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1. INTRODUCTION

The West of Scotland Blood Transfusion Centre is part of the Scottish National Blood Transfusion Service (SNBTS). SNBTS is the specialist provider of transfusion medicine services in Scotland, including all activities relating to the collection, processing, storage, distribution and appropriate use of blood, selected tissue, and derived products gifted by donors for the benefit of patients.

West of Scotland Blood Transfusion Centre
The West of Scotland Blood Transfusion Centre (West BTC) is located in Glasgow and supplies blood components and transfusion-related expertise to the population of approximately 2.7 million served by the hospitals and GP practices located in an area stretching from Oban to Dumfries. In addition, the Centre supports the Emergency Medical Retrieval Service (EMRS) in providing pre-hospital transfusion capacity and transfusion support for retrievals from designated hospital sites as required.

West BTC Clinical Laboratory is the local Hospital Blood Bank for Gartnavel Hospitals including the West of Scotland Cancer Centre and the Bone Marrow Transplant Unit. It also provides Red Cell Reference Serology Investigations (RCI) for the West of Scotland; the Blood Group Genotyping and Anti-D and Anti-c quantification services for the whole of Scotland and Northern Ireland; and supports the national Intra-uterine Blood Transfusion Programme for the Ian Donald Fetal Medicine Unit at the Queen Elizabeth University Hospital in Glasgow.

From September 2017, the clinical laboratory assumes responsibility for the operation of the Glasgow despatch hub that will distribute blood components to hospitals in the region.

Who is this Handbook for?
This handbook is intended to provide a guide to the clinical laboratory services provided by West BTC, specifically those relating to the supply of blood components to hospital blood banks and the red cell reference laboratory. Additional information for Gartnavel Hospital transfusion laboratory services can be found on the Greater Glasgow and Clyde (GG&C) intranet:

http://www.staffnet.ggc.scot.nhs.uk/Acute/Diagnostics/BloodTransfusion/Pages/BloodTransfusion.aspx

For more information on other SNBTS services please refer to the SNBTS websites:

www.scotblood.co.uk

https://nhsnss.org/services/blood-tissues-and-cells/clinical-services/information-and-manuals-for-clinicians/

Disclaimer
The information contained in this handbook is, to the best of our knowledge, consistent with accepted best practice, relevant national guidelines and the requirements of the various regulatory authorities that oversee our activities. However, we would emphasise that clinical decisions must remain the responsibility of the clinical team. References and additional source material can be found at the end of this guide.
Meeting the Transfusion Needs of Patients in the West of Scotland

2 GENERAL INFORMATION

2.1 Location

The West of Scotland Blood Transfusion Centre is located on the Gartnavel Hospital site in Glasgow.

Postal Address: 25 Shelley Road
               Glasgow
               G12 0XB

2.2 Hours of Business

The Glasgow despatch hub and Gartnavel Hospital blood bank service operate on a 24 hour basis, 365 days a year. The Reference Laboratory Service and Clinical Transfusion Advisory Service are generally available within routine business hours i.e. 0900 – 1700 hours Monday – Friday.

Outside of routine business hours, a shift system is in operation; however at certain times only one member of BMS staff is on site and clinical transfusion advice is provided by the on call SNBTS consultant according to a national rota.

Restriction of services outside of routine business hours

Gartnavel Hospital Blood Bank:

- Urgent cross-match requests
- Urgent component requests
- Telephone advice / enquiries
- Involvement in a Major Haemorrhage procedure

Reference Laboratory services:

- Urgent cross-match requirements
- Urgent serological investigation – blood group anomalies and antibody confirmation / identification
- Urgent requirement for phenotyped red cells, specialised red cells for Intra-Uterine and Exchange Transfusion
- Telephone advice / enquiries (clinical and laboratory)

Routine hours for all services are: 0900 - 1700 hrs, Monday to Friday

The Glasgow Despatch Hub is open 24 hrs a day, 365 days a year
## 2.3 Telephone numbers for Enquiries and Requests

<table>
<thead>
<tr>
<th>Service</th>
<th>Contact Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood Transfusion Centre</td>
<td><strong>EMERGENCY USE ONLY</strong> 0141 338 6689 07766 725754 (mobile)</td>
</tr>
<tr>
<td>Blood Transfusion Centre</td>
<td>Switchboard 0141 433 5800 0141 433 5803 /4 /5</td>
</tr>
<tr>
<td>Blood Transfusion Centre</td>
<td>Despatch 0141 433 5852</td>
</tr>
<tr>
<td>Blood Transfusion Centre</td>
<td>Quality Assurance Department 0141 433 5857</td>
</tr>
<tr>
<td>Clinical Laboratories</td>
<td>Fax 0141 357 7766 0141 433 5857</td>
</tr>
<tr>
<td>Clinical Laboratories</td>
<td>Sample Reception 0141 433 5806</td>
</tr>
<tr>
<td>Clinical Laboratories</td>
<td>Phenotyped Blood Orders 0141 433 5808</td>
</tr>
<tr>
<td>Clinical Laboratories</td>
<td>Red Cell Immunohaematology (RCI) 0141 433 5807</td>
</tr>
<tr>
<td>Clinical Laboratories</td>
<td>Reference Cross Match 0141 433 5876</td>
</tr>
<tr>
<td>Clinical Laboratories</td>
<td>Quantification 0141 433 5873</td>
</tr>
<tr>
<td>Hospital Transfusion Laboratory (Gartnavel)</td>
<td>From SNBTS 0141 433 5806</td>
</tr>
<tr>
<td>Hospital Transfusion Laboratory (Gartnavel)</td>
<td>From GG&amp;C Ext 53359 0141 211 3359</td>
</tr>
<tr>
<td>Hospital Transfusion Laboratory (Gartnavel)</td>
<td>or direct dial on call mobile 07789 616525</td>
</tr>
<tr>
<td>Clinical Apheresis Unit</td>
<td>0141 301 7013 / 4</td>
</tr>
<tr>
<td>Tissue Services Co-ordinator</td>
<td>0141 433 5810</td>
</tr>
<tr>
<td>Medical Staff</td>
<td>Administration 0141 433 5861 / 5862</td>
</tr>
</tbody>
</table>
Meeting the Transfusion Needs of Patients in the West of Scotland

2.4 Clinical Advisory Service
The West BTC clinical team is available to discuss individual clinical cases or to provide general advice on transfusion matters and the clinical use of components and / or plasma derivatives. All consultant staff can be contacted within business hours through the Transfusion Centre switchboard or clinical services administration.

Out of Hours medical cover is provided by SNBTS consultants on a national basis. The on call medical staff can be contacted through the Transfusion Centre switchboard.

2.5 Buddy System for Hospitals
To foster closer links with Haematology Department staff and Hospital Blood Banks in our region, West BTC has put in place a Consultant ‘Buddy’ system. Each hospital has a named Transfusion Centre Consultant who will act as a point of contact for transfusion issues, and will contribute to the activities of the relevant hospital transfusion committees, as appropriate. If you are not familiar with your named consultant buddy, please contact the administration team at West BTS and we will make sure that the relevant contacts are established. We would be interested to receive feedback on the success or otherwise of the links created by this “Buddy” system; if you have comments, please direct them to the BTC Clinical Director.

2.6 Quality of Service
It is our aim that no patient should be harmed by the lack of an appropriate blood component in the right place at the right time. We endeavour to deliver a high quality service at all times and our laboratory and clinical staff are always happy to offer advice and assistance. There is an on-going programme of internal quality monitoring and audit as part of the SNBTS Quality Management System.

West BTC operates under the SNBTS Manufacturing "Specials" Licence as issued by the Medicines and Healthcare Products Regulatory Agency (MHRA). Products produced by the SNBTS conform to the requirements of Good Manufacturing Practice (GMP) and the National Guidelines for the Blood Transfusion Service. The Clinical Laboratories are UKAS accredited, Reference 8098.

2.7 External Quality Assurance Schemes
All clinical laboratories participate in the relevant External Quality Assurance Schemes as listed below.

- **UK NEQAS Blood Transfusion Laboratory Practice**
  Examinations covered; ABO and RhD typing, antibody screening, antibody identification, crossmatching including emergency situations, red cell phenotyping, selection of suitable units, ABO titration and blood group genotyping

- **UK NEQAS Feto-maternal haemorrhage(FMH)**
  Examinations covered: estimation of FMH by flow cytometry

- **NHSBT Antibody Quantification Quality Assurance**
  Examinations covered: anti-D and anti-c quantification

The results of our performance in specific internal and external quality monitoring schemes can be made available to users if required.
2.8 Service Agreements

West BTC has a service level agreement in place with each of the Territorial Boards for whom it undertakes transfusion services (NATS BDS 021). In addition, each request accepted by West BTC for testing shall be considered an agreement as per ISO 15189:2012 standard 4.1.1.

2.9 Turnaround Times for the West RTC Clinical Laboratory

The turnaround time is taken to be the time between receiving an acceptable sample in the laboratory to the issue of the required test result or blood component. The table below gives the target turnaround times within which the WoS BTC clinical laboratories aim to operate for tests most commonly requested. Actual report time will depend on several factors including the urgency specified by the referring laboratory. If necessary, results may be reported verbally but a computerised report will always be issued later. For complex investigations, an interim report with the findings to date may be issued, followed by a final report when the investigation is concluded.

If results are required on the same day, this must be discussed with the appropriate section of the laboratory in advance. In these circumstances, and for other services provided by the West BTC clinical laboratories, a suitable turnaround time can be discussed at the time of referral.

Note: All Histocompatibility and Immunogenetics (H&I) investigations, with the exception of HIT tests, are processed in other SNBTS laboratories. For turnaround times for tests undertaken by other laboratories within the SNBTS network, please refer to the relevant laboratory guide.

Target Turnaround Times for Component & Report Issue from West RTC

<table>
<thead>
<tr>
<th>Investigation</th>
<th>Target Turnaround Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cross match “urgent”</td>
<td>Within 60 minutes</td>
</tr>
<tr>
<td>Cross match “routine”</td>
<td>Within 3 hours&lt;br&gt;Note: Routine samples are batched for automated testing; if a requirement becomes urgent the laboratory should be informed immediately.</td>
</tr>
<tr>
<td>Cross match “complex”</td>
<td>Minimum of 4 hours&lt;br&gt;Note: The complexity of the investigation and subsequent availability of suitable components will determine actual time taken. Where there may be considerable delay, the situation will be discussed with the referring clinician or laboratory</td>
</tr>
<tr>
<td>Antibody investigation</td>
<td>within 10 working days</td>
</tr>
<tr>
<td>Grouping anomaly</td>
<td>within 7 working days</td>
</tr>
<tr>
<td>Transfusion reaction</td>
<td>Within 7 working days for serological results, bacteriology up to 14 working days</td>
</tr>
<tr>
<td>Blood Group Genotyping</td>
<td>Within 7 working days</td>
</tr>
<tr>
<td>FMH by Flow Cytometry</td>
<td>Within 2 working days</td>
</tr>
<tr>
<td>Anti-D quantification</td>
<td>Within 7 working days</td>
</tr>
<tr>
<td>Anti-c quantification</td>
<td>Within 7 working days</td>
</tr>
<tr>
<td>Heparin Induced</td>
<td>Within 2 working days</td>
</tr>
<tr>
<td>Thrombocytopenia (HIT) assay</td>
<td></td>
</tr>
</tbody>
</table>
2.10 Feedback
We are continually assessing the service we provide with the aim of providing an excellent service at all times. The annual User Survey and Service Level Agreement review meetings with customer hospitals provide formal opportunities for obtaining feedback; the six monthly West BTC Clinical Laboratories User Group meetings provide an additional forum for feedback and discussion of services.

We are happy to receive your comments and suggestions as to how we can best meet your needs and those of your patients at any time; comments or suggestions specifically about this User Guide would also be appreciated.

2.11 Complaints
West BTC operates a formal complaints procedure. If you are dissatisfied with either the service or “products” provided by the BTC laboratories or personnel we would like to hear from you so that we can try to understand the nature of the problem and take appropriate action to address it. A Customer Communications Form (NATF 1022) is available to document your concerns. Please return forms to the Quality Assurance Department.
3 DISTRIBUTION of BLOOD COMPONENTS

3.1 Blood Components
West BTC performs a despatch function for supply of standard blood components to hospital Blood Banks within its catchment area. Non–standard components such as granulocytes (indicated in italics in the summary table below) are provided from the Jack Copeland Centre (JCC) in Edinburgh. Unless otherwise specified, all products conform to, or exceed, the UKBTS / NIBSC "Guidelines for the Blood Transfusion Service" and any nationally agreed revisions.

Guidance on the clinical use of blood components can be found at: http://www.b-s-h.org.uk/guidelines/

<table>
<thead>
<tr>
<th>Components</th>
<th>Specifications Available</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red Cells</td>
<td>• As Whole Blood&lt;br&gt;• In Optimal Additive Solution&lt;br&gt;• Paediatric (Pedi-Packs – 4 splits)&lt;br&gt;• Phenotyped&lt;br&gt;• Irradiated&lt;br&gt;• Plasma reduced (shelf life 14 days)</td>
<td>Red cell products must be stored in a designated, validated blood fridge. Transfusion should be completed within 4 hours of removal from a blood fridge</td>
</tr>
<tr>
<td>Platelets</td>
<td>• Apheresis (single donor)&lt;br&gt;• Pooled (4 donors)&lt;br&gt;• HLA selected&lt;br&gt;• Irradiated*&lt;br&gt;• HPA 1a Negative&lt;br&gt;• In Platelet Additive Solution (PAS) (shelf life 24 hours)</td>
<td>Platelets are stored at room temperature (22°C). Do not refrigerate. Transfusion should be completed within 1 hour Expected platelet increment after one adult dose: 20 - 40x10⁹/l</td>
</tr>
<tr>
<td>Granulocytes</td>
<td>• Pooled Buffy coat pools (4-5 donors)</td>
<td>Supplied under ‘Concessionary Release’</td>
</tr>
<tr>
<td>Fresh Frozen Plasma</td>
<td>• Random (single donor)&lt;br&gt;• Octaplas®&lt;br&gt;• Methylene blue treated and removed (paediatric use)&lt;br&gt;• IgA deficient</td>
<td>Stored below -30°C 20 minutes to thaw before use; transfuse within 4 hours of thawing Standard dose 10 -15mls/kg</td>
</tr>
<tr>
<td>Cryoprecipitate</td>
<td>• Pooled (5 donors)&lt;br&gt;• Methylene blue treated and removed (paediatric use)</td>
<td>Rich source of Fibrinogen, FVIII &amp; VWF Standard dose 10 -15mls /kg</td>
</tr>
<tr>
<td>Other</td>
<td>• Beriplex®&lt;br&gt;• Anti-D Immunoglobulin</td>
<td></td>
</tr>
</tbody>
</table>

*It is SNBTS policy that manufactured platelet components are irradiated as standard.

For a full compendium of information about blood components, please see www.blood.co.uk/hospitals/products
3.2 Deliveries to Hospital Blood Banks
The Glasgow despatch hub supplies blood components to hospital Blood Banks within its catchment area as required. Each hospital blood bank will receive regular deliveries of blood components by SNBTS vehicles. To ensure that the required components are included in these regular deliveries, requests should be made to West BTC during the previous afternoon or evening. Requests must be placed by Fax and followed up by telephone—see Page 5 for the relevant contact numbers.

Please note that West BTC is only funded for routine deliveries. Ad hoc and urgent deliveries at other times can be arranged. Where deliveries are made by taxi, the requesting hospital, GP practice or Health Centre will be billed the cost of such transport. If a Hospital, GP practice or Health Centre wishes to arrange collection, it will be responsible for the safe and appropriate storage of components during transport and for any associated transport costs.

3.3 Urgent Deliveries
Emergency delivery of blood components can be made on request. This requires the despatch of an emergency driver and vehicle under our ‘Blue Light’ policy (GLAP CLIN 005). On receipt of such a request the despatch department will establish the requirements and location for delivery and inform the duty doctor that a ‘Blue Light’ delivery has been initiated. The duty doctor may confirm the clinical details and component specification with the hospital blood bank concerned before authorising the delivery. An expected time for delivery at the requesting hospital will be given; the expected journey time will include 30 minutes for the driver to respond and arrive at West BTC and drive time from WEST BTC depending on distance to the relevant hospital as detailed in the table below:

<table>
<thead>
<tr>
<th>Destination</th>
<th>Total Journey Time (Minutes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aberdeen</td>
<td>180</td>
</tr>
<tr>
<td>Inverness</td>
<td>180</td>
</tr>
<tr>
<td>Dundee</td>
<td>105</td>
</tr>
<tr>
<td>Edinburgh</td>
<td>90</td>
</tr>
<tr>
<td>Glasgow Royal Infirmary</td>
<td>40</td>
</tr>
<tr>
<td>Western Infirmary, Glasgow</td>
<td>40</td>
</tr>
<tr>
<td>Yorkhill</td>
<td>40</td>
</tr>
<tr>
<td>Victoria</td>
<td>45</td>
</tr>
<tr>
<td>Southern General</td>
<td>40</td>
</tr>
<tr>
<td>Monklands</td>
<td>55</td>
</tr>
<tr>
<td>Wishaw</td>
<td>60</td>
</tr>
<tr>
<td>Hairmyres</td>
<td>60</td>
</tr>
<tr>
<td>Crosshouse</td>
<td>60</td>
</tr>
<tr>
<td>Dumfries</td>
<td>105</td>
</tr>
<tr>
<td>Royal Alexandra Hospital, Paisley</td>
<td>45</td>
</tr>
<tr>
<td>Inverclyde, Greenock</td>
<td>60</td>
</tr>
<tr>
<td>Vale of Leven</td>
<td>55</td>
</tr>
<tr>
<td>Stirling</td>
<td>75</td>
</tr>
</tbody>
</table>
3.4 "Flying Squad" Blood
Group O Rh CDE Negative, Kell Negative blood is supplied for use in emergencies.

3.5 Concessionary Release of Blood Components
Occasionally, in the interests of patient care, blood components that do not conform to the specification set out in the Guidelines for the Blood Transfusion Services in the UK (The Red Book) must be issued for clinical use. The significance of a given non-conformance will vary and the implications must be discussed with the requesting clinical team as part of the concessionary release procedure (NATS QAD 015). Formal documentation of this discussion and all requirements for the component concerned will be required, in most circumstances before release of the component to the requesting hospital.

3.6 Major Incident Notification
In order that the Transfusion Centre can respond immediately to blood component and / or plasma derivative requirements following a Major Incident, the Despatch department at the Centre should be contacted by telephone (0141 433 5803 /4 /5) with such information as is available. They will cascade the required information throughout the Service.

If a hospital is planning a mock major incident procedure, the Transfusion Centre should be informed in advance of the test date and if a real emergency arises during the mock procedure, the nature of the communication must be made absolutely clear to avoid any misinterpretation of the need for components and the urgency of despatch.

3.7 Traceability
In addition to the obligations under adverse event reporting, the BSQR also require blood establishments and hospital blood banks to maintain records to ensure full traceability for no less than 30 years.

All blood components issued to the EMRS and for patients in Gartnavel General Hospital have a ‘bag and tag’ label (Appendix III) attached.

It is the responsibility of clinical staff to complete and return this label for all transfused components. Completed labels are collected daily from each ward and collated against issues. Any component that has a missing label will be followed up by the transfusion laboratory, and a Transfusion Validation Form must be completed by the relevant ward manager. A reminder will be sent to the ward manager at 3 and 8 days following issue of the implicated component if the validation form has not been returned. A report on the number and location of ‘missing components’ is distributed to the Clinical Director and Chair of the HTC quarterly and is submitted to the MHRA.

Blood components issued by the Transfusion Centre as a reference cross-match to another hospital blood bank will be accompanied by a ‘Blood Bank Despatch Record’. This document confirms transfer of the component traceability responsibility to the receiving hospital and should be completed and sent back to the Transfusion Centre Reference laboratory.

Valid on date of printing only: 16/10/2017
4 TRANSFUSION SAMPLE COLLECTION AND LABELLING

The following information is applicable for all samples, whether they are destined for the Hospital Transfusion Laboratory or are referral samples for the Reference Serology Service.

All staff involved in the blood transfusion process must be appropriately trained and assessed as competent in the required tasks. Further information and training materials can be found at [www.learnbloodtransfusion.org.uk](http://www.learnbloodtransfusion.org.uk)

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**CLERICAL ERRORS ARE THE COMMONEST CAUSE OF FATAL HAEMOLYTIC TRANSFUSION REACTIONS**

**TAKE PARTICULAR CARE WITH PATIENT IDENTIFICATION AND SAMPLE LABELLING**

---

### 4.1 Patient Identification

It is essential that the identity of the patient is confirmed at the time of blood sampling by asking the patient for his / her details where possible, and by checking the patient’s identity bracelet.

### 4.2 Sample Labelling

It is essential that samples sent for Compatibility Testing or Reference Red Cell / Platelet Investigation meet all of the criteria set out below.

- Sample tube and request form **must** carry the following patient information with no **discrepancy** between tube and form:
  
  - Surname / Family name (correctly spelt)
  - Forename(s) in full (correctly spelt)
  - Date of Birth (not age or year of birth)
  - Unique patient identifier

  The unique patient identifier should be the **CHI number**. In very exceptional circumstances, the Hospital / NHS / Major Incident / Accident & Emergency number can be accepted.

- The sample tube must be in date and must not carry details of another patient, even if these have been obliterated and the correct information completed. The details on the tube must be **handwritten**, and should be dated, timed and signed by the person taking the sample.

- Addressograph Labels must not be used on sample containers for blood transfusion. They may be used on request forms.

- Each request form should be fully completed, including the date and time of sample withdrawal, clinical details pertinent to transfusion (see 4.5) and should be signed.

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**SAMPLES NOT CONFORMING TO THESE STANDARDS WILL NOT BE PROCESSED**

Valid on date of printing only: 16/10/2017 12
4.3 ‘Unknown’ Patients
If a patient is admitted as an emergency and their name and / or date of birth are not known, the request form and sample must carry an Accident & Emergency (A&E) number and state the location of the patient. The accompanying request form must also state the gender of the patient.

4.4 Cord Blood and Blood Samples from the Newborn
Newborn infants are identified in their own right. All samples from this group of patients and the accompanying request forms must be labelled with the same details as section 3.2. In addition, samples and forms must include the relevant maternal details (e.g. Maternal Surname & Forename(s), Hospital / NHS / CHI number, DOB).

4.5 Clinical Details
The risk status for category 3 pathogens, previous transfusions, transfusion reactions, known red cell antibodies, and pregnancies should be given. For obstetric cases, parity, stage of gestation and expected date of delivery, and any Anti-D prophylaxis administered should all be included on the request form.

The reason for the transfusion, including any underlying diagnosis, and the timeframe within which the requested blood components are required, should be stated on the request form. This information will allow laboratory staff to prioritise all requests on the basis of clinical urgency and optimise turnaround times for issue of components.

4.6 Urgent Requests
Urgent requests should be restricted to those patients that require immediate issue of blood components. Emergency Group O Rh CDE Negative K Negative (un-cross matched) blood is available for immediate issue. Blood of homologous ABO and RhD group can be issued in 10 - 15 minutes. Fully screened and compatible components can usually be issued within 45 minutes, however, if red cell antibodies have been detected, a further sample may be required and the provision of blood for transfusion may be delayed.

Please telephone the relevant laboratory before despatching samples for urgent processing. This will assist us to prioritise testing and ensure as rapid a response as possible.

4.7 Sample validity
Transfusion or pregnancy may stimulate red cell antibody production. To ensure that the sample tested is representative of the patient’s current status with respect to red cell antibodies, BCSH guidelines for pre-transfusion compatibility procedures in blood transfusion laboratories recommend that pre-transfusion samples for a patient who has been pregnant or transfused within the previous 3 months must be taken no more than 3 days in advance of the planned transfusion. For all other patients, the sample will remain valid for 7 days.

4.8 Sample storage
Whole blood samples will deteriorate over time. Problems include red cell lysis, bacterial contamination and loss of potency of red cell antibodies and loss of complement activity in serum. Any sample that cannot be transported on the same day to the laboratory should be held overnight at 4°C.
4.9 Transport of Samples
It is the policy of SNBTS that all dangerous goods, including blood samples, should be packaged and transported safely, complying with all relevant legislation. All samples are regarded as potentially hazardous and are handled in accordance with standard safety guidelines. Diagnostic/clinical samples must be packaged to UN650 packaging instructions. For specimens sent via the postal system, we recommend the Royal Mail Safebox. www.royalmail.com Request forms and any other documentation should be enclosed in a separate compartment, protected from potential leakage from samples. Packages should be clearly addressed to the appropriate department within the West BTC.

SNBTS drivers, and couriers contracted to SNBTS, reserve the right to refuse to transport samples that are not appropriately packaged and/or labelled. It is the responsibility of the sender to ensure that the correct packaging and transport arrangements are followed.

Leaking, haemolysed or samples more than 7 days old will not normally be processed by any of the laboratories.

4.10 High Risk Samples
‘High Risk’ samples are samples that carry the risk of transmitting category 3 pathogens such as Hepatitis B virus and HIV. Such samples include those from confirmed or suspected cases of the disease; known carriers (e.g. those known to be antibody or antigen positive) as well as patients from an at-risk group, e.g. intravenous drug users.

All ‘high risk’ samples must be labelled with *Danger of Infection / High Risk* labels.

The sample tube(s) should be sealed in a separate bag before being placed in a double compartment sample bag. *Danger of Infection / High Risk* labels must be affixed to the request form and sample bag; the request form must state the relevant suspected/confirmed infection.

Please note that in line with national recommendation we do not accept/test samples from suspected or confirmed cases of Viral Haemorrhagic Fever (VHF).
5 SPECIAL REQUIREMENTS FOR BLOOD COMPONENTS

The term 'special' is used to refer to additional conditions or processing steps that are not routinely applied to all components. These may include:

- Components from accredited donors
- Autologous donations
- Age restricted red cell units (e.g. less than 5 days old)
- Extended phenotype (Rh, Kell, Duffy, Kidd, MNS)
- Rare blood groups
- Selected components (red cell antigen, HLA, HPA)
- Low titre Anti-A, -B, -T
- IgA deficient components
- CMV seronegative
- Plasma reduced components
- Pathogen inactivated components
- Irradiated components

The most commonly requested special requirements in practice are irradiated components and CMV seronegative components. If special blood components are required, the request form must clearly state exactly what is required e.g. CMV antibody negative components, irradiated components or plasma reduced cellular components. The reason for the special requirement, including any underlying diagnosis, and the timeframe within which the requested blood components are needed, should be stated on the request form.

5.1 Irradiated Blood Components

Irradiation of cellular blood components (red cells, platelets and granulocytes) is undertaken to inactivate residual lymphocytes that are implicated in the pathogenesis of the rare complication of Transfusion associated graft versus host disease (TaGvHD). The clinical indications for irradiated blood components are:

- Intrauterine transfusion
- Neonatal red cell exchange following IUT
- Neonatal top up transfusion following IUT (until 6 months following expected date of delivery – 40 weeks gestation)
- Granulocytes (irrespective of age of the recipient)
- Severe T-lymphocyte deficiency syndromes
- Donations from first or second degree relatives
- HLA selected platelets
- Recipients of Allogeneic haemopoietic stem cell transplants from initiation of conditioning until cessation of immunosuppressant therapy
- Recipients of autologous haemopoietic stem cell transplant from initiation of conditioning until 3 months post transplant (6 months if total body irradiation used)
- Bone marrow and PBSC donors 7 days before harvest until completion
- Hodgkins Lymphoma from diagnosis for life
- Recipients of purine analogue drugs, from first use indefinitely
- Aplastic anaemia patients receiving ATG and /or alemtuzumab
5.2 CMV Seronegative Blood Components
The UK Advisory Committee on the Safety of Blood Organs and Tissues (SABTO) has recommended that due to the introduction of universal leukodepletion of blood components and the improved monitoring and treatment of CMV, there is no longer a requirement for patients undergoing haemopoietic stem cell or solid organ transplants, patients with congenital or acquired immunodeficiency or patients with malignancy to receive CMV seronegative components (www.dh.gov.uk/ab/sabto/index.html)

The current indications for CMV seronegative blood components are:
- IUT
- Neonatal transfusion (until 28 days post expected date of delivery – 40 weeks gestation)
- Transfusion during pregnancy
- Granulocyte transfusion (all recipients)

5.3 Plasma Reduced Components (‘washed’)
Plasma reduced red cells and platelets are indicated for recipients who have previously experienced severe allergic / anaphylactic reactions to transfused components, including IgA-deficient patients. IgA deficient patients who have not experienced a reaction but who are likely to require repeated transfusions in the future may also be considered in an attempt to avoid sensitisation.

Plasma reduced components have a shorter shelf life compared to standard components:
- Platelets in additive solution: 24 hours
- Red cells, washed and re-suspended in SAG-M: 14 days

5.4 Components for neonatal transfusion
A Neonate is defined as an infant less than 4 months old irrespective of its gestational age at birth. Neonates rarely make antibodies in response to blood transfusion but may have red cell antibodies in their plasma that have been passively acquired from their mother. Anyone requesting blood for babies is required to supply full clinical details so that the most suitable units can be issued.

Components intended for Intrauterine Transfusion (IUT) or Exchange Transfusion (ET) require the identification of suitable donors who will often have to be specifically invited to donate to secure blood of the required phenotype. This means that 48 – 72 hours notice is required if unusual phenotypes are involved. The specification of the blood noted below may need to be modified (after clinical consultation) to meet urgent requests, or in the unlikely event that it is not possible to provide blood that fully meets the specification.

It is the responsibility of the requesting hospital to ensure that:
- blood components supplied by SNBTS are of the specification required by the patient
- blood components supplied by SNBTS for these indications are compatible with maternal serum before it is transfused
- where possible the blood is not transfused straight from 4ºC storage

At the time of sending the first request from a neonate, a sample should also be sent from its mother. The maternal sample will be used to screen for antibodies likely to be present in the baby. The ABO and Rh(D) group and Direct Antiglobulin Test (DAT) will be performed on the infant's sample.
All cellular components are manufactured from pre-storage leukocyte depleted whole blood. Although the SaBTO statement (2012) suggests that CMV seronegative components should be made available for new born infants up to 28 days of age, current BCSH Guidelines for Transfusion in Neonates and Older Children advocate CMV antibody negative components for all infants up to 1 year old.

All blood is leucocyte depleted prior to storage and in the rare event of CMV antibody negative components not being available, leucocyte depletion can be used as an alternative in the neonatal setting. Clinicians will be advised in the event that a CMV antibody negative component is not available.

Red Cells in optimal additive solution will be provided for all top-up transfusions in infants under 1 year old. We do not recommend the use of red cells in Optimal Additive Solution for intra-uterine transfusions, neonatal exchange or large volume transfusions.

Group O RhD positive and RhD negative ‘Pedi packs’ are available for neonatal top-up transfusions. These units are as fresh as possible and can be used (if not irradiated) until the end of their shelf life. These should be dedicated to one infant and ordered for infants who are likely to require repeated transfusions.

Specification of Red cell components for IUT:
- Sourced from an accredited donor
- CPD whole blood, plasma reduced (PCV within the range 0.7 – 0.85)
- NOT IN ADDITIVE SOLUTION
- Leucodepleted
- Under 5 days old
- Negative for the relevant antigen(s) – ref maternal alloantibody(ies)
- ABO compatible, but usually Group O
- Kell negative and of appropriate RhD group
- Immune anti A and/or anti B screen negative
- Free from irregular blood group antibodies by IAT
- CMV antibody negative
- Gamma irradiated (with an expiry of 24 hours)
- Labelled as “Red cells for IUT”

Specification of Red cell components for ET:
- Sourced from accredited donors
- Whole blood, plasma reduced (PCV within the range 0.50 – 0.60)
- NOT IN ADDITIVE SOLUTION
- Leucodepleted
- Under 5 days old
- Negative for the relevant antigen(s) - ref maternal alloantibody(ies)
- ABO compatible, but usually Group O
- Kell negative and of appropriate RhD group
- Immune anti A and/or anti B screen negative
- Free from irregular blood group antibodies by IAT
- CMV antibody negative
- Gamma irradiated (with an expiry of 24 hours)
- Labelled as “Red cells for Exchange transfusion”
Necrotising Enterocolitis
Infants suffering from Necrotising Enterocolitis should avoid plasma-containing components. Severe haemolysis may occur if these infants are transfused with random adult plasma. This is because the bacteria implicated in the Necrotising Enterocolitis produce "neuraminidase" which exposes (activates) T antigen sites on the red cell membrane. Adult plasma normally contains IgM anti-T antibody that reacts with the exposed T antigen sites, resulting in haemolysis.

Red cells in additive solution are recommended in the first instance unless there has been a prior haemolytic event. Low titre anti-T plasma is available and red cells can be washed to remove plasma should these infants require further red cell transfusions.
6 GARTNAVEL HOSPITAL BLOOD BANK

The Gartnavel Hospital Blood Bank operates a 24-hour service for pre-transfusion testing.

All hospital transfusion policies and guidelines can be found on the transfusion pages of the GG&C intranet:

http://www.staffnet.ggc.scot.nhs.uk/Acute/Diagnostics/BloodTransfusion/Pages/BloodTransfusion.aspx

For advice regarding blood transfusion matters please contact:

- Mrs Cathy Collins, Transfusion Practitioner – GGH Extension 57762 or Page 4847
- Dr Richard Soutar, Consultant Haematologist – GGH Extension 57733 or 433 5857

6.1 Procedure for Providing Blood Urgently

Emergency Group O Rh CDE Negative K Negative (un-cross matched) blood is available for immediate use. Blood of homologous ABO and RhD group can be available in 10 - 15 minutes. The results of a retrospective antibody screen and cross match will later be telephoned to the Doctor in charge of the patient.

Group O Rh CDE Negative blood (Un-Cross matched Blood) is used ONLY where there is no time to provide cross-matched units. NOTE – this stock blood may not be suitable for patients with alloantibodies - please discuss with Transfusion Laboratory Staff if alloantibodies are known to be present.

4 Units of Group O, CDE negative, K negative, irradiated blood are available at all times in the fridge in the Hospital Theatre Suite

Please inform the Hospital Transfusion Laboratory as soon as you use these emergency units to facilitate their early replacement to ensure availability for any other emergency situation that may arise.

Major Haemorrhage Protocol

A copy of the Gartnavel General Hospital’s Major Haemorrhage Policy is available on each ward within the Hospital and can be accessed electronically via the hospital intranet.

The Major Haemorrhage Pager is activated through the central switchboard:

Telephone: 2222
6.2 Cross matched blood
A cross match may be done electronically (i.e. compatibility is determined by the laboratory computer system) or serologically. The blood bank will issue components for transfusion via electronic issue where possible. Patients suitable for electronic issue of components must have a historical blood group in the computer system, a current valid sample, and have no previous or current clinically significant red cell antibodies. Units should be requested ONLY if it is certain, or very likely, that a patient will require blood transfusion. If a cross match is requested to cover a surgical procedure then the date and time of this should be clearly indicated on the Request Form. Requests for surgical cases, ideally, should be sent to the Transfusion Laboratory at least 24 hours before the procedure is to be carried out. Requests for cross matching for surgical cases should comply with the maximum surgical blood order schedule (MSBOS). The Hospital Transfusion Committee(s) has agreed this schedule. It is designed to maximise the use of available bloodstocks, whilst at the same time minimise blood wastage. The MSBOS is available on the hospital intranet.

Identification of red cell antibodies
If red cell antibodies have been detected, these will be identified (where possible) and appropriate units of blood selected. A further sample may be requested and the provision of blood for transfusion may be delayed. Once the investigation is complete, the referring clinician will be notified, and the unit(s) of blood despatched by the swiftest available means.

Provision of blood that is not fully compatible with the patient’s plasma
In certain circumstances it may not be possible to find blood that appears to be serologically compatible with a patient’s plasma. In these instances we will select units that, in our opinion, are unlikely to trigger a significant transfusion reaction. Staff in the clinical area will be notified of the problem and advised about special precautions to be taken when administering such units. The units will be issued as “least incompatible”.

Issue of blood of a different ABO / Rh group
Occasionally, blood may be issued that is not of the same group as the intended recipient. This may arise because suitable blood of the patient’s group is not available, for example in cases where there are multiple alloantibodies present. However, the blood issued will be ABO and Rh(D) compatible with the intended recipient’s serum / plasma.

Provision of Blood for ABO/Rh Mismatched Stem Cell Transplant Recipients
Inheritance of ABO & HLA antigens is independent, therefore, ABO mismatched transplantation is feasible, however, potential transfusion – related problems that may occur include:

- Haemolysis at the time of reinfusion of stem cells
- Haemolysis of donor type red cells
- Delayed erythropoiesis
- Delayed haemolysis due to persistence of anti-A produced by recipient or donor lymphocytes

All transplant recipients will have a transfusion protocol drawn up as part of their transplant treatment schedule and sent to the transfusion laboratory to ensure the appropriate selection of blood components as the transplant proceeds. ABO compatibility is mandatory from day 0 (date of stem cell reinfusion). Serological confirmation and clinical authorisation must be in place before changing to the donor blood group for the purposes of component issue. Please see GG&C BMT unit policy pages for further information:

http://www.staffnet.ggc.scot.nhs.uk/Acute/RegionalServices/SpecialistOncologyServices/HaemopoieticStemCellTransplantationServices(HSCTS)/Pages/default5439618bd2784684a4ba5641fc1a4ac2.aspx
6.3 Acute Transfusion Reactions

Acute, life-threatening complications of transfusion are rare, but all patients receiving blood components must be monitored closely for any change in their condition throughout the transfusion so that any reaction is recognised early and managed appropriately. Serious acute transfusion reactions include:

- Acute haemolytic transfusion reactions
- Reactions to a bacterially contaminated blood component
- Transfusion-related acute lung injury (TRALI)
- Acute fluid overload
- Severe allergic reactions or anaphylaxis

Acute haemolytic transfusion reactions are generally accompanied by an acute deterioration in the patient’s condition and may be associated with rigors, chest pain, loin pain, abdominal pain, dyspnoea, shock, hypotension, oliguria, and in all cases, haemoglobinuria.

Where a serious transfusion reaction is suspected, further investigations are essential to establish its aetiology and to inform the provision of future transfusion support for the patient. A summary of acute transfusion reactions and their management is given in Appendix II.

If a transfusion reaction is suspected:

- Stop the transfusion immediately
- Inform the Transfusion Laboratory by telephone of the suspected reaction
- Take a post transfusion sample from the patient and send it to the Transfusion Laboratory with a completed Blood Transfusion Request Form marked with ‘Post Transfusion Sample’.
- Relevant investigations include:
  - Repeat ABO and Rh phenotype and red cell antibody screen on the patient’s sample
  - Direct Antiglobulin Test (DAT) to look for evidence of bound red cell antibodies
  - Antibody identification and eluate where indicated
  - Compatibility test against the selected red cells
  - Group and phenotype of the red cells and DAT on the residue of red cells in the implicated donation
- Fill in the reverse of the blood pack label with details of the suspected reaction and return all packs and labels to the Transfusion Laboratory
- Liaise with the Transfusion Laboratory to make arrangements for any on-going transfusion requirement the patient may have and to discuss the need for any additional samples that may be necessary to investigate the cause of the suspected transfusion reaction.

Investigation of suspected transfusion reactions is time consuming and will inevitably cause some delay in supplying blood while the investigation is completed. In urgent cases advice on the immediate transfusion strategy should be sought from Consultant Haematologist staff.
Meeting the Transfusion Needs of Patients in the West of Scotland

Transfusion Related Acute Lung Injury

Transfusion Related Acute Lung Injury (TRALI) is defined as a new episode of acute lung injury (ALI) occurring during or within 6 hours of a transfusion. The clinical presentation includes dyspnoea, hypoxaemia, fever and bilateral pulmonary infiltrates.

The patient should ideally be assessed and managed in an intensive care unit. There is no specific treatment for TRALI; most patients require ventilatory support. In 5-10% of cases the condition is fatal.

The clinical syndrome is thought to be due to a donor HLA or neutrophil antibody reacting with recipient leucocytes that are sequestered in the lung. The investigation of TRALI includes testing of any implicated donors for the presence of leucocyte antibody and, if appropriate, removing them from the donor panel.

If TRALI is suspected, please contact the Transfusion Centre to discuss the possible diagnosis and to initiate a TRALI investigation if appropriate. Transfusion Centre medical staff will request the following:

- Recipient details
- Clinical details including other risk factors for acute lung injury (ALI)
- Details of all blood components received in the 6 hours prior to the onset of symptoms
- Additional samples (if required) to be sent to the TRALI coordinator in Aberdeen
  - 2x7ml EDTA
  - 2x10ml clotted
- Completion of a TRALI investigation form (NATF 094). This form will be forwarded to the referring team by the Transfusion Centre doctor if required.
- Initiation of a SABRE/SHOT report by the referring team if appropriate

The completion of a TRALI investigation may take up to 8 weeks; the progress and outcome of any TRALI investigation will be reported to the referring clinical team by the TRALI coordinator in Aberdeen (01224 812 409 / 461).

6.4 Adverse Event Reporting

The UK Blood Safety and Quality Regulations (BSQR, 2005) derived from the EU Blood Directive require that serious adverse events (SAEs) and reactions (SARs) related to blood transfusion are reported to the UK Competent Authority for blood safety (the Medicines & Healthcare products Regulatory Agency, MHRA).

The MHRA definition of a **Serious Adverse Reaction** (SAR) is ‘an unintended response in a donor or in a patient that is associated with the collection, or transfusion of blood or blood components that is fatal, life-threatening, or disabling or incapacitating, or which results in or prolongs hospitalisation or morbidity’.

SARs include:

- Immunological & non-immunological haemolysis
- Anaphylaxis / hypersensitivity
- Transfusion-related acute lung injury (TRALI)
- Transfusion-transmitted bacterial, viral and parasitic infection
- Post-transfusion Purpura (PTP)
- Transfusion-associated Graft versus Host disease (TaGvHD)
- Other serious reactions
A serious adverse event (SAE) is defined as ‘any untoward occurrence associated with the collection, testing, processing, storage and distribution of blood or blood components that might lead to death, life-threatening, or disabling or incapacitating conditions for patients, or which results in or prolongs hospitalisation or morbidity’.

All SARs and SAEs must be reported to the MHRA via their on-line reporting system SABRE – ‘Serious Adverse Blood Reactions & Events’. Please note that SABRE does not replace existing local reporting arrangements. If an adverse event or reaction would previously have been reported to local management or to a blood establishment, those arrangements should continue. For further guidance, please refer to the MHRA website: www.mhra.gov.uk.

In addition to satisfying the requirements of the BSQR haemovigilance reporting, SABRE has been developed to facilitate the Serious Hazards of Transfusion (SHOT) scheme. This provides a single reporting route for UK Haemovigilance. Adverse event reporting through the SHOT scheme was voluntary until 1996, when reporting became a requirement for compliance with the best clinical transfusion practice standards as stated in the ‘Better Blood Transfusion’ Health Service Circulars. The Serious Hazards of Transfusion (SHOT) system is more wide reaching and records all adverse incidents including ‘near misses’ and events related to the use of Anti-D. An annual SHOT report is produced documenting the nature and frequency of adverse incidents and making recommendations for practice improvement. Further information can be obtained from the SHOT website: www.shotuk.org.

Reporting of adverse events and incidents is the responsibility of the organisation required to initiate corrective actions. Reporting should be co-ordinated by the delegated representative of the hospital transfusion committee and/or SNBTS quality department as required.
## 7 DIRECTORY OF TESTS AND SAMPLE REQUIREMENTS

<table>
<thead>
<tr>
<th>Test</th>
<th>Sample Requirements</th>
<th>Availability</th>
<th>Request Form / Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group &amp; Screen (and/or Cross match)</td>
<td>10ml EDTA</td>
<td>24/7</td>
<td>Blood Transfusion Request Form</td>
</tr>
<tr>
<td>Transfusion Reaction Investigation</td>
<td>10ml EDTA Pre Transfusion sample 10ml EDTA Post Transfusion sample 7ml Clotted Post Transfusion sample</td>
<td>24/7</td>
<td>Blood Transfusion Request Form Return involved transfused and un-transfused blood pack(s)</td>
</tr>
<tr>
<td>Antenatal Group and Antibody Identification</td>
<td>10ml EDTA</td>
<td>Routine hours</td>
<td>Immunohaematology Request Form</td>
</tr>
<tr>
<td>Antibody Monitoring</td>
<td>10ml EDTA</td>
<td>Routine hours</td>
<td>Immunohaematology Request Form</td>
</tr>
<tr>
<td>Paternal Phenotyping</td>
<td>5ml EDTA</td>
<td>Routine hours</td>
<td>Immunohaematology Request Form</td>
</tr>
<tr>
<td>Anti-D Quantification *</td>
<td>10ml EDTA</td>
<td>Routine hours</td>
<td>Antibody quantification request form</td>
</tr>
<tr>
<td>Anti-c Quantification *</td>
<td>10ml EDTA</td>
<td>Routine hours</td>
<td>Antibody quantification request form</td>
</tr>
<tr>
<td>FMH estimation by Flow *</td>
<td>5ml EDTA</td>
<td>Routine hours (inc. public holidays)</td>
<td>Immunohaematology Request Form</td>
</tr>
<tr>
<td>Baby Group &amp; DAT</td>
<td>0.5mls EDTA if accompanied by a maternal sample (5-10mls); otherwise 1.0 -1.5mls</td>
<td>Routine hours</td>
<td>Immunohaematology Request Form</td>
</tr>
<tr>
<td>ABO &amp; Rh Group Investigation</td>
<td>10ml EDTA</td>
<td>Routine hours</td>
<td>Immunohaematology Request Form</td>
</tr>
<tr>
<td>Red Cell antibody identification</td>
<td>10ml EDTA</td>
<td>Routine hours</td>
<td>Immunohaematology Request Form</td>
</tr>
<tr>
<td>Extended blood group</td>
<td>10ml EDTA</td>
<td>Routine hours</td>
<td>Immunohaematology Request Form</td>
</tr>
<tr>
<td>AIHA investigation</td>
<td>10ml EDTA x 2</td>
<td>Routine hours</td>
<td>Immunohaematology Request Form</td>
</tr>
<tr>
<td>Blood Group Genotyping</td>
<td>5ml EDTA</td>
<td>Routine hours</td>
<td>Immunohaematology Request Form</td>
</tr>
<tr>
<td>Heparin induced thrombocytopenia (HIT) test *</td>
<td>7ml Clotted</td>
<td>Routine hours</td>
<td>Complete ‘4Ts’ request form</td>
</tr>
</tbody>
</table>

**Measurement of Uncertainty:** The laboratory has assessed the uncertainty in quantitative test results (*). These measures of uncertainty can be shared with laboratory users on request.
BIBLIOGRAPHY

Handbook of Transfusion Medicine
The handbook is available electronically at: www.transfusionguidelines.org.uk.

Guidelines for the Blood Transfusion Services in the UK (Red Book)
The guidelines are available electronically at: www.transfusionguidelines.org.uk.

BCSH Guidelines are all available at: http://www.b-s-h.org.uk/guidelines/
- Guidelines for the clinical use of red cell transfusions
- Guidelines for the use of platelet transfusions
- BCSH Guidelines on the Management of Massive Blood Loss
- Guidelines for use of fresh frozen plasma, cryoprecipitate and cryosupernatant
- Transfusion Guidelines for neonates and older children
- Guideline for blood grouping and antibody testing in pregnancy
- Addendum for guidelines for blood grouping and red cell antibody testing during pregnancy
- Guidelines for the use of irradiated blood components
- Guidelines on the clinical use of leucocyte-depleted blood components
- Guidelines on the estimation of fetomaternal haemorrhage
- Recommendations for the use of anti-D immunoglobulin for RH prophylaxis
- Guidelines for pre-transfusion compatibility procedures in blood transfusion laboratories
- Guidelines for policies on Alternatives to Allogeneic Blood Transfusion 1: Predeposit Autologous Blood Donation and Transfusion

Serious Hazards of Transfusion (SHOT) Annual Reports. www.shotuk.org

Other
Royal College of Obstetricians and Gynaecologists (2011). The use of Anti-D Immunoglobulin for Rhesus D Prophylaxis (Green Top Guideline No.22)
APPENDIX I: SUMMARY OF ACUTE TRANSFUSION REACTIONS

This table is intended as a brief aide memoire only - contact Duty Doctor for further advice if required. In any severe reaction contact the Transfusion Laboratory / BTC for advice on how it should be investigated. Save all packs and send patient samples to the Transfusion Laboratory / BTC as advised by the Duty Doctor or laboratory staff.

<table>
<thead>
<tr>
<th>REACTION</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 pack +patient details)</td>
<td>Stop blood, Give IV saline, Establish diuresis, Monitor U&amp;Es + coagulation</td>
</tr>
<tr>
<td>Anaphylaxis</td>
<td>Acute collapse, ↓BP, Dyspnoea</td>
<td>Reaction to plasma constituent eg IgA</td>
<td>Stop transfusion, Give Oxygen I.M. adrenaline (0.5ml of 1/1000 solution) I.V. Antihistamine Nebulised Salbutamol Maintain BP.</td>
</tr>
<tr>
<td>Fever/Rigors</td>
<td>Chills, fever, rigors</td>
<td>Anti-leucocyte antibodies (patient)</td>
<td>Stop or slow transfusion, Paracetamol / asprin.</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, Broad spectrum antibiotics, Maintain BP, Give Oxygen.</td>
</tr>
<tr>
<td>Transfusion Related Acute Lung Injury (TRALI)</td>
<td>Acute respiratory decompensation, Pulmonary Oedema, Fever, Circulatory collapse</td>
<td>Anti-leucocyte &amp;/or anti-neutrophil antibodies (donor or recipient)</td>
<td>Stop transfusion, Intensive respiratory support, Steroids are of uncertain benefit, Avoid Diuretics</td>
</tr>
</tbody>
</table>

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PATIENT EXHIBITING POSSIBLE FEATURES OF AN ACUTE TRANSFUSION REACTION, WHICH MAY INCLUDE:
fever, chills, rigors, tachycardia, hyper- or hypotension, collapse, flushing, urticaria, pain
(bone, muscle, chest, abdominal), respiratory distress, nausea, general malaise

STOP THE TRANSFUSION: undertake rapid clinical assessment, check patient ID/blood compatibility level, visually assess unit
Evidence of:
Life-threatening Airway and/or Breathing and/or Circulatory problems and/or wrong blood given and/or evidence of contaminated unit

Yes

Inform medical staff

SEVERE/LIFE-THREATENING
- Call for urgent medical help
- Initiate resuscitation ABC
- Is haemorrhage likely to be causing hypotension? If not, discontinue transfusion (do not discard implicated unit(s))
- Maintain venous access
- Monitor patient, e.g. TPR, BP, urinary output, oxygen saturations

No

SEVERE/LIFE-THREATENING
- If likely anaphylaxis/severe allergy, follow anaphylaxis pathway
- If bacterial contamination likely, start antibiotic treatment
- Use BP, pulse, urine output (catheterise if necessary) to guide intravenous physiological saline administration
- Inform hospital transfusion department
- Return unit (with administration set) to transfusion laboratory
- If bacterial contamination suspected, contact blood services to discuss recall of associated components
- Perform appropriate investigations

MILD
- Isolated temperature ≥ 38°C and rise of 1–2°C and/or
- Pruritus/rash only

MODERATE
- Temperature ≥ 39°C or rise ≥ 2°C and/or
- Other symptoms/signs apart from pruritus/rash only

Continue transfusion
- Consider bacterial contamination if the temperature rises as above and review patient’s underlying condition and transfusion history
- Monitor patient more frequently e.g. TPR, BP, oxygen saturations, urinary output

CONTINUE TRANSFUSION

Net consistent with condition or history
- Discontinue (do not discard implicated unit(s))
- Perform appropriate investigations

If consistent with underlying condition or transfusion history, consider continuation of transfusion at slower rate and appropriate symptomatic treatment

Document in notes that no HTT/HTC review/SHOT report necessary

Transfusion-related event

Transfusion-unrelated
APPENDIX II

Blood Component Traceability ‘Bag & Tag’ Label

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