead>
<tr>
<th>Blood Component</th>
<th>Main Indication for Use</th>
<th>Description</th>
</tr>
</thead>
</table>
| Octoplas Human Plasma in Solvent Detergent           | Used as normal FFP, mainly in patients with TTP or in patients with allergic reactions to FFP | • Volume 200ml  
• From non-UK donors                                                                           |
| FFP-Methylene Blue Treated (MBT) and removed         | Same as FFP.                                                                            | • For children and neonates born after 1\textsuperscript{st} January 1996.  
• Virally inactivated with MBT  
• Imported from the USA.  
• Transfusion must be completed within 4 hours of thawing  
• FVIIIc > 0.5 IU/mL                                                                                   |
| Cryoprecipitate                                      | Fibrinogen Deficiency                                                                  | • FVIIIc > 70IU/mL  
• Fibrinogen >140mg/unit  
• Transfusion must be completed within 4 hours of thawing                                                                 |
| Cryoprecipitate MBT (Virus Inactivated)              | Fibrinogen deficiency                                                                  | • For children and neonates born after 1\textsuperscript{st} January 1996.  
• Virally inactivated with MBT  
• FVIIIc > 70IU/mL  
• Fibrinogen >140mg/unit  
• Infusion must be completed within 4 hours of thawing                                                                 |
| Beriplex                                             | • Haemophilia B  
• Rapid reversal of oral anticoagulant overdose  
• Factor II and X deficiency                                                                         | Contents after reconstitution (IU/mL)  
• Factor II: 20-48  
• FVII: 10-25  
• FIX: 20-31  
• FX: 22-60  
• Protein C: 15-45  
• Protein S: 12-38 |
Blood Product | Main Indication for Use | Description
---|---|---
Human anti-D Immunoglobulin | Prevention of sensitisation to D antigen in D Negative individuals | • Store at 2-8°C • Available as 250IU, 500IU or 1500IU

**ALWAYS CONSULT THE DATA SHEET AND FOLLOW SUPPLIER'S INSTRUCTIONS AND CHECK THE EXPIRY DATE BEFORE USE.**

Plasma derivatives other than anti-D and Four Factor concentrate are provided by Pharmacy.

For advice on clinical indications, contact On-Call Duty Registrar (See page 6 for details)

Guidelines for the use of blood components are available at: [www.transfusionguidelines.org.uk](http://www.transfusionguidelines.org.uk) and [www.bcsghguidelines.com](http://www.bcsghguidelines.com). (See Appendix 10)
4.2 Ordering blood components

Requests for FFP and platelets should be discussed with the duty haematology/BTS registrar or Consultant Haematologist. Medical staff from selected units can order directly from the Blood Bank according to the locally agreed protocol. All requests for cryoprecipitate must be discussed with BTS medical staff.

4.3 Delivery of blood products

Within the RIE, blood components will be delivered by the portering service provided by Cofley (Telephone extension 24242).

Delivery of blood components out with the RIE will be by SNBTS transport or approved Taxi Companies.

Urgent Delivery

Within the RIE, blood components will be delivered by the emergency portering service provided by Cofley (Telephone extension 27700).

Emergency ‘Blue Light’ delivery may be provided if there is an SNBTS driver available.

4.4 Transfer of blood to another hospital

If a patient is going to be transferred to another hospital and requires ongoing transfusion support, the Blood Transfusion Laboratory should be informed immediately.

If required blood components will be prepared for transport and will be sent to the clinical area in a validated transport box with accompanying documentation and marked with the time of despatch.

In general, no more than two units are required to travel with the patient. Previously issued blood components should not be sent to another hospital directly from the clinical area, as they are likely to be discarded by the receiving hospital.

4.5 Receiving patients who have been transferred with blood

If blood arrives with a transferred patient it should be sent to the Blood Transfusion Laboratory without delay.

If urgent transfusion is required the blood can still be transfused as long as the blood has been transported correctly in an approved cooled transport box with appropriate accompanying documentation and it is clear that the blood was meant for the patient concerned. Documentation should be completed by the receiving clinical area prior to the transfusion.

To maintain transfusion support for any patient transferred from another hospital to the RIE, a sample must be sent to the Blood Transfusion Laboratory immediately. If crossmatched blood is not available, emergency O RhD Negative red cells can be issued in the interim.
Section 5

5.1 Antenatal Service

Laboratory Hours: Monday to Friday 09:00 – 17:00

Telephone Number: 0131 242 7501 or 0131 242 7502

The main role of the antenatal serology laboratory is:

- To ensure prior knowledge of the patient’s blood group and identify any red cell antibodies that may make the cross matching of blood for transfusion difficult.
- To identify RhD Negative mothers in order to identify those who may require anti-D prophylaxis
- To ensure early awareness of any red cell antibodies which have the potential to result in foetal/neonatal anaemia leading to Haemolytic Disease of the Foetus and Newborn.

5.2 Sample Requirements

Please refer to tables on page 9 and 10 for sample and request form requirements and the minimum data required for sample acceptance.

On the request form, please state clearly:

- If the request is an antenatal booking
- Whether the patient is prim/multigravidae
- History of transfusion
- Any known clinically significant red cell antibodies
- Any administered prophylactic anti-D Ig and if so, when?
- If the sample is from a partner, please give details of the pregnant mother.
5.3 Antibody Investigation

When an antibody screen is positive further tests will be carried out to determine the antibody specificity and significance. Antenatal patients with clinically significant red cell antibodies require regular monitoring of their antibody titre (Please refer to Appendix 4 for testing frequency).

Where alloimmune anti-D or anti-c have been identified in a patient, this will be reported initially as an antibody titre result and will subsequently be quantified in International Units (IU/mL). All quantification testing is carried out by the SNBTS Gartnavel laboratory (see Appendix 7 for address). Where an antibody quantitation has shown a significant rise, results are communicated directly to the patient’s midwife or obstetric consultant to ensure they are aware of the result in a timely manner.

Antenatal patients who have clinically significant red cell antibodies require determination of the paternal phenotype to give an indication of whether the foetus is likely to be at risk of HDFN.

5.4 Routine Antenatal Anti-D Prophylaxis Programme (RAADP)

The RAADP protocol has been drawn up to comply with the guidelines: Recommendations for the use of anti-D immunoglobulin for Rh Prophylaxis. Transfusion medicine 1999, (9), 93-97.

Royal College of Obstetricians and Gynaecologists Guidelines No 22 October 1999.

The aim of RAADP programme is to prevent HDFN due to anti-D. It is important to determine the D group and antibody status of all pregnant women in order to decide the eligibility for anti-D prophylaxis.

To be eligible for RAADP a woman must:
- Be RhD Negative
- Not have pre-existing immune anti-D

The protocol should be explained to the patient (Information available: http://www.scotblood.co.uk/media/11388/preventing_rhesus_v3.pdf ).

A single dose of 1500IU anti-D Ig is administered at 28 weeks.

Please inform SNBTS when anti-D Ig is administered.
5.5 Prophylaxis for Potentially Sensitising Events (PSE)

All RhD Negative women with no pre-existing immune anti-D are eligible for prophylactic anti-D.

Events, following which, prophylactic anti-D should be given:
- Delivery of a RhD Positive child
- Abortion
- Invasive prenatal diagnosis e.g. amniocentesis, chorionic villus sampling, foetal blood sampling
- Antepartum Haemorrhage
- External version of the foetus
- Closed abdominal injury
- Ectopic pregnancy
- Intrauterine death (at diagnosis and delivery)
- Transplacental Haemorrhage

Dose:
- Before 20 weeks gestation → 250 IU
- After 20 weeks gestation → 500 IU*
- Delivery → 1500 IU*
  * In conjunction with a Kleihauer test to assess the size of any TPH

Further doses of anti-D will be required following each new sensitizing event.

Patients with ongoing intermittent bleeding in the antenatal period will be given anti-D at approximately 6 weekly intervals, and monitored with Kleihauers every 2 weeks to establish whether additional doses of anti-D are required.

5.6 Kleihauer Testing

A Kleihauer is the screening test performed to detect a foetal-maternal haemorrhage (FMH) following a potentially sensitising event after 20 weeks gestation.

In cases where there has been a large bleed requiring more than the standard dose of prophylactic anti-D, the Kleihauer test results will be communicated back to the requesting ward by telephone. All other Kleihauer results will be reported via the SNBTS Immunohaematology report form.

Bleeds which are estimated to be over 2ml are confirmed by flow Cytometry to give an accurate measurement of the FMH, as recommended in BCSH Guidelines on the estimation of Feto-Maternal Haemorrhage, Transfusion Medicine, 2009, 9, 87-92.
5.7 Quantitation

Quantitation is carried out on antenatal samples with antibody specificities of anti-D or anti-c. When these antibodies are detected they will be reported first as an antibody titration value then quantified in international units. These antibodies and anti-K are considered the most likely to cause HDFN. The quantitation value correlates better with the risk of intravascular haemolysis.

Antibody quantitation is referred to the Obstetric Reference Laboratory based within the SNBTS laboratories at Gartnavel Hospital (see Appendix 7 for address). When an antibody quantitation has shown a significant rise, results are communicated by telephone from Gartnavel to allow us to contact the patient’s midwifery team as soon as possible.
Section 6

6.1 Immunohaematology Investigations

This laboratory provides a comprehensive reference service for the investigation and confirmation of red cell antibodies, investigation of Autoimmune Haemolytic Anaemia (AIHA) and possible transfusion reactions.

The following tests are available:

- Red Cell auto and allo antibody screen
- Extended blood group phenotyping
- Direct Antiglobulin Test (DAT) for complement C3 and IgG
- Cold haemagglutinin screen
- Red cell adsorption for AIHA
- Investigation of Transfusion Reactions (See section 3.13 and Appendix 6)

Samples for extended blood group genotyping are sent to Dundee H&I Laboratory, East Scotland Blood Donor Centre, Ninewells Hospital, Dundee, DD1 9SY. Contact Alan Comrie: 01382-645-166.
Appendix 1

The Scottish National Blood Transfusion Service (SNBTS) Zero Tolerance Policy

Following the publication of the NHS Quality Improvement Scotland (QIS) Clinical Standards for Blood Transfusion in 2006, QIS recommended that every NHSS Board should introduce a ‘Zero Tolerance’ policy for pre-transfusion samples. BCSH also strongly recommended zero tolerance in their updated Guidelines on the Administration of Blood Components in 2009:

SNBTS Clinical Laboratories operate a “Zero Tolerance” approach in relation to blood sample acceptance criteria.

Sample tubes must be fully completed and hand written. Addressograph labels are acceptable on request forms.

The minimum data set for acceptance is:
- Last Name (correctly spelt)
- First Name (correctly spelt)
- Date of Birth
- Unique Identification Number (CHI or Hospital Number)*
- Signature or initials of person taking the sample
- The gender of the patient (mandatory if space on the sample tube)

*An alternative point of identification (e.g. Address) may be used in those patients without a CHI or Hospital Number.

Emergency Department (ED) patients

In the case of an unidentified patient the minimum acceptance criteria are:
- Emergency Number
- Gender

Samples/request forms which do not comply WILL NOT BE ACCEPTED.
Amendments to mislabelled samples/forms WILL NOT BE ACCEPTED.
In urgent cases, Emergency Blood can be issued in order to avoid unnecessary delays whilst the correctly labelled sample is awaited.
Appendix 2

Major Haemorrhage Protocol - LUHS

To trigger the Major Haemorrhage Protocol

1. Phone 2222 and state that there is a Major Haemorrhage and the location of the patient.

   Remain on the line while the switchboard operator transfers your call to the Blood Bank.

Tell Blood Bank:

- The diagnosis e.g. ruptured aortic aneurysm
- The patient's details - name, DOB, CHI number
- What blood components are required e.g. red cells, FFP, platelets and how many units
- How urgently the blood components are required
- Where the patient will be
- Your name and contact details
- What samples are being sent to Blood Bank / Haematology and whether they are ready for collection. (Blood Bank will inform you whether a sample for blood grouping is required)

Switchboard will inform:

- Porters - a dedicated emergency porter will report to Blood Bank and will be available to transport blood components and blood samples until stood down.
- Haematology lab and on-call Haematologist. Emergency FBC and coagulation samples will be expected and will receive priority handling.

2. Send blood samples with the dedicated emergency porter (not the pod system).

   - a sample for blood grouping to the Blood Bank (unless Blood Bank have informed you this is not required because they already have a suitable sample).
   - FBC and coagulation screen samples to Haematology

If further blood components are required or blood samples are ready for collection, contact the Blood Bank directly on the numbers given in the box below. Haematology advice is available from the on-call Haematologist - contact via switchboard.
**When the Major Haemorrhage is over.**

Inform the Blood Bank directly. Blood Bank will stand down the dedicated MHP emergency porter and inform the Haematology laboratory. (It will still be possible to ask Blood Bank to arrange urgent transport for any blood components that are subsequently requested if this is considered necessary.)

---

**Do you need to trigger the Major Haemorrhage Protocol (MHP)?**

**Blood components can be obtained rapidly from Blood Bank without triggering the MHP.** Contact blood bank directly, explain how urgent the need for blood components is and ask them to arrange urgent transport to the clinical area.

- **RIE**  Phone 27501 or 27502
- **WGH**  Phone 31912 or Bleep 8539 (emergency only)
- **St John's**  Bleep 3729 (or phone 2222 and ask switchboard to "fast bleep" 3729)

O negative blood is kept in Blood Bank at each hospital. At RIE, there is also O neg. in the blood fridges in A&E (6 units) and Labour Ward (2 units). Inform Blood Bank **immediately** if these units are used so that they can be replaced.
Appendix 3

RHSC MAJOR HAEMORRHAGE PROTOCOL

♦ Attending clinicians should telephone RHSC switchboard on the emergency number (222), informing them that there is a major haemorrhage, the name and location of the patient and a contact telephone number (and individual where possible).

**Switchboard will inform:**

1. Blood Bank RIE on the emergency phone [RIE ext 27501/2]
2. Haematology Technician [via bleep]
3. Haematology duty doctor at RIE [via RIE switchboard, bleep #6466]
4. Arrange emergency transport for samples – Taxi authorization has been previously agreed by the General Manager.

♦ Blood Issue RIE (ext 27501/2) should be rung directly to clarify the following:-
  - How urgent the need for blood is
  - Patient’s minimum data set (full name, date of birth, hospital number if available, A&E number or Major Incident number if necessary).
  - The number and nature of blood components requested (ie red cells, FFP, platelets). For children the normal dose is 10-15 ml/kg for these components).
  - The exact location of the patient

♦ If required, emergency O Negative stock is held in RHSC blood fridge (key with switchboard).

♦ When the full blood count and coagulation screen are available they will be phoned to both the clinical team and to the RIE Haematology duty doctor (via RIE switchboard #6466). The Haematology duty doctor will liaise with the attending clinicians with regard to the haematological results and further blood component requirements.

For further FBC/coagulation, the clinical team should liaise direct with the RHSC haematology technician (via RHSC switchboard).
For further blood or components, the clinical team should liaise direct with the NRIE Blood Bank (ext 27501/27502).
Appendix 4

Lothian Code Red Protocol

Medic One or EMRS patient pre-hospital with:
- Suspected or confirmed bleeding
- Systolic blood pressure < 90 mmHg in an adult patient
- Unresponsive to fluid boluses

ACTIVATE CODE RED PROTOCOL

RIE ED

Standby call via Ambulance Service airwave to the RIE ED or by phone to the RIE ED nurse in charge (NiC) phone (0131 242 1330) to activate the 'Code Red' procedure.

RIE ED NiC to check there are 4 units of O negative packed red cells ('flying squad blood') in the BD satellite fridge.

RIE NiC or senior Emergency Physician to phone 2222 stating CODE RED patient arriving in ED. Remain on line whilst switchboard transfer to blood bank. NiC or senior Emergency Physician to provide blood bank with brief clinical information and ETA.

Blood Bank prepare:
- 4 x O RhD Negative Red Cells
- 1 x Platelet (Group A preferred or Non High Titre A/B Group O)
- 4 x AB Fresh Frozen Plasma

RIE MHP porter will go to Blood Bank and will come down to the RIE ED with Red cells, then FFP/platelets when required

RHSC ED

Standby call over the Ambulance Service airwave to the RHSC ED to activate the 'Code Red' procedure

RSHC nurse in Charge to check there are 2 units of O negative red cells ('flying squad blood') in RHSC blood fridge

RHSC NiC or senior Emergency Physician phones 2222 stating CODE RED patient arriving in ED. Remain on line whilst switchboard transfer to blood bank. NiC or senior Emergency Physician to provide blood bank with brief clinical info and ETA.

RHSC ED Nurse in Charge or senior Emergency Physician should advise blood bank on the components required. 50mls/kg O Negative Red Cell Conc 15mls/kg Platelets 15mls/kg Group AB FFP 5mls/kg Cryoprecipitate

Blood bank will send the requested components by blue light or in a Taxi (depending on availability) as soon as they are available.

A correctly labelled blood sample with patient information and CHI number or with 'unknown patient' details (see Lothian Major Haemorrhage protocol) and a FBC and clotting screen to be sent ASAP with MHP porter, and if possible prior to starting transfusion.
Flow Chart Summarising Clinical Care for Pregnant Women with red Cell Antibodies

First Pregnancy or No Previous Pregnancy Affected by HDFN
- Identify antibody specificity, titre and/or quantification
- History of Previous Pregnancy Affected by HDFN
  - Commence testing to determine risk to this fetus
  - Risk of HDFN Low (see table below)
    - Anti-c, D or K
      - Any other antibody
        - Continue antibody testing: Monthly to 28 weeks then 2 weekly
          - Delivery: Await spontaneous labour
            - Fetus Antigen Negative: NOT AT RISK
              - Continue antibody screening as per Non-Sensitized Pregnancy
                (If an antibody of another specificity develops resume care as per flow chart above)
                NB: iRHD negative women who do not have anti-D antibody should be given anti-D prophylaxis even if other red cell antibodies are present
                - Delivery: Await spontaneous labour
      - Risk of HDFN Moderate or High (see table below)
        - Continue antibody testing: Monthly to 28 weeks then 2 weekly
          - Father antigen positive
            - Paternal Phenotype* (Homozygous/Heterozygous)
              - Paternal testing not possible
                - Father antigen positive
                  - Fetus Antigen Positive
                    - Free Fetal DNA Testing*
                      - Fetus antigen positive or unknown & Moderate or High Risk (see table below)
                        - MCA Doppler from 18 weeks
                          - Repeat regularly (at least fortnightly) and/or intracardiac transfusion
                            - MCA >1.5MoM
                              - Not available locally
                                - Delivery: As discussed with RMU Glasgow
                      - MCA <1.5MoM
                        - Delivery: By 38 weeks
                          - Fetus Antigen Negative
                            - Testing Not Possible
                              - Fetus Antigen Positive
                                - Delivery: Await spontaneous labour

Taken from:
Pregnant Women with Red Cell Antibodies: Scottish National Clinical Guidance
Available www.scotblood.co.uk/about-us/publications.aspx
**Appendix 6 Management of Transfusion Reactions**

This table is intended as a brief aide memoire only – contact the Haematology Registrar for any clinical advice required.

For assistance in the investigation of a suspected transfusion reaction, please contact the laboratory directly.

<table>
<thead>
<tr>
<th>Reaction Description</th>
<th>Features</th>
<th>Cause</th>
<th>Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute Haemolytic Transfusion Reaction</td>
<td>Dyspnoea, fever, chest/back pain, ↓BP, haemoglobinuria</td>
<td>Mismatched transfusion (Check patient and donor details)</td>
<td>Stop blood. Give IV saline. Establish diuresis. Monitor U&amp;E and coagulation. Send blood packs and new sample to BTS.</td>
</tr>
<tr>
<td>Anaphylaxis</td>
<td>Acute collapse, ↓BP, dyspnoea</td>
<td>Reaction to plasma constituent e.g. IgA</td>
<td>Stop transfusion. Give O₂, IV antihistamines, nebulised Salbutamol, IV Adrenaline.</td>
</tr>
<tr>
<td>Fevers/Rigors</td>
<td>Chills, fever, rigors</td>
<td>Anti-leucocyte antibodies (patient)</td>
<td>Slow or stop transfusion. Give Paracetamol / Aspirin</td>
</tr>
<tr>
<td>Urticaria</td>
<td>Rash, itch</td>
<td>Antibodies to plasma protein (patient to donor)</td>
<td>Slow transfusion, Oral or IV Antihistamine</td>
</tr>
<tr>
<td>Infective Shock</td>
<td>Acute collapse, ↓BP, fever</td>
<td>Bacteria or endotoxin in blood component</td>
<td>Stop transfusion. Give broad spectrum antibiotics. Maintain BP and O₂</td>
</tr>
</tbody>
</table>
## Appendix 7

<table>
<thead>
<tr>
<th>Clinical indications for the use of CMV-Seronegative cellular blood components</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
</tr>
<tr>
<td>2</td>
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<tr>
<td>3</td>
</tr>
</tbody>
</table>

CMV negative components will be issued if a request for one of the above patient groups is made. Specific requests can be made on the request form when ordering products.
Transfusion Associated Graft versus Host Disease (TA-GvHD) is a rare but often life-threatening complication of transfusion or bone marrow transplant. It is caused by the transfusion of viable donor lymphocytes into a susceptible host.

TA-GvHD can affect both immunocompromised and immunocompetent recipients.

The gamma irradiation of cellular products at a minimum dose of 25 Gy (with no part receiving more than 50 Gy) damages DNA and leaves the lymphocytes incapable of replication.

**For patients at risk of TA-GvHD the use of irradiated blood components is recommended, provided this does not unduly delay transfusion.** Patients at risk of TA-GvHD should be made aware of their need for irradiated blood components and issued with a card stating their requirements.

All cases of TA-GvHD should be reported to Serious Hazards of Transfusion (SHOT). All cases where non-irradiated blood is transfused to a patient requiring irradiated components should be reported to SHOT.

**Paediatric Cases:**
- All intrauterine transfusions (IUT)
- All exchange transfusions or top-ups following IUT until 6 months after expected delivery date
- All exchange transfusions without a history of IUT as long as this does not unnecessarily delay the transfusion
- Congenital immunodeficiencies in infants and children i.e. SCID, primary T lymphocyte immunodeficiencies, Di George’s Wiskott-Aldrich syndrome, purine nucleoside phosphorylase deficiency

**Lymphoma**
- All Hodgkins disease: **irradiated blood components indefinitely**
- All Non-Hodgkin’s Lymphoma: **irradiated blood components indefinitely**

**Patients receiving chemotherapy or monoclonal antibody**
- Purine analogues: Fludarabine, Cladribine, Clofarabine Deoxycolormycin and anti-lymphocyte globulin (ALG): **irradiated blood components indefinitely**
- T-cell depleted agents such as alemtuzumab (CAMPATH or anti-CD52) for haematological or non-haematological indications such as solid organ transplant and multiple sclerosis: **irradiated blood components indefinitely**

Aplastic Anaemia: only if patient receiving anti-thymocyte globulin (ATG) treatment

**No firm recommendation for duration of irradiated products.**

**References:**
Guidelines for the use of irradiated blood components prepared by the British Committee for Standards in Haematology Blood Transfusion taskforce. BJH 2010; 152: 35-51

## Appendix 9

### Key Addresses

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<thead>
<tr>
<th>Address</th>
<th>Location</th>
<th>Notes</th>
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<tbody>
<tr>
<td>Susan Buchanan</td>
<td>Gartnavel</td>
<td>Associate Director – Patient Services</td>
</tr>
<tr>
<td>National Services Scotland</td>
<td>General Hospital</td>
<td></td>
</tr>
<tr>
<td>25 Shelley Road</td>
<td>Glasgow</td>
<td>G12 0XB</td>
</tr>
<tr>
<td>West of Scotland Blood Transfusion Centre</td>
<td>Glasgow</td>
<td>G12 0XB</td>
</tr>
<tr>
<td>Obstetric Reference Laboratory</td>
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<tr>
<td>Gartnavel General Hospital</td>
<td></td>
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</tr>
<tr>
<td>25 Shelley Road</td>
<td>Glasgow</td>
<td>G12 0XB</td>
</tr>
<tr>
<td>Dundee H&amp;I Laboratory</td>
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<tr>
<td>East Scotland Blood Donor Centre</td>
<td>Ninewells Hospital</td>
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<td>Dundee</td>
<td>DD1 9SY</td>
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<tr>
<td>IBGRL (International Blood Group Reference Laboratory)</td>
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<td>BS34 7QG</td>
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<tr>
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<td>BRISTOL</td>
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<td>BS34 7QG</td>
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</tbody>
</table>
Appendix 10

Bibliography and References


- British Committee for Standards in Hematology (BCSH) guidelines available at www.bcshguidelines.com
  - The administration of blood components (2009)
  - Guidelines for use of prophylactic anti-D immunoglobulin (2006)
  - Guideline for blood grouping and antibody testing in pregnancy (2006)
  - The clinical use of red cell transfusion (2001)

- Serious hazards of transfusion (SHOT) annual reports available at www.shot-uk.org

- SNBTS online transfusion training programme available at www.learnbloodtransfusion.org.uk

- National patient safety agency (NPSA) Safer practice notice 14 Right patient, right blood available at www.npsa.nhs.uk

- www.scotblood.co.uk

- Other policies of interest are available on NHS Lothian intranet (Healthcare/Clinical Guidance/NHS Lothian Local Policies)
  - NHS Lothian Major Haemorrhage Protocol
  - NHS Lothian Surgical Blood Ordering Schedule
  - NHS Lothian Emergency Blood Management Arrangements
  - Anti-D Policy (via Reproductive Medicine/RIE Maternity/Antenatal)
  - NHS Lothian Satellite Blood Fridge Policy
  - NHS Lothian Blood Transfusion Clinical Policy and Procedures